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Firm incentives, institutional complexity and the quality of "harmonized" accounting numbers

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Abstract

In this paper, we investigate how firm reporting incentives and institutional factors affect accounting quality in firms from 26 countries. We exploit a unique multicountry setting where firms are required to comply with the same set of international reporting standards. We develop an approach of cross-country comparisons allowing for differences between firms within a country and we investigate the relative importance of country- versus firm-specific factors in explaining accounting quality. We find that financial reporting quality increases in the presence of strong monitoring mechanisms by means of ownership concentration, analyst scrutiny, effective auditing, external financing needs, and leverage. Instability of business operations, existence of losses, and lack of transparent disclosure negatively affect the quality of accounting information. At the country level, we observe better accounting quality for firms from regulatory environments with stronger institutions, higher levels of economic development, greater business sophistication, and more globalized markets. More importantly, we find that firm-specific incentives play a greater role in explaining accounting quality than countrywide factors. This evidence suggests that institutional factors shape the firm's specific incentives that influence reporting quality. Our findings support the view that the global adoption of a single set of accounting standards in isolation is not likely to lead to more comparable and transparent financial statements unless the institutional conditions and the firm-specific reporting incentives also change.

Keywords: Accounting quality; Firm reporting incentives; Institutional factors
JEL classification: G15; M21; M41

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1. Introduction

This study is motivated by the debate about the influences of institutional and economic forces, firm-specific reporting incentives, and accounting standards on financial reporting outcomes (e.g., Holthausen, 2003, 2009; Schipper, 2005; Soderstrom & Sun, 2007). A large bulk of the international literature contributing to this debate focuses on the role of institutional and economic incentives in determining the quality of accounting numbers (e.g. Ali & Hwang, 2000; Ball, Kothari, & Robin, 2000; Burgstahler, Hail, & Leuz, 2006; Land & Lang, 2002). As international markets integrate, it becomes increasingly important to understand to what extent a variation in the institutional setting is reflected on the variation of the quality of financial reporting processes across firms from different countries (e.g., Leuz, Nanda, & Wysocki, 2003). However, these prior studies have difficulty examining how institutionally shaped reporting incentives affect financial reporting outcomes when these outcomes are influenced *simultaneously* by accounting standards and by reporting incentives. For example, Schipper (2005) emphasizes that accounting numbers are materially affected by what standards require and by reporting incentives when preparers try to achieve some desired financial reporting outcome. Holthausen (2003), Schipper (2005), and others argue that when institutional factors, firm incentives, and accounting standards vary simultaneously, it is difficult to isolate their individual effects on the properties of accounting information. However, many international studies do not examine the effects of institutional factors (at a country level) and company reporting incentives (at a firm level) on financial reporting in a setting with *constant* accounting standards. Following Holthausen (2003) and Schipper (2005), we investigate the quality of accounting outcomes in a context where the direction and strength of institutional factors and firm reporting incentives vary but accounting standards remain constant. We are aware of only one other study that attempts a similar approach: Ball, Robin, and Wu (2003). This study analyzes earnings' timeliness and conservatism in Asian countries with *similar* accounting regulations. It infers that incentives and institutional factors dominate accounting standards as determinants of financial reporting. The study (2003) tacitly assumes that the standards are of high quality. However, the standards and their quality vary across these Asian countries. They are only similar in their Anglo-Saxon origin and they are also of an uncertain quality (Holthausen, 2003). Our research design addresses this issue and builds a framework which places international firms on a level playing field in terms of mandatory accounting standards. Mandatory adoption of IFRS across a large number of jurisdictions provides not *similar* but *identical* standards of a high quality.[1] Specifically, we analyze institutionally-shaped reporting incentives of a set of firms from 26 countries reporting under the same mandated International Financial Reporting Standards (IFRS) to see the effects on firms' financial reporting outcomes.

Moreover, we build on Holthausen's (2003) comment regarding the need for more quantitative analysis in cross-country comparison. We develop an approach of country classification. In contrast to Ball et al. (2003), who treat the four Asian countries as a

[1] The high quality of IFRS is evidenced by the IASC's Improvements Project and the International Organization of Securities Commissions's (IOSCO) endorsement in the case of EU adoption of IFRS (Schipper, 2005).

homogenous group, we group countries using a variety of country-level metrics. Our sample consists of firms from a wide range of institutional, economic, and capital market contexts. This multidimensional approach enables us to base our classification on seventeen country-level dimensions and to develop more powerful tests of the association between countrywide factors and accounting quality.

In addition to country-level institutional factors, institutional factors shape the complex set of firm-level incentives, which determine the financial reporting outcomes. As a result, we do not treat firms in the same country homogenously; rather, we allow for differences across firms within a country (Holthausen, 2003). By refining the comparison of international firms to firm-level variation, we allow for the possibility that firms might mitigate or undo the effects of their country-specific institutional arrangements. While prior research (e.g., Burgstahler et al., 2006) suggests that institutional factors have a role in shaping the reporting behavior of firms, they offer little insight into the relative importance of firm- versus country-specific factors on reporting quality. For example, Leuz et al. (2003) and Pincus, Rajgopal, and Venkatachalam (2007) show that financial reporting quality is influenced by legal, economic, and enforcement elements of the firm's environment. However, the authors do not show whether these country forces affect financial reporting outcomes, or, instead, if they shape firms' particular incentives such as international diversification, ownership structure, and auditor quality, which in turn influences reporting quality. Thus, the present analysis can help clarify previously inconclusive evidence regarding the extent to which accounting quality is determined by firm incentives and institutional conditions. Accounting quality is difficult to observe and thus difficult to measure. We rely on two measures widely used in previous accounting research (e.g., Easton & Harris, 1991; Francis, LaFond, Olsson, & Schipper, 2004). The first is a market-based measure that captures the relation between stock returns and accounting earnings. The main critique of market-based proxies of accounting quality is that, although these measures are usually employed to test the quality of accounting standards, they actually reflect both the effect of accounting standards and institutional factors (see, Holthausen & Watts, 2001). In our research design accounting standards are held constant, therefore we do not face the difficulty of unraveling the relative influences of these factors. The second proxy is purely dependent on accounting numbers and measures the relation between accruals and cash flows. We test empirically the relative impact of a broad range of firm and institutional factors on the two accounting measures. The sample comprises 7854 firm-year observations from 26 countries for the years 2006 and 2007. Although using only two years limits our empirical tests, it ensures that IFRS is the mandatory set of standards used across all firms as our research design requires. We find that accounting quality is positively associated with ownership structure, analyst scrutiny, audit fees, external financing needs, and leverage. Instability of business operations, existence of losses, and lack of transparent disclosure negatively affect the quality of accounting information. At the country level, our findings indicate that firms exhibit better quality financial reporting if they are domiciled in countries with higher levels of economic and institutional development, with greater business sophistication, and with greater integration in the global economy.

Our findings have important economic implications. The results suggest that firm-specific incentives reflect a significant part of institutional and economic conditions.

Consequently, efforts by policy-makers, managers, and monitoring agents are more likely to result in desired achievements in financial reporting if changes to the countries' overall institutional and economic infrastructures are brought about *simultaneously* with actions that impact firms' reporting incentives. For example, improvements in capital market development at a macro level might not be sufficient to enhance the quality of financial reporting substantially unless the corporate governance structures at a firm level also improve to facilitate the efficient implementation of country-level measures. Firm managers and investors will also benefit from understanding which firm incentives are likely to affect reporting outcomes. For example, if audit quality is more important than analyst scrutiny, then managers might prefer investing resources in hiring better auditors to improving relations with the analyst community.

The international efforts by the IASB and the FASB to improve accounting standards worldwide (e.g., Memorandum of Understanding between the FASB and the IASB, 2006) are expected to result in more comparable and transparent reporting. Our findings support the view that this goal can only be realized if the institutional factors that shape firm reporting incentives are also improved (e.g., Holthausen, 2009; Schipper, 2005). Our results suggest that the global accounting debate should focus not only on convergence of accounting standards but also on the market forces and institutional factors that shape firm-specific reporting incentives (e.g., Leuz, 2003).

The remainder of the paper is organized as follows: Section 2 discusses the accounting harmonization, firm incentives, and institutional factors included in the analysis. Section 3 describes the research design. Section 4 presents the data and empirical results. Section 5 concludes.

2. Accounting harmonization, diversity of firms' incentives, and institutional factors

International firms have adopted IFRS in an attempt to harmonize accounting standards. IFRS adoption has raised expectations that reporting quality will increase across jurisdictions and will lead to more consistent and reliable results. Although research shows that high-quality standards (i.e., IFRS) generally improve accounting quality (Barth, Landsman, & Lang, 2008; Daske, Luzi, Leuz, & Verdi, 2008a), other evidence suggests that standards have a limited role for determining financial reporting quality (Burgstahler et al., 2006; Daske, Hail, Leuz, & Verdi, 2008b; Leuz, 2003). Rather, the conditions in which a firm operates determine financial reporting outcomes. For example, ownership structure and the degree of business internationalization have a significant influence on reporting quality (see Ball & Shivakumar, 2005; Burgstahler et al., 2006). At the country level, several institutional factors are known to affect financial reporting quality, including the quality of the legal system, the effectiveness of enforcement mechanisms, and the development of capital markets (e.g., Ball et al., 2003; Leuz et al., 2003; Soderstrom & Sun, 2007). Institutional factors vary across countries, hence global implementation of IFRS per se might not lead to the desired improvements and similarity in financial reporting outcomes across jurisdictions (see Holthausen, 2009; Leuz et al., 2003). In addition, the implementation of a single set of standards in a particular country might not have homogenous effects on all firms in that economy. IFRS permits enough judgment to let managers' reporting choices affect accounting numbers. Managers' choices are strongly

influenced by firm operating conditions and by institutional features such as capital market forces, ownership structures, enforcement mechanisms, and auditors' incentives. Thus, to explain financial reporting quality in an international context, we must consider a variety of *firm-level* reporting incentives in addition to *country-level* economic and institutional factors (Holthausen, 2003). In order to understand the effects of these two types of factors, we must isolate them from the effects of differences in accounting standards (Schipper, 2005). To do so, we investigate the country and firm determinants of financial reporting quality in jurisdictions that follow the same set of mandatory accounting standards. Specifically, we make use of the mandatory adoption of IFRS in 26 countries to test the relative influence of institutional factors and firm incentives on properties of accounting information. This framework guarantees constant standards across firms and it avoids the need to judge subjectively which regimes have similar accounting standards.[2] A vast number of research papers have analyzed the interactions between firm and country factors. For example, Doidge, Karolyi, and Stulz (2007) and Francis, Khurana, Martin, and Pereira (2008) show that firm-specific incentives play a more important role in determining accounting quality in countries with a stronger institutional environment. On the other hand, evidence reported by Covrig, Defond, and Hung (2007) and Durnev and Kim (2005) shows that firm-specific incentives are more important for financial reporting when firms operate in poor legal and information environments. However, these studies cannot provide definitive evidence on the relative role of country and firm factors on accounting quality because the set of firms analyzed have *varying* degrees of accounting standards either through time or cross-sectionally. Furthermore, these studies allow for variation across countries using a single-dimension (e.g., legal environment). They also observe the behavior of firm-level incentives across a single criterion (e.g., weak versus strong legal environment). Our study considers a wide range of institutional, economic, and technological country-level metrics and it allows firm-level variation in reporting incentives while it keeps reporting standards *fixed*. This approach clarifies the relative role of institutional versus firm incentives on financial reporting outcomes.

2.1. Firm incentives

2.1.1. Listing in U.S. markets

The cross-listing literature shows that cross-listed firms generally have better information quality than their non-U.S. listed peers (e.g., Bradshaw, Bushee, & Miller, 2004; Doidge, Karolyi, & Stulz, 2004; Lang, Lins, & Miller, 2003a; Lang, Raedy, & Wilson, 2006; Lang, Raedy, & Yetman, 2003b). Firms choose to cross list in order to attract external funds, to draw the attention of sophisticated investors, and to increase visibility and reputation. These factors positively affect financial reporting quality. But since the decision to cross list in the U.S. is voluntary, we question whether improvements in accounting quality should be attributed to cross listing or to another underlying factor (e.g., Doidge et al., 2004). Given these arguments, we make no prediction regarding the sign of the relation between accounting quality and listing in the U.S. markets. We measure

[2] Several studies benchmark the accounting standards with U.S. standards (e.g., Ali & Hwang, 2000). But as observed by Holthausen (2003), there is no consensus about the superiority of U.S. standards.

U.S. cross-listing as an indicator variable (USLIST) that takes the value of one if the firm lists in U.S. markets (via ADR), and zero otherwise.

2.1.2. International business diversification

International research shows that interactions with foreign markets are associated with greater transparency and better disclosure (e.g., Khanna, Palepu, & Srinivasan, 2004). Firms that have diversified operations abroad have greater incentives to provide comprehensive financial information to their foreign clients, suppliers, and potential investors. Therefore, we include a firm-level variable that captures the level of international business diversification: the log of the number of geographical segments (GEOSEG). We hypothesize that a higher level of international diversification results in better reporting quality.

2.1.3. Ownership concentration

Ownership structures vary considerably around the world (e.g., Faccio & Lang, 2002; La Porta, Lopez-de-Silanes, & Shleifer, 1999). Thus, it is critical to account for such variation in international studies. Ownership also has a significant effect on the quality of accounting numbers. When ownership is concentrated in the hands of investors capable of and willing to exercise effective monitoring, accounting numbers are typically more relevant and reliable (e.g., Ball & Shivakumar, 2005; Cheng & Warfield, 2005; Durnev & Kim, 2005; Velury & Jenkins, 2006). Ownership concentration has an association with closer alignment of interests between insiders and outsiders and with better governance practices, which are expected to result in better financial reporting. Consequently, we expect to observe a positive relation between ownership concentration and our measures of accounting quality. We measure ownership concentration (OWNER) as the percentage of closely held shares in a firm.[3]

2.1.4. Transparency of disclosure

Transparent (clear and precise) disclosure is difficult to measure and previous research has used a variety of methods such as analyst scores and self-developed indices. But analysts' disclosure scores typically include only large firms (mostly U.S. ones), and research-made scores are subjective and time-consuming. For these reasons, we focus on measures that capture the consequences of transparent disclosure: the reduction in information asymmetry that translates into increased liquidity (e.g., Bushee & Leuz, 2005; Leuz & Verrecchia, 2000) and the reduction in uncertainty and diversity of opinion that affects trading volume (e.g., Bamber, Barron, & Stober, 1997; Linsmeier, Thornton, Venkatachalam, & Welker, 2002). To capture both the liquidity and volume effects, we combine the average bid–ask spread and the average change in trading volume (TDISC) by using a principal component analysis. Bid–ask spread is calculated as the absolute difference between closing bid and ask prices divided by the midpoint of the spread (e.g., Bushee &

[3] The definition of closely held shares given in Worldscope is as follows: (1) shares held by officers, directors, and their immediate families; (2) shares held in trust; (3) shares of the company held by any other corporation (except shares held in a fiduciary capacity by banks or other financial institutions); (4) shares held by pension/benefit plans; and (5) shares held by individuals who hold 5% or more of the outstanding shares.

Leuz, 2005; Leuz & Verrecchia, 2000). We calculate change in trading volume as the change in the log of number of shares traded (e.g., Leuz, Triantis, & Wang, 2008). Both measures represent the averages over the last fiscal year. We expect clear and transparent information to be associated with lower bid–ask spreads and lower changes in trading volume. Thus, we anticipate a negative relation between TDISC and accounting quality.

2.1.5. Analyst activity

Accounting and finance literature suggests that analysts use accounting information to value the firm and predict future cash flows (e.g., Hope, 2003a,b). By extensively using and scrutinizing financial information, analysts create pressure for firms to report better financial information (e.g., Fang, 2008; Lang, Lins, & Miller, 2003a). We consider two aspects of analyst activity: forecast accuracy and the number of analysts following the firm. We reduce the two into a single measure (ANALYST) using a principal component analysis. We define analyst forecast accuracy as Hope (2003a) does: the negative of the absolute difference between actual earnings per share and the annual average of analysts' forecasts of one-year ahead of earnings, scaled by the stock price at the beginning of the fiscal year end. The number of analysts following is calculated as the annual average of the number of analysts providing one-year ahead earnings forecasts. We hypothesize a positive relation between ANALYST and accounting quality.

2.1.6. Auditor quality

Agency problems between managers and investors can be mitigated through contracting that often relies on accounting numbers. Contracting creates a demand for competent and independent monitoring of accounting information personified in high-quality audit services (Watts & Zimmerman, 1986). The link between audit quality and financial reporting quality is well documented (e.g., Ashbaugh, LaFond, & Mayhew, 2003; Barton, 2005), but empirical findings are contradictory. For example, Frankel et al. (2002) argue that there is a negative relation between fees paid for non-audit services (an indication of auditor dependence on the firm) and earnings quality. On the other hand, Larcker and Richardson (2004) find higher earnings quality in firms where auditors have great financial dependence. The quality of auditing services also varies internationally due to differences in businesses, litigation, and reputation across countries (e.g., Francis, Khurana, & Pereira, 2003; Khurana & Raman, 2004). We expect to see cross-sectional variation in the effectiveness of auditing in monitoring financial statement information prepared under IFRS. But given previous contradictory findings, we make no directional prediction for this association. We measure the effectiveness of auditing services as the proportion of total audit fees paid relative to the firm's total assets (AUDFEE).

2.1.7. Firm-level book-tax alignment

There is significant variation in the influence of income taxes on accounting numbers across the world (e.g., Soderstrom & Sun, 2007). Even within European Union countries that have made efforts to establish common corporate tax strategies, there are still significant differences in taxation.[4] Previous studies, such as Ali and Hwang (2000),

[4] For a review of the taxation differences in Europe see European Commission (2006).

Burgstahler et al. (2006), and Guenther and Young (2000), show that earnings are less likely to reflect underlying economic activities in countries with close book-tax alignment. Further, Hanlon, Laplante, and Shevlin (2005) find that individual firms make use of taxation in different ways. This produces cross-firm variation in tax-book alignment within the same country. Thus we expect the influence of tax rules on the quality of reported accounting numbers to be firm specific.[5] Following Hanlon et al. (2005), we calculate tax-book alignment (TAXBOOK) as the log of the squared difference between pre-tax book income and taxable income, where taxable income is calculated as tax expense divided by the tax rate in the country. We anticipate that a close book-tax alignment muddles firms' incentives to report true economic performance and thus we expect a negative influence from TAXBOOK on accounting quality.

2.1.8. Variability of business operations

Higher uncertainty about business operations implies more management judgments and estimation errors that can hinder the quality of financial reporting. Dechow and Dichev (2002) observe that accounting quality declines with a longer operating cycle, higher sales volatility, and a higher cash flow volatility. Consistent with the idea that lower reporting quality negatively impacts the cost of capital, Francis, Khurana, and Pereira (2005b) find that higher business uncertainty increases a firm's cost of equity capital. We measure the variability of business operations (STSALE) as an indicator variable that takes the value of one if the standard deviation of firm sales is above the corresponding industry median, and zero otherwise. We expect higher variability in business operations to have an association with lower accounting quality.

2.1.9. Economic distress

Losses are typically interpreted as a sign of economic distress for a business. Literature as far back as Ball and Brown (1968) documents a negative market reaction to bad news about earnings. To avoid such a negative reaction, managers purposely manage financial information to portray a better image of business performance (e.g., Burgstahler & Dichev, 1997), thus reducing the quality of accounting information. Information prepared during loss years is more likely to contain estimation errors because managers might have to predict unusual items (e.g., restructuring costs) or changing accounting policies (Dechow & Dichev, 2002). For these reasons, we expect the incidence of losses to be negatively associated with accounting quality. Incidence of losses (NLOSS) is calculated as the number of years of losses relative to the total number of years (as in Dechow & Dichev, 2002).

[5] Typically, firms calculate income tax based on individual financial statements prepared under local standards. In this study, we focus on information prepared under IFRS that applies only to consolidated financial statements. However, IFRS-based consolidated financial statements can be affected by firm tax incentives for two reasons. First, in some countries tax legislation allows firms to pay corporate taxes at the consolidation level (for example in the EU in groups where capital participations are above 90%). Second, policy choices on individual accounts that are driven by tax considerations are likely to be kept in the consolidated reports.

2.1.10. External financing needs

External financial needs have been identified as an important determinant of financial reporting quality (e.g., Francis et al., 2008; Healy & Palepu, 2001; Leuz, 2003). Firms with abundant growth opportunities and insufficient internal funds have incentives to increase the quality of financial information as a way to obtain funds at favorable conditions. We measure external financing needs (FINEED) as the difference between the required investment to keep the firm growing and the proportion of firm's earnings that are reinvested (Demirguc-Kunt & Maksimovic, 1998). The required investment to grow is calculated as the two-year average growth in total assets, and the proportion of reinvested earnings is calculated as the two-year average ROE/(1 − ROE), similarly to Leuz et al. (2008). Consistent with previous arguments, we expect a positive association between external financing needs and accounting quality.

2.1.11. Size, leverage and industry

We control for industry differences using industry indicator variables based on 1-digit SIC codes. As a robustness check, we use a two-digit SIC code and the Fama and French (1997) industry classification. These alternative criteria result in an uneven distribution of observations by groups; thus, we prefer the former.

The existence of debt can be an important governance mechanism (Shleifer & Vishny, 1997). Debt forces managers to generate cash flows to pay interest and the principal, mitigating agency conflicts created by free cash flows. It also increases demand for credible financial reporting as a way to monitor debt contracts. The counter-argument is that excess debt can create incentives to manipulate accounting numbers in order to meet debt commitments (Defond & Jiambalvo, 1994). Thus we do not state a prior prediction for the effect of debt on accounting quality. We use the debt-to-assets ratio to calculate financial leverage (LEV).

Another important determinant of accounting quality is firm size. However, we do not include a size variable in our empirical tests because size is already captured (and thus correlated) with some of the other variables. For example, analysts following and audit fees are usually associated with firm size (e.g., Lang, Lins, & Miller, 2003a; Larcker & Richardson, 2004).

2.2. Institutional and economic factors

2.2.1. Institutional environment

Prior evidence suggests that the quality of accounting numbers is influenced by the legal environment (e.g., Lang et al., 2006; Leuz et al., 2003; Pincus et al., 2007; Soderstrom & Sun, 2007), the level of investor protection, and the importance of equity markets (e.g., Ali & Hwang, 2000; Burgstahler et al., 2006; Hung, 2001; Leuz et al., 2003). With the mandatory adoption of IFRS, legal enforcement assumes particular relevance because the issuing body (IASB — International Accounting Standards Board) does not have enforcement power. That power resides in the regulators and the courts of the specific jurisdiction. Thus, the institutional and legal environment in which the firm operates are crucial in shaping financial reporting outcomes. Accordingly, we expect institutional quality to be positively associated with accounting quality. We measure the quality of institutional and regulatory environment using

the following four variables constructed by Kaufmann, Kraay, and Mastruzzi (2007): rule of law (RULAW), regulatory quality (REGQUAL), government effectiveness (GOVEFF), and control of corruption (CONCORR). Scores vary between −2.5 and 2.5 and higher scores reflect countries with higher quality institutions.

2.2.2. Importance of capital markets

When capital is provided mostly by numerous small investors, accounting information is usually more accurate and transparent because finance providers rely on public information to make investment decisions. On the other hand, firms have incentives to disclose high-quality information in order to attract a wider pool of investors to finance their projects. The relation between sources of finance and the quality of accounting information is well documented in Ali and Hwang (2000), Bradshaw et al. (2004), Burgstahler et al. (2006), Dargenidou, McLeay, and Raonic (2006), Joos and Lang (1994) and Leuz et al. (2003). For example, Bradshaw et al. argue that institutional and foreign investors prefer high-quality financial statements when making international investments. Similar to La Porta, Lopez-de-Silanes, and Shleifer (2006), we use the log of the average ratio of the number of domestic firm listed in a country to its population (DOMFIRM) over the period 1997 to 2007, and the average percentage of the total market capitalization to the country's GDP over the period 1997 to 2007 (MCTOGDP) as proxies for capital market importance. We anticipate a positive relation between the capital market measure and accounting quality.

2.2.3. Economic development and competitiveness

The quality of financial reporting also has an association with the country's level of economic development (e.g., Doidge et al., 2007; Francis et al., 2008). Usually the literature relies on a country's GDP as a measure of economic development. In this study, we consider a more comprehensive set of factors intended to capture the complexity of the country's degree of development. Notably, we derive nine variables from the Global Competitiveness Index (World Economic Forum, 2007) that measure the countries' productivity and growth potential. We consider the following variables: (1) institutions (INST), which capture the government attitudes toward markets and ethical practices in business dealings; (2) macro economy (MACROEC), which captures the country's economic stability; (3) higher education and training (HEDT), which measures the quality of education and on-the-job training; (4) goods market efficiency (GOODMAREF), which reflects the healthy market competition (i.e. ensuring that the most efficient firms are those that survive); (5) financial market sophistication (FINMARSOPH), which measures the ability of the financial sector to channel resources to the best entrepreneurs; (6) technological readiness (TECHREAD), which assesses the agility with which a country adopts existing technologies; (7) market size (MARSIZE), which includes both domestic and foreign markets; (8) business sophistication (BUSOPH), which reflects the quality of the country's business networks and supporting industries; and (9) innovation (INN), which is related to the country's ability to develop cutting-edge products and processes to maintain a competitive edge and high productivity. The scores vary from one to seven with higher values allocated to countries with a higher degree of development. Consistent with previous findings, we hypothesize that economic development and competition have a positive effect on firms' reporting quality.

2.2.4. Interaction with global markets

We extend previous work that shows an association between cross-border economic interactions and disclosure quality (e.g., Khanna et al., 2004). We expect a country's interaction with foreign markets to have a positive influence on the quality of financial information. We control for a country's product market interaction with businesses abroad and construct a variable for foreign trade (FOREIGNTR) computed as the sum of exports and imports divided by the country's GDP.

2.2.5. Differences between countries' local GAAP and IFRS

We acknowledge that the degree of *prior* similarity between domestic GAAP and IFRS may still be reflected in accounting quality *after* the mandatory switch to IFRS. For example, a firm's financial reporting might have higher quality due to the fact that the firm is domiciled in a country that has already experienced a high degree of alignment with IFRS prior to the compulsory switch. Recall that we aim to study accounting quality in a setting where accounting standards are unique and *constant* across all firms. Thus, we control for ex ante similarities between domestic GAAP and IFRS. We include the differences index developed by Bae, Tan, and Welker (2008). The index is a summary score measured on 21 key accounting dimensions where higher scores represent more differences between domestic GAAP and IFRS. We multiply this measure by minus one so that the higher values represent less ex ante differences (DIFFER). We expect a positive effect of ex ante similarities between domestic GAAP and IFRS on accounting quality. That is because we take the view that IFRS generally improves reporting quality (e.g., Barth et al., 2008).

3. Research design

3.1. Measures of accounting quality

The quality of accounting numbers is difficult to observe. Thus, there is no consensus on the best way to measure it. Some authors focus on the market perspective by looking at earnings' value relevance and timeliness (e.g., Ball et al., 2003; Francis & Schipper, 1999; Joos & Lang, 1994). Others rely on accounting-based measures that do not depend on market perceptions such as earnings management, smoothing, and persistence (e.g., Burgstahler et al., 2006; Francis et al., 2004; Leuz et al., 2003). We attempt to balance these two perspectives by using a market-based and an accounting-based measure of accounting quality. The first measure (AQ1) captures relevance of earnings information to stock market investors. The second measure (AQ2) reflects how earnings are affected by managers' accrual choices. Although these accounting quality proxies may not be universally accepted, previous literature has used them widely. Also, the two-year time frame (necessary to ensure that IFRS is mandatory across all countries) limits the type of accounting measures that we can implement.

Following previous research, notably Barth et al. (2008), Easton and Harris (1991), Francis et al. (2004) and Francis and Schipper (1999), we construct the first proxy for accounting quality (AQ1) by fitting the following model:

$$\mathrm{RET}_{i,t} = \alpha_0 + \alpha_1 \mathrm{EAR}_{i,t} + \alpha_2 \Delta \mathrm{EAR}_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where $RET_{i,t}$ is the 15-month return obtained three months after the fiscal-year end t for firm i.[6] EAR is earnings before extraordinary items and preferred dividends, scaled by the beginning of fiscal year t market value of equity for firm i. ΔEAR is the change in EAR from fiscal year $t-1$ to t deflated by the beginning of fiscal year t market value of equity for firm i.[7]

For each firm and year, we obtain the absolute residuals of regression (1).[8] The residual term is the component of RET that is not determined by EAR and ΔEAR. Its larger magnitude in absolute terms indicates that accounting numbers are less able to explain variation in stock returns. Thus, it indicates lower quality in accounting numbers. We define our measure of accounting quality as the negative of the absolute value of the residual term from regression (1), so that its greater (less negative) values represent better quality[9]:

$$AQ1 = -abs(\varepsilon_{i,t}). \tag{2}$$

The second proxy for accounting quality (AQ2) follows Burgstahler et al. (2006) and Francis et al. (2004) and shows how the magnitude of total accruals deviates from cash flows from operations. It is based on the idea that cash flows from operations capture firms' underlying economic performance and that firms can use accruals to manage earnings. It is measured as the ratio of the absolute value of total accruals to the absolute value of cash flow from operations (CFO).[10] Larger values of the ratio imply greater earnings manipulation. We multiply the ratio by minus one so that higher values (less negative) represent better accounting quality:

$$AQ2 = -\frac{abs(\text{total accruals})}{abs(CFO)}. \tag{3}$$

3.2. Data, sample, and summary statistics

The sample consists of non-financial firms in 26 countries that adopted IFRS by 2005 for which data is available. We use data for fiscal years 2006 and 2007 for a maximum of 7854 firm-year observations.[11] We remove observations falling in the top or bottom 1% of the distribution for stock price returns and earnings to reduce the effect of outliers on the

[6] To account for accounting periods not equal to one fiscal year, we match the observed returns with corresponding accounting year ends and annualize the return figures to a standard 15-month, accordingly.

[7] For clarity, we suppress the variable subscripts throughout the rest of the text.

[8] Adding industry effects and/or country effects to Eq. (1) yields similar empirical results.

[9] An alternative measure is the explanatory power (R^2) of rolling window time-series regressions as in Francis et al. (2004). However, that procedure requires a relatively long time-series of data that is not available for our study. It has also been criticized for biasing the measure in favor of successful and surviving firms. Alternatively, we could estimate R^2's from cross-sectional industry regressions. However, small sample sizes in many industry groups do not permit it.

[10] Accruals are calculated as follows: Δcurrent assets $-\Delta$cash $-\Delta$current liabilities $+\Delta$short-term debt $-$ depreciation.

[11] We do not include year 2005 to ensure that only mandatory adopters of IFRS are included in the sample. The mandatory adoption of IFRS in Europe (and other countries) took place in 2005, thus for certain firms with fiscal year end different from 31st December the adoption of IFRS occurs only in year 2006. Excluding 2005 also guarantees that accounting numbers are not affected by one-time transition items that may distort our measures of accounting quality.

regression results.[12] We also eliminate firm-years with a negative book value of equity and missing data. A December fiscal year-end restriction is not applied and therefore companies that have reporting periods other than for the calendar year are included. Accounting and market data is collected from Worldscope and Datastream. Analyst data is from I/B/E/S. Country variables are obtained from Kaufmann et al. (2007), the Federation of European Securities Exchange (2007), the World Bank (2008), the World Economic Forum (2007), and the World Federation of Exchanges (2008). Data on cross-listings are from the Bank of New York Mellon (2008). Tax rates are from the European Commission (2006) and PriceWaterhouseCoopers (2008). Mean values of firm variables and country factors for each individual country are reported in Table 1.

The number of firm-years ranges from a minimum of six for Venezuela to a maximum of 1654 for Australia.[13] As expected, firms vary considerably across countries in terms of fundamental characteristics such as geographic dispersion, ownership structure, and leverage. For example, Panel A of Table 1 reveals that ownership is more concentrated in the Czech Republic and the Philippines; and that Portuguese and Spanish firms have the highest proportion of debt. Panel B reveals that Nordic countries (Denmark, Finland and Sweden), the U.K., Ireland, Switzerland, Singapore, and Hong Kong have higher institutional quality and economic development. The largest capital markets (market capitalization to GDP) can be found in Hong Kong, Singapore, Australia, Luxembourg, Switzerland, and the U.K.

Table 2 reports the summary statistics for the variables in the regression analysis. The average firm generates earnings equivalent to 5% of market value at the beginning of the period, has 35% of closely owned shares, pays approximately 1% of total assets for audit services, and its assets are 21% debt financed. Results also suggest cross-firm variation in disclosure transparency and analyst activity.

Pairwise correlations presented in Table 3 indicate generally low correlations between firm-incentive variables. The highest correlations are for ANALYST with variables STSALE (0.37), USLIST (0.40) and GEOSEG (0.29). These correlations are in keeping with previous research (e.g., Lang, Lins, & Miller, 2003a) showing that firms with international exposure and cross-listing in the U.S. are more likely to be followed closely by analysts. Not surprisingly, the correlations between country factors are usually high and statistically significant.

Given the degree to which institutional, economic, and market conditions tend to move together, we employ a factor analysis using a maximum likelihood estimation procedure to identify underlying commonalities among sample countries. The factor analysis (not tabulated) indicates three common factors. We rotate the factors using varimax rotation to clarify the interpretation of factor loadings.

[12] Other methods to deal with outlier observations yield similar conclusions. In particular, we have considered the following: elimination of 1% top/bottom for all financial variables; elimination of extreme influential observations using Belsley, Kuh, and Welsch (1980) cut-off value. We choose to eliminate the 1% top/bottom deletion of observations for variables in the first regression model because it has less impact in the number of observations.

[13] The relative low number of observations for some countries (e.g., Hong Kong) is a consequence of the low number of firms identified in Worldscope as following IFRS in the period analyzed.

Table 1
Variable means by country.
This table reports the variable means for 26 countries using IFRS standards in 2006 and 2007. AQ1 measures accounting quality as the negative of the absolute value of residuals from a regression of 15-month stock returns on earnings and earnings changes. AQ2 measures accounting quality as the negative of the ratio of the absolute value of total accruals to the absolute value of cash flow from operations. Accruals are calculated as follows: Δcurrent assets − Δcash − Δcurrent liabilities + Δshort-term debt − depreciation. USLIST is an indicator taking the value of 1 if a firm lists in a U.S. market, or zero otherwise. GEOSEG is the log of the number of geographical segments. OWNER is the percentage of closely held shares. TDISC is the first principal component of the annual average bid–ask spread and the change in the annual average trading volume. ANALYST is the first principal component of analyst forecast accuracy and the number of analysts following the firm. AUDFEE is the ratio of total audit fees to total assets. TAXBOOK is the log of the squared difference between pre-tax book income and taxable income (tax expense divided by the tax rate in the country). STSALE is an indicator taking the value of 1 if the standard deviation of the firm's sales in the last two years is above the corresponding industry median, and zero otherwise. NLOSS is the proportion of years of losses. FINEED is the required investment to grow (two-year average growth in total assets) minus the proportion of earnings that are reinvested (two-year average ROE/(1 − ROE)). LEV is the ratio of debt to total assets. INST is the country's score for government attitude to markets. MACROEC is the country's score for macroeconomic stability. HEDT is the country's score for level of education. GOODMAREF is a country score for market efficiency in competition. FINMARSOPH is a country score for financial market sophistication. TECHREAD is the country's score for technological readiness. MARSIZE is the country's score for market size. BUSOPH is the country's score for business sophistication. INN is the country's score for innovation. CONCORR is the country's score for control of corruption. GOVEFF is the country's score for government effectiveness. REGQUAL is the country's score for regulatory quality. RULAW is the country's score for rule of law. MCTOGDP is the average ratio of the country's total market capitalization to its GDP in the period 1997 to 2007. DOMFIRM is the log of the average ratio of the number of domestic firms listed in a country to its population (in millions) for the period 1997 to 2007. FOREIGNTR is the ratio of the country's exports plus imports to GDP. DIFFER is Bae et al.'s (2008) country score of difference between the country's local GAAP and IFRS based on 21 accounting characteristics.

Panel A: dependent and firm-level variables

	N	AQ1	AQ2	USLIST	GEOSEG	OWNER	TDISC	ANALYST	AUDFEE	TAXBOOK	STSALE	NLOSS	FINEED	LEV
Australia	1654	−0.50	−4.50	0.06	0.30	0.39	0.35	−0.34	0.02	−0.14	0.34	0.52	0.02	0.14
Austria	94	−0.35	−0.76	0.20	1.16	0.51	0.00	−0.11	0.00	−0.01	0.66	0.07	0.00	0.24
Belgium	136	−0.26	−2.00	0.05	0.87	0.51	−0.18	−0.03	0.00	0.01	0.53	0.15	0.00	0.24
Czech Republic	16	−0.21	−0.47	0.08	0.33	0.81	0.00	0.27	0.00	0.01	0.55	0.02	0.00	0.13
Denmark	157	−0.40	−1.43	0.04	0.90	0.44	−0.24	−0.05	0.00	−0.01	0.53	0.15	0.00	0.25
Finland	207	−0.29	−2.95	0.05	1.08	0.31	−0.18	0.25	0.00	−0.03	0.56	0.16	0.00	0.22
France	715	−0.33	−1.54	0.08	0.80	0.54	−0.20	0.20	0.02	0.00	0.57	0.11	0.00	0.22
Germany	790	−0.34	−5.16	0.06	0.89	0.50	−0.34	0.10	0.00	0.00	0.53	0.16	0.00	0.18
Greece	297	−0.39	−1.76	0.03	0.46	0.57	0.19	−0.13	0.00	−0.02	0.54	0.16	0.01	0.28
Hong Kong	62	−0.49	−1.06	0.15	0.83	0.64	0.18	0.11	0.00	0.02	0.45	0.14	0.00	0.17
Hungary	29	−0.42	−0.73	0.37	0.97	0.57	−0.01	−0.07	0.00	0.04	0.60	0.12	0.00	0.12
Ireland	65	−0.41	−0.95	0.18	0.47	0.29	0.00	−0.11	0.00	−0.06	0.63	0.26	0.00	0.21
Italy	301	−0.35	−7.21	0.07	0.87	0.53	−0.28	0.07	0.00	−0.01	0.68	0.17	0.00	0.27
Luxembourg	26	−0.41	−0.71	0.06	1.31	0.51	−0.19	−0.03	0.00	−0.02	0.64	0.18	−0.03	0.23
Netherlands	208	−0.31	−1.08	0.13	1.08	0.42	−0.21	0.34	0.05	0.00	0.69	0.10	0.00	0.21
Norway	211	−0.39	−3.07	0.03	0.92	0.46	−0.16	−0.13	0.01	−0.03	0.55	0.30	0.01	0.28

Philippines	118	−0.41	−4.22	0.02	0.19	0.75	1.16	−0.25	0.00	0.01	0.24	0.17	0.02	0.18
Poland	213	−0.56	−1.61	0.05	0.29	0.61	−0.16	−0.24	0.00	0.00	0.52	0.07	0.00	0.19
Portugal	63	−0.39	−0.91	0.10	0.77	0.62	0.13	0.05	0.00	0.01	0.52	0.07	0.00	0.37
Singapore	46	−0.35	−1.48	0.08	0.60	0.58	0.24	−0.48	0.00	−0.03	0.28	0.18	0.00	0.16
South Africa	312	−0.38	−1.36	0.13	0.58	0.46	0.45	−0.22	0.00	−0.02	0.46	0.10	−0.05	0.15
Spain	166	−0.38	−0.92	0.05	0.84	0.46	−0.23	0.58	0.01	0.01	0.71	0.07	0.00	0.31
Sweden	407	−0.38	−2.80	0.03	1.12	0.33	−0.21	0.06	0.00	−0.03	0.47	0.20	0.01	0.18
Switzerland	252	−0.31	−1.72	0.04	0.98	0.42	−0.23	0.07	0.01	0.00	0.56	0.12	0.02	0.18
United Kingdom	1303	−0.36	−1.85	0.08	0.59	0.30	0.20	−0.05	0.01	−0.04	0.52	0.21	0.01	0.17
Venezuela	6	−0.38	−0.75	0.44	0.00	0.00	0.00	−1.11	0.00	0.06	1.00	0.11	0.00	0.14

Panel B: country-level variables

	N	INST	MACROEC	HEDT	GOODMAREF	FINMARSOPH	TECHREAD	MARSIZE	BUSOPH	INN	CONCORR	GOVEFF	REGQUAL	RULAW	MCTOGDP	DOMFIRM	FOREIGNTR	DIFFER
Australia	1654	5.66	5.39	5.46	5.32	5.87	5.20	4.90	4.81	4.41	2.00	1.90	1.67	1.79	1.89	1.11	0.42	0.40
Austria	94	5.72	5.32	5.40	5.41	5.13	5.17	4.47	5.69	4.76	2.00	1.66	1.61	1.86	1.09	0.28	1.08	−2.50
Belgium	136	5.06	4.90	5.57	5.20	5.37	4.82	4.68	5.44	4.74	1.41	1.76	1.41	1.43	1.13	0.74	1.74	−1.40
Czech Republic	16	3.84	5.26	4.85	4.65	4.60	4.12	4.38	4.71	3.95	0.32	1.07	1.03	0.73	0.53	0.18	1.52	−0.60
Denmark	157	6.14	5.87	5.96	5.43	5.89	5.64	4.19	5.60	5.11	2.40	2.32	1.86	1.94	1.56	0.61	0.64	−0.10
Finland	207	6.16	5.87	6.01	5.35	5.58	5.36	4.08	5.46	5.67	2.58	2.14	1.75	1.93	1.44	1.33	0.85	−4.40
France	715	5.09	4.93	5.38	5.03	5.20	4.88	5.66	5.47	4.69	1.46	1.33	1.11	1.35	1.19	0.87	0.55	−0.40
Germany	790	5.83	4.93	5.33	5.29	5.64	5.05	5.90	5.93	5.46	1.84	1.66	1.48	1.77	0.93	0.47	0.86	−1.50
Greece	297	4.31	4.29	4.44	4.24	4.41	3.29	4.33	4.13	3.23	0.40	0.58	0.79	0.68	1.46	0.53	0.30	−6.10
Hong Kong	62	5.70	6.13	4.97	5.79	6.23	5.48	4.56	5.28	4.34	1.77	1.80	1.90	1.46	2.17	4.89	4.02	1.50
Hungary	29	4.14	4.22	4.64	4.26	4.64	3.91	4.26	4.35	3.61	0.57	0.80	1.16	0.76	0.69	0.26	1.56	0.30
Ireland	65	5.25	5.69	5.26	5.41	5.91	4.65	4.17	5.07	4.54	1.70	1.61	1.87	1.68	1.09	0.62	1.51	3.30
Italy	301	3.77	4.46	4.55	4.32	3.96	4.37	5.61	4.91	3.45	0.41	0.41	0.85	0.36	0.69	0.47	0.57	−0.70
Luxembourg	26	5.50	5.80	4.40	5.23	5.85	5.38	3.09	4.96	4.18	2.03	1.71	1.84	1.81	1.99	1.38	3.07	−6.00
Netherlands	208	5.73	5.73	5.57	5.37	5.63	5.65	4.95	5.54	4.88	2.06	1.89	1.72	1.74	1.18	0.84	1.41	7.60
Norway	211	5.82	6.10	5.60	5.09	5.61	5.46	4.09	5.19	4.60	2.14	2.11	1.35	2.01	1.65	0.51	0.76	3.80
Philippines	118	3.42	4.70	4.02	4.19	4.06	3.07	4.77	4.20	3.03	−0.78	−0.06	−0.12	−0.48	0.46	0.35	0.90	−1.10
Poland	213	3.65	5.01	4.62	4.12	4.32	3.44	4.88	4.04	3.28	0.19	0.49	0.68	0.25	0.78	0.24	0.83	0.90
Portugal	63	4.87	4.68	4.62	4.59	4.94	4.28	4.28	4.37	3.71	1.09	0.85	1.04	0.94	0.68	0.41	0.72	−2.20
Singapore	46	6.03	5.68	5.42	5.76	6.02	5.36	4.06	5.19	5.08	2.20	2.22	1.76	1.76	2.14	1.82	3.78	4.50
South Africa	312	4.55	5.08	4.12	4.73	5.19	3.57	4.89	4.61	3.71	0.44	0.75	0.62	0.24	0.99	1.63	0.57	3.10
Spain	166	4.46	5.42	4.75	4.59	4.96	4.33	5.36	4.81	3.58	1.16	0.99	1.11	1.08	0.55	0.82	0.59	−4.90
Sweden	407	5.86	5.76	5.98	5.37	5.73	5.87	4.47	5.70	5.53	2.22	2.06	1.53	1.87	1.49	1.11	0.96	0.70
Switzerland	252	5.90	5.69	5.63	5.39	5.40	5.67	4.38	5.80	5.74	2.20	2.17	1.44	1.95	1.74	2.53	1.00	−2.20
United Kingdom	1303	5.31	5.18	5.42	5.30	6.17	5.27	5.74	5.41	4.79	1.90	1.86	1.88	1.75	1.63	1.40	0.58	3.40
Venezuela	6	2.41	4.84	3.61	3.28	3.66	2.95	4.04	3.52	2.79	−0.98	−0.72	−1.26	−1.36	−0.46	0.05	0.56	4.90

Table 2
Summary statistics.
This table reports mean, median, standard deviation, first quartile, and third quartile of firm-level and country-level variables used in the regression models. AQ1 measures accounting quality as the negative of the absolute value of residuals from a regression of 15-month stock returns on earnings and earnings changes. AQ2 measures accounting quality as the negative of the ratio of the absolute value of total accruals to the absolute value of cash flow from operations. Accruals are calculated as follows: Δcurrent assets − Δcash − Δcurrent liabilities + Δshort-term debt − depreciation. USLIST is an indicator taking the value of 1 if a firm lists in a U.S. market, or 0 otherwise. GEOSEG is the log of the number of geographical segments. OWNER is the percentage of closely held shares. TDISC is the first principal component of the annual average bid–ask spread and the change in the annual average trading volume. ANALYST is the first principal component of analyst forecast accuracy and the number of analysts following the firm. AUDFEE is the ratio of total audit fees to total assets. TAXBOOK is the log of the squared difference between pre-tax book income and taxable income (tax expense divided by the tax rate in the country). STSALE is an indicator taking the value of 1 if the standard deviation of the firm's sales in the last two years is above the corresponding industry median, and 0 otherwise. NLOSS is the proportion of years of losses. FINEED is the required investment to grow (two-year average growth in total assets) minus the proportion of earnings that are reinvested (two-year average ROE/(1 − ROE)). LEV is the ratio of debt to total assets. INST is the country's score for government attitude to markets. MACROEC is the country's score for macroeconomic stability. HEDT is the country's score for level of education. GOODMAREF is a country score for market efficiency in competition. FINMARSOPH is a country score for financial markets sophistication. TECHREAD is the country's score for technological readiness. MARSIZE is the country's score for market size. BUSOPH is the country's score for business sophistication. INN is the country's score for innovation. CONCORR is the country's score for control of corruption. GOVEFF is the country's score for government effectiveness. REGQUAL is the country's score for regulatory quality. RULAW is the country's score for rule of law. MCTOGDP is the average ratio of the country's total market capitalization to its GDP in the period 1997 to 2007. DOMFIRM is the log of the average ratio of the number of domestic firms listed in a country to its population (in millions) for the period 1997 to 2007. FOREIGNTR is the ratio of the country's exports plus imports to GDP. DIFFER is Bae et al.'s (2008) country score of difference between the country's local GAAP and IFRS based on 21 accounting characteristics.

Variable		Mean	Median	Std. Dev.	Q25	Q75
Panel A: firm-level variables						
Earnings per share	EAR	0.05	0.06	0.08	0.04	0.09
Change in earnings per share	ΔEAR	0.01	0.01	0.08	−0.01	0.03
15-Month return	RET	0.15	0.07	0.48	−0.19	0.40
Accounting quality 1	AQ1	−0.36	−0.30	0.29	−0.51	−0.15
Accounting quality 2	AQ2	−1.85	−0.51	13.54	−0.86	−0.26
Listing in US markets	USLIST	0.12	0.00	0.33	0.00	0.00
International diversification	GEOSEG	0.84	0.69	0.64	0.00	1.39
Ownership concentration	OWNER	0.35	0.33	0.24	0.15	0.54
Transparency of disclosure	TDISC	−0.18	−0.23	0.49	−0.43	0.01
Analyst activity	ANALYST	0.18	−0.08	0.82	−0.40	0.56
Auditor quality	AUDFEE	0.01	0.00	0.08	0.00	0.00
Tax-book alignment	TAXBOOK	−0.01	0.00	0.10	−0.01	0.02
Variability business operations	STSALE	0.67	1.00	0.47	0.00	1.00
Economic distress	NLOSS	0.12	0.00	0.28	0.00	0.00
External financing needs	FINEED	0.00	0.00	0.07	0.00	0.00
Debt level	LEV	0.21	0.20	0.17	0.07	0.32
Observations = 2472						
Panel B: country-level variables						
Government attitude to markets	INST	5.30	5.66	0.67	5.09	5.82
Macroeconomic stability	MACROEC	5.23	5.18	0.42	4.93	5.39
Education	HEDT	5.29	5.42	0.47	5.33	5.46

Table 2 (*continued*)

Variable		Mean	Median	Std. Dev.	Q25	Q75
Market efficiency in competition	GOODMAREF	5.12	5.30	0.39	5.03	5.32
Financial markets sophistication	FINMARSOPH	5.52	5.64	0.59	5.20	5.87
Technological readiness	TECHREAD	4.96	5.20	0.68	4.88	5.27
Market size	MARSIZE	5.09	4.90	0.60	4.68	5.74
Business sophistication	BUSOPH	5.19	5.41	0.51	4.81	5.47
Innovation	INN	4.59	4.69	0.70	4.41	4.88
Control of corruption	CONCORR	1.64	1.90	0.68	1.46	2.00
Government effectiveness	GOVEFF	1.59	1.86	0.55	1.33	1.90
Regulatory quality	REGQUAL	1.44	1.53	0.43	1.11	1.72
Rule of law	RULAW	1.49	1.75	0.57	1.35	1.79
Market capitalization to GDP	MCTOGDP	1.39	1.49	0.43	0.99	1.74
Domestic listed firms to population	DOMFIRM	1.03	1.11	0.59	0.53	1.40
Foreign trade	FOREIGNTR	0.73	0.59	0.49	0.55	0.85
Difference to IFRS	DIFFER	0.36	0.40	2.75	−1.40	3.10

The first factor shows high loadings for variables REGQUAL, RULAW, CONCORR, GOVEFF, INST, and FINMARSOPH, which captures the quality of institutional framework, enforcement, and the efficacy and credibility of public services. Variables GOODMAREF, HEDT, and TECHREAD also load heavily on factor one and represent the countries' ability to design cutting-edge products, to adopt existing technologies, to develop sophisticated business networks that support innovation, and to ensure high efficiency in the production of goods and services. The quality of institutions overall has a strong bearing on economic development, competitiveness, and growth. Thus, it is not surprising that we observe interplay between the two sets of variables that capture the degree of a country's economic development and the quality of its institutional framework. We interpret factor one as a relative measure of the country's *overall economic and institutional development* and label it DEVELOP.

Factor two depends mostly on BUSOPH, INN, and DOMFIRM. The difference between domestic GAAP and IFRS (DIFFER) has also some weight in this factor. The second factor reflects the *importance of capital markets to business development, and business sophistication and innovation*. We label this underlying construct as BUSINESS.

Also, variables FOREIGNTR, MARSIZE, MCTOGDP and MACROEC load most heavily on the third factor. This factor captures the *global importance of the country's economy and its exposure to foreign markets*. We label factor three as GLOBAL.

Unlike prior studies that typically classify countries based on single-dimensional criterion (e.g., legal origin), we use common factors to group countries with similar macro characteristics. In Table 4, we separate countries that fall into the lower (low-country factor) and the upper (high-country factor) half of the distribution of each common country factor. Such an approach identifies underlying commonalities among countries using a variety of country-level metrics. This enables us to develop more powerful tests of the interaction between countrywide influences, firm characteristics, and financial reporting outcomes.

We start with a simple analysis of the variance of firm-level incentives across distinct country groups. Within each country group, we rank individual firm-level variables and

Table 3
Pairwise correlations.
This table reports pairwise correlations for firm-level (Panel A) and country-level (Panel B) variables used in the regression models. AQ1 measures accounting quality as the negative of the absolute value of residuals from a regression of 15-month stock returns on earnings and earnings changes. AQ2 measures accounting quality as the negative of the ratio of the absolute value of total accruals to the absolute value of cash flow from operations. Accruals are calculated as follows: Δcurrent assets − Δcash − Δcurrent liabilities + Δshort-term debt − depreciation. USLIST is an indicator taking the value of 1 if a firm lists in a U.S. market, or 0 otherwise. The GEOSEG is the log of the number of geographical segments. OWNER is the percentage of closely held shares. TDISC is the first principal component of the annual average bid–ask spread and the change in the annual average trading volume. ANALYST is the first principal component of analyst forecast accuracy and the number of analysts following the firm. AUDFEE is the ratio of total audit fees to total assets. TAXBOOK is the log of the squared difference between pre-tax book income and taxable income (tax expense divided by the tax rate in the country). STSALE is an indicator taking the value of 1 if the standard deviation of the firm's sales in the last two years is above the corresponding industry median, and 0 otherwise. NLOSS is the proportion of years of losses. FINEED is the required investment to grow (two-year average growth in total assets) minus the proportion of earnings that are reinvested (two-year average ROE/(1 − ROE)). LEV is the ratio of debt to total assets. INST is the country's score for government attitude to markets. MACROEC is the country's score for macroeconomic stability. HEDT is the country's score for level of education. GOODMAREF is a country score for market efficiency in competition. FINMARSOPH is a country score for financial markets sophistication. TECHREAD is the country's score for technological readiness. MARSIZE is the country's score for market size. BUSOPH is the country's score for business sophistication. INN is the country's score for innovation. CONCORR is the country's score for control of corruption. GOVEFF is the country's score for government effectiveness. REGQUAL is the country's score for regulatory quality. RULAW is the country's score for rule of law. MCTOGDP is the average ratio of the country's total market capitalization to its GDP in the period 1997 to 2007. DOMFIRM is the log of the average ratio of the number of domestic firms listed in a country to its population (in millions) for the period 1997 to 2007. FOREIGNTR is the ratio of the country's exports plus imports to GDP. DIFFER is Bae et al.'s (2008) country score of the difference between the country's local GAAP and IFRS based on 21 accounting characteristics. The symbol * against the number indicates statistical significance at the 5% level or less.

Panel A: firm-level variables

	AQ1	AQ2	USLIST	GEOSEG	OWNER	TDISC	ANALYST	AUDFEE	TAXBOOK	STSALE	NLOSS	FINEED	LEV
AQ1	1												
AQ2	0.0295	1											
USLIST	0.0826*	0.0339	1										
GEOSEG	0.0590*	0.0081	0.1541*	1									
OWNER	0.0285	0.0138	−0.1319*	−0.0774*	1								
CDISC	−0.1078*	−0.0544*	−0.0585*	−0.0971*	−0.0124	1							
ANALYST	0.1334*	0.0507*	0.4006*	0.2916*	−0.2195*	−0.1934*	1						
AUDFEE	0.0380	0.0067	−0.0038	0.0194	0.0166	0.0071	0.0274	1					
TAXBOOK	0.0360	−0.0089	−0.0135	0.0818*	0.0248	−0.0963*	0.1174*	0.0001	1				
STSALE	0.0200	0.0217	0.1439*	0.1612*	−0.0423*	−0.1609*	0.3629*	0.0353	0.1305*	1			
NLOSS	−0.0898*	−0.0089	−0.0398*	−0.0968*	−0.0203	0.1327*	−0.2082*	−0.0158	−0.4765*	−0.2362*	1		
FINEED	0.0075	−0.0035	−0.0296	−0.0042	0.0077	0.0098	−0.0204	−0.0006	−0.0269	−0.0041	0.0244	1	
LEV	0.0602*	0.0256	0.0047	0.0675*	0.0524*	−0.0486*	0.1528*	−0.0058	0.0885*	0.1666*	−0.0566*	0.0265	1

Panel B: country-level variables

	INST	MACROEC	HEDT	GOODMAREF	FINMARSOPH	TECHREAD	MARSIZE	BUSOPH	INN	CONCORR	GOVEFF	REGQUAL	RULAW	MCTOGDP	DOMFIRM	FOREIGNTR	DIFFER
INST	1																
MACROEC	0.6800*	1															
HEDT	0.8498*	0.6534*	1														
GOODMAREF	0.9271*	0.6599*	0.8251*	1													
FINMARSOPH	0.7965*	0.5833*	0.6909*	0.8984*	1												
TECHREAD	0.8606*	0.6974*	0.9180*	0.8933*	0.7603*	1											
MARSIZE	−0.1147*	−0.4812*	−0.0608*	0.0432*	0.1404*	0.0221*	1										
BUSOPH	0.6470*	0.2895*	0.6568*	0.6692*	0.4707*	0.7134*	0.3651*	1									
INN	0.8460*	0.4975*	0.8269*	0.8127*	0.6325*	0.8170*	0.1222*	0.9049*	1								
CONCORR	0.9507*	0.7137*	0.9230*	0.9260*	0.8336*	0.9410*	−0.0580*	0.6379*	0.8196*	1							
GOVEFF	0.9372*	0.7491*	0.9113*	0.9393*	0.8743*	0.9251*	−0.1104*	0.5946*	0.7977*	0.9768*	1						
REGQUAL	0.7852*	0.5494*	0.7816*	0.8683*	0.8909*	0.8394*	0.0996*	0.5065*	0.6397*	0.8928*	0.8907*	1					
RULAW	0.9342*	0.6274*	0.9076*	0.9081*	0.8324*	0.9150*	0.0026	0.6408*	0.8049*	0.9800*	0.9626*	0.8988*	1				
MCTOGDP	0.2978*	0.4340*	0.1788*	0.4545*	0.4573*	0.3457*	−0.1113*	0.1452*	0.2432*	0.3227*	0.3857*	0.3578*	0.2564*	1			
DOMFIRM	0.5926*	0.5203*	0.5426*	0.6315*	0.6970*	0.5669*	−0.2725*	−0.0028	0.2625*	0.6461*	0.7094*	0.6790*	0.6446*	0.5546*	1		
FOREIGNTR	0.1460*	0.3023*	0.0624*	0.2382*	0.0657*	0.1728*	−0.2708*	0.2494*	0.2133*	0.0987*	0.1356*	0.1095*	0.0712*	0.3455*	−0.0421*	1	
DIFFER	0.1318*	0.3349*	0.1747*	0.3311*	0.4801*	0.3228*	0.2133*	0.1300*	0.1032*	0.2090*	0.2900*	0.3434*	0.1730*	0.2361*	0.2404*	0.1068*	1

Table 4
Variation of accounting quality and firm incentives by country factor.
This table reports the means for the lowest and highest tercile of firm-level variables for two country groups. Countries are classified as below median (low) or above median (high) for the corresponding country factor. Tests of differences in tercile means (*p*-values) are reported next to the means. Panel A refers to country-factor economic and institutional development, Panel B refers to country-factor business sophistication and innovation, and Panel C refers to country-factor global integration of the economy. AQ1 is the negative of the absolute value of residuals from a regression of 15-month stock returns on earnings and earnings changes. AQ2 is the negative of the ratio of the absolute value of total accruals to the absolute value of cash flow from operations. Accruals are calculated as follows: Δcurrent assets − Δcash − Δcurrent liabilities + Δshort-term debt − depreciation. GEOSEG is the log of the number of geographical segments. OWNER is the percentage of closely held shares. TDISC is the principal component of the annual average bid–ask spread and the change in the annual average trading volume. ANALYST is the principal component of analyst forecast accuracy and the number of analysts following the firm. AUDFEE is the ratio of total audit fees to total assets. TAXBOOK is the log of the squared difference between pre-tax book income and taxable income (tax expense divided by the tax rate in the country). NLOSS is the proportion of years of losses. FINEED is the required investment to grow (two-year average growth in total assets) minus the proportion of earnings that are reinvested (two-year average ROE/(1 − ROE)). LEV is the ratio of debt to total assets. (Discrete variables USLIST and STSALE are not included.)

Variable		Low country factor			High country factor		
		Lowest tercile	Highest tercile	Test differences (*p*-value)	Lowest tercile	Highest tercile	Test differences (*p*-value)
Panel A: economic and institutional development							
Accounting quality 1	AQ1	−0.79	−0.08	0.000	−0.73	−0.10	0.000
Accounting quality 2	AQ2	−10.51	−0.27	0.000	−8.49	−0.25	0.000
International diversification	GEOSEG	0.00	0.00	0.000	0.00	1.59	0.000
Ownership concentration	OWNER	0.00	0.00	0.000	0.18	0.77	0.000
Transparency of disclosure	TDISC	0.00	0.00	0.000	−0.70	0.63	0.000
Analyst activity	ANALYST	0.00	0.00	0.000	−0.60	0.91	0.000
Auditor quality	AUDFEE	0.00	0.00	0.000	0.00	0.03	0.000
Tax-book alignment	TAXBOOK	−0.15	0.05	0.000	−0.20	0.06	0.000
Economic distress	NLOSS	0.00	0.63	0.000	0.00	0.73	0.000
External financing needs	FINEED	0.00	0.02	0.000	−0.01	0.02	0.000
Debt level	LEV	0.02	0.40	0.000	0.01	0.38	0.000
Panel B: business sophistication and innovation							
Accounting quality 1	AQ1	−0.82	−0.10	0.000	−0.69	−0.09	0.000
Accounting quality 2	AQ2	−12.54	−0.27	0.000	−6.58	−0.26	0.000
International diversification	GEOSEG	0.00	1.63	0.000	0.00	1.59	0.000
Ownership concentration	OWNER	0.14	0.69	0.000	0.13	0.70	0.000

Table 4 (*continued*)

Variable		Low country factor			High country factor		
		Lowest tercile	Highest tercile	Test differences (*p*-value)	Lowest tercile	Highest tercile	Test differences (*p*-value)
Transparency of disclosure	TDISC	−0.64	0.68	0.000	−0.66	0.61	0.000
Analyst activity	ANALYST	−0.66	0.68	0.000	−0.64	0.95	0.000
Auditor quality	AUDFEE	0.00	0.03	0.000	0.00	0.02	0.000
Tax-book alignment	TAXBOOK	−0.20	0.06	0.000	−0.12	0.05	0.000
Economic distress	NLOSS	0.00	0.76	0.000	0.00	0.00	0.000
External financing needs	FINEED	0.00	0.02	0.000	−0.01	0.01	0.000
Debt level	LEV	0.01	0.39	0.000	0.02	0.39	0.000
Panel C: global integration of economy							
Accounting quality 1	AQ1	−0.80	−0.10	0.000	0.00	−0.10	0.000
Accounting quality 2	AQ2	−12.22	−0.25	0.000	−6.37	−0.27	0.000
International diversification	GEOSEG	0.00	1.56	0.000	0.00	1.62	0.000
Ownership concentration	OWNER	0.12	0.66	0.000	0.16	0.73	0.000
Transparency of disclosure	TDISC	−0.61	0.74	0.000	−0.67	0.51	0.000
Analyst activity	ANALYST	−0.69	0.65	0.000	−0.59	0.97	0.000
Auditor quality	AUDFEE	0.00	0.02	0.000	0.00	0.03	0.000
Tax-book alignment	TAXBOOK	−0.20	0.06	0.000	−0.11	0.05	0.000
Economic distress	NLOSS	0.00	0.76	0.000	0.00	0.66	0.000
External financing needs	FINEED	−0.01	0.02	0.000	0.00	0.02	0.000
Debt level	LEV	0.01	0.39	0.000	0.02	0.39	0.000

split them into terciles. Table 4 reports the firm variable means of the lowest and the highest terciles within a country group. The analysis documents significant differences in mean values between terciles within country groups, indicating that firms from the same or similar jurisdictions face different reporting incentives. Thus, these preliminary tests suggest that firms from countries with similar institutional and economic degrees of development might not be treated as homogenous groups and that in addition to countrywide influences, firm-specific incentives are likely to influence accounting quality.

Table 5
The influences of firm-level incentives and country-level institutional factors on accounting quality.
This table reports the results of the individual (columns 3 to 6) and joint (columns 7 and 8) influences of firm incentives and institutional factors on accounting quality ($AQ_{i,t}$). Variables are defined as follows. AQ1 is the negative of the absolute value of residuals from a regression of 15-month stock returns on earnings and earnings changes. AQ2 is the negative of the ratio of the absolute value of total accruals to the absolute value of cash flow from operations. Accruals are calculated as follows: Δcurrent assets − Δcash − Δcurrent liabilities + Δshort-term debt − depreciation. USLIST is an indicator taking the value of 1 if a firm lists in a U.S. market, or 0 otherwise. GEOSEG is the log of the number of geographical segments. OWNER is the percentage of closely held shares. TDISC is the principal component of the annual average bid–ask spread and the change in the annual average trading volume. ANALYST is the principal component of analyst forecast accuracy and the number of analysts following the firm. AUDFEE is the ratio of total audit fees to total assets. TAXBOOK is the log of the squared difference between pre-tax book income and taxable income (tax expense divided by the tax rate in the country). STSALE is an indicator taking the value of 1 if the standard deviation of the firm's sales in the last two years is above the corresponding industry median, and 0 otherwise. NLOSS is the proportion of years of losses. FINEED is the required investment to grow (two-year average growth in total assets) minus the proportion of earnings that are reinvested (two-year average ROE/(1 − ROE)). LEV is the ratio of debt to total assets. DEVELOP represents country *j* economic and institutional development and is measured as the first factor of a factor analysis of 17 country characteristics. BUSINESS represents country *j* business sophistication and innovation and is measured as the second factor of a factor analysis of 17 country characteristics. GLOBAL represents the global importance of country's *j* economy and its exposure to foreign markets and is measured as the third factor of a factor analysis of 17 country characteristics. The *t*-statistics based on the Huber/White/sandwich robust estimates of standard errors are presented in parenthesis. ***, **, * indicate significance at the 1%, 5%, and 10% levels, respectively. ###, ##, # indicate significance at the 1%, 5%, and 10% levels, respectively for a Davidson/MacKinnon *P*-test that compares a joint significance of firm- against country-level coefficients and tests whether firm factors outperform country factors in explaining the response variables AQ1 and *ss*, respectively.

1	2	3	4	5	6	7	8
		Firm-level incentives		Country-level institutional factors		Firm-level incentives and country-level institutional factors	
	Variable	AQ1	AQ2	AQ1	AQ2	AQ1	AQ2
Listing in US markets	USLIST	0.041**	0.591*			0.045***	0.612**
		(2.29)	(1.73)			(2.64)	(2.06)
International operations	GEOSEG	0.009	0.007			0.008	−0.075
		(0.86)	(0.02)			(0.85)	(−0.19)
Ownership concentration	OWNER	0.069**	1.264			0.061**	1.157
		(2.48)	(1.06)			(2.27)	(1.03)
Transparency of disclosure	TDISC	−	−			−	−1.370*
		0.053***	1.478*			0.048***	
		(−4.20)	(−1.82)			(−3.92)	(−1.68)
Analyst activity	ANALYST	0.038***	0.860**			0.036***	0.710**
		(4.37)	(2.36)			(4.38)	(2.55)
Auditor quality	AUDFEE	0.122**	1.038**			0.123**	0.961**
		(2.25)	(2.25)			(2.27)	(2.16)
Tax-book alignment	TAXBOOK	−0.077	−2.372			−0.069	−2.565
		(−1.18)	(−1.36)			(−1.08)	(−1.57)
Variability business operations	STSALE	−	−0.131			−	−0.150
		0.030**				0.031**	
		(−2.20)	(−0.14)			(−2.26)	(−0.17)

Table 5 (*continued*)

1	2	3	4	5	6	7	8
		Firm-level incentives		Country-level institutional factors		Firm-level incentives and country-level institutional factors	
	Variable	AQ1	AQ2	AQ1	AQ2	AQ1	AQ2
Economic distress	NLOSS	−0.072***	−0.238			−0.075***	−0.137
		(−2.61)	(−0.37)			(−2.75)	(−0.20)
External financing needs	FINEED	0.059**	1.164			0.056	−0.332
		(2.11)	(0.55)			(1.57)	(−0.26)
Debt level	LEV	0.093**	1.397			0.078**	1.163
		(2.53)	(1.12)			(2.20)	(0.96)
Economic and institutional development	DEVELOP	0.004***	0.224*			0.004*	0.143*
		(2.74)	(1.68)			(1.70)	(1.70)
Business sophistication and innovation	BUSINESS	0.019***	0.645**			0.003	−0.057
		(6.81)	(2.34)			(0.70)	(−0.55)
Global integration of economy	GLOBAL	0.015***	0.657**			−0.002	−0.183
		(4.22)	(2.10)			(−0.32)	(−0.92)
	Intercept	−0.461***	−1.150	−0.409***	−3.632***	−0.445***	−2.634***
		(−7.24)	(−1.35)	(−9.05)	(−7.81)	(−7.21)	(−3.23)
Observations		2472	2374	7854	7283	2472	2374
R-squared		0.072	0.012	0.053	0.001	0.061	0.007
Differences in coefficients on firm- versus country-level factors						$9.285^{\#\#\#}$	$3.666^{\#\#\#}$

3.3. Model of accounting quality, firm incentives, and country factors

We start by modeling the association between accounting quality measures (AQ1 and AQ2) and a set of firm-level variables that represent firm reporting incentives.[14] We fit the following regression model:

$$\begin{aligned} AQ_{i,t} = {} & \beta_0 + \beta_1 USLIST_{i,t} + \beta_2 GEOSEG_{i,t} + \beta_3 OWNER_{i,t} \\ & + \beta_4 TDISC_{i,t} + \beta_5 ANALYST_{i,t} + \beta_6 AUDFEE_{i,t} + \beta_7 TAXBOOK_{i,t} \\ & + \beta_8 STSALE_{i,t} + \beta_9 NLOSS_{i,t} + \beta_{10} FINEED_{i,t} + \beta_{11} LEV_{i,t} + \mu_{i,t}. \end{aligned} \quad (4)$$

Following the discussion in Section 2.1, we expect positive coefficients for β_2, β_3, β_5, and β_{10} and negative coefficients for β_4, β_7, β_8, and β_9; and we make no predictions regarding β_1, β_6, and β_{11}.

[14] We include industry and country fixed effects in the model. Excluding these effects do not materially change the empirical results.

Next, we fit the following model to investigate separately the association between accounting quality measures and country j's economic and institutional characteristics:

$$AQ_{i,t} = \gamma_0 + \gamma_1 DEVELOP_j + \gamma_2 BUSINESS_j + \gamma_3 GLOBAL_j + \upsilon_{i,t}. \quad (5)$$

To the extent that the degree of the country's economic and institutional development, business sophistication, capital markets development, and international exposure contribute to a greater quality of corporate financial reporting, we expect to see positive coefficients for γ_1, γ_2, and γ_3.

The main purpose of our empirical analysis is to investigate the relative importance of firm reporting incentives and countrywide institutional factors in explaining the quality of accounting numbers. To do that, we fit a combined firm incentive model (Eq. (4)) and country-factor model (Eq. (5)), and infer the following about the combined model coefficients:

$$\begin{aligned} AQ_{i,t} = {} & \alpha_0 + \beta_1 USLIST_{i,t} + \alpha_2 GEOSEG_{i,t} + \alpha_3 OWNER_{i,t} \\ & + \alpha_4 TDISC_{i,t} + \alpha_5 ANALYST_{i,t} + \alpha_6 AUDFEE_{i,t} + \alpha_7 TAXBOOK_{i,t} \\ & + \alpha_8 STSALE_{i,t} + \alpha_9 NLOSS_{i,t} + \alpha_{10} FINEED_{i,t} + \alpha_{11} LEV_{i,t} \\ & + \alpha_{12} DEVELOP_j + \alpha_{13} BUSINESS_j + \alpha_{14} GLOBAL_j + \varepsilon_{i,t}. \end{aligned} \quad (6)$$

4. Result analysis

Table 5 presents the effects of firm incentives and countrywide institutional factors on accounting quality.

Columns 3 and 4 report the individual influence of firm-level incentives on accounting quality (Eq. (4)). We observe that firms listed in U.S. markets (USLIST) report higher quality accounting numbers, a result that confirms the prediction that firms can improve their financial reporting by opting to cross-list in the U.S. (coefficients on USLIST are 0.041 and 0.591 for AQ1 and AQ2, respectively). International diversification captured by GEOSEG does not have a significant association with our measures of accounting quality. It is possible that the firm's international dimension is captured by other factors considered in the analysis, such as ANALYST. We find a positive effect of ownership concentration (OWNER) on the market-based measure of accounting quality. This effect suggests that if insiders and minority shareholders have shared interests, a firm will have better financial statements. Coefficients on a firm's disclosure transparency (TDISC) are statistically significant and have the predicted negative sign (coefficients are −0.053 and −1.478 for AQ1 and AQ2, respectively). Analyst activity (ANALYST) has a positive association with accounting quality for the two AQ measures (coefficients are 0.038 and 0.860 for AQ1 and AQ2, respectively). This association suggests that firms followed by more and knowledgeable analysts have greater incentives to report better accounting information. The coefficient on AUDFEE has a positive association with accounting quality (coefficients are 0.122 and 1.038 for AQ1 and AQ2, respectively). In accordance with the findings of Larcker and Richardson (2004), this result indicates that firms that pay proportionally more audit fees benefit from better monitoring of financial information and

thus report better quality information. We find no statistical evidence that book-tax alignment (TAXBOOK) negatively impacts the quality of accounting. A possible interpretation is that IFRS-based financial information is less responsive to tax influences. As predicted, higher variability of business operations (STSALE) leads to lower accounting quality in terms of the ability of earnings to explain stock market returns (coefficient is −0.028 for AQ1). However, we find no statistical evidence that STSALE affects reporting quality in terms of earnings management. The existence of losses (NLOSS) is negatively associated with accounting quality but it is only statistically significant for AQ1 (coefficient is −0.072). The level of external financing needs (FINEED) appears to be an important determinant of accounting quality as measured by AQ1 (coefficient is 0.059). This result supports the idea that firms with insufficient internal funds to finance business growth need to provide higher quality financial information to market participants in order to obtain the necessary funds. Leverage (LEV) positively impacts AQ1, consistent with the roles of debt in monitory financing contracts and in reducing free cash flow problems (Shleifer & Vishny, 1997). Overall, the empirical results of firm-specific factors suggest that firm operating conditions are strong determinants of financial reporting quality.[15]

Columns 5 and 6 in Table 5 set out the results regarding the individual influence of country institutional factors on accounting quality (Eq. (5)). Variable DEVELOP that measures a country's overall economic and institutional development is positive and statistically significant for the two accounting quality measures. This is consistent with prior evidence that firms exhibit better accounting quality in countries with strong institutional frameworks and economic development (e.g., Leuz et al., 2003). The empirical results also show that in countries where business is sophisticated, firms benefit from innovation and have access to developed capital markets (BUSINESS). Thus, financial reporting is of higher quality. Furthermore, a positive and statistically significant coefficient on GLOBAL confirms our argument that accounting quality is higher in countries well integrated into global markets. Generally, our results provide evidence that economic, legal, and market conditions play a role in enhancing the quality of accounting information. This finding suggests that global adoption of IFRS might not achieve the desired goal of improved financial reporting quality and comparability around the world unless the country's institutional and economic systems evolve to become more efficient and comparable.

Results so far confirm prior research that both firm-specific incentives and country macro-economic conditions are important determinants of accounting quality. More importantly, we must assess the relative importance of these two sets of factors in explaining our measures of accounting quality.

Columns 7 and 8 in Table 5 show the empirical results for the combined firm- and country-factor models (Eq. (6)). The main conclusion is that firm-specific incentives exhibit a stronger association with accounting quality proxies relative to countrywide factors. The signs and statistical significance of firm factors remain very similar to those reported in columns 3 and 4 but the country factors are less or not as statistically

[15] We tested the impact of early adopters in the regression analysis (both by estimating separate regressions and by including an indicator variable) and concluded that the overall empirical results remain the same.

significant. The general economic and institutional development of the country (DEVELOP) are the only country factor that remains important in explaining accounting quality. We interpreted this as an indication that the general institutional and economic environments in which firms operate remain an important condition for high-quality financial reporting. However, macroeconomic conditions are already embedded in the firm-specific incentives that predominantly determine the quality of reported accounting numbers.

As a sensitivity analysis, we compare the importance of the two sets of factors. Specifically, we test the joint significance of coefficients on the firm- against country-level variables.[16] The sensitivity test, reported at the bottom of Table 5, substantiates the findings discussed above that imply that the country-level factors are to an extent already reflected in firm-level incentives. It also confirms that once consideration is given to both sets of influences, the firm-level incentives appear to outperform country-level factors in explaining the variation in accounting quality. This result confirms the argument this study presents that individual firms may mitigate the influences of their country-specific institutional regime by improving their corporate governance quality or opting to list in the U.S., for example.

5. Conclusion

This study is motivated by a large body of international literature that studies the influence of institutional, economic, and market forces on accounting quality. Most prior studies (e.g., Ball et al., 2003) examine the influences of institutionally grounded firm incentives on financial reporting while allowing accounting standards to vary. These studies thus face issues disentangling their individual influences on the properties of accounting information. While prior research (e.g., Burgstahler et al., 2006) indicates that financial reporting behavior is influenced by legal, economic, and enforcement elements of the firm's environment, it is not clear whether these countrywide forces affect financial reporting directly or if they shape firms' particular incentives, such as international diversification and ownership structure that in turn influences reporting quality. More importantly, research to date offers little insight into the relative importance of firm- versus country-specific factors for reporting quality.

Our analysis exploits a unique multicountry setting in which firms are required to comply with an identical set of international reporting standards. This approach allows us to investigate how institutional factors affect the accounting quality of firms from 26 countries that use the same accounting standards. The sample firms are drawn from a wide range of institutional and economic contexts that enable us to identify underlying commonalities among countries using a variety of country-level metrics. Our approach of a multi-dimensional classification of countries yields potentially more powerful tests for the association between countrywide factors and accounting quality relative to studies which

[16] The test we employ is based on the approach developed by Davidson and MacKinnon (1981) that compares two competing models (e.g., firm- against country-level regression) and tests whether one model is superior to another one in terms of explaining the same response variable. For details of tests of two competing non-nested models see Cox (1962), and Pesaran and Deaton (1978).

typically group countries based on a single-dimensional criterion (e.g., legal origin). Furthermore, we do not treat firms in the same country homogenously. In addition to country-level factors, we consider a set of firm-level incentives and allow for differences across firms within a country.

We find that financial reporting quality increases in the presence of strong monitoring mechanisms by means of ownership concentration, analyst scrutiny, effective auditing, external financing needs, and leverage. Instability of business operations, existence of losses, and lack of transparent disclosure negatively affect the quality of accounting information. At the country level, we observe better accounting quality for firms from regulatory environments with stronger institutions, higher levels of economic development, greater business sophistication, and more globalized markets. When the two sets of factors are combined, we find that firm-specific incentives have a stronger association with accounting quality. This result suggests that countrywide factors are already reflected in firm conditions.

Our findings provide two important conclusions. First, we show that a significant part of institutional and economic features is reflected in firm-specific conditions. This result suggests that policy-makers can improve accounting quality by implementing reforms in institutional systems that are capable of changing business conditions at the firm level. Moreover, firm managers might be able to reduce the influence of the institutional features in which they operate on financial reporting by changing firm-specific conditions. Second, our evidence supports the view that despite the global adoption of a single set of accounting standards, significant differences in accounting quality across individual firms persist because firms face different market forces, institutional incentives, and business constraints.

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