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REGULAR ARTICLE

The relationship between market competition and accrual earnings management: A cross-country study

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Abstract

This study aims to address the mixed evidence in the extant literature regarding the relationship between market competition and accrual earnings management. We explore this relationship in an international context using a sample comprising all listed companies from 32 countries using International Financial Reporting Standards from 2005 to 2022, totaling 34,931 observations. Our study uncovers a positive relationship between market competition and accrual earnings management in weak financial reporting environments, while a negative association is observed in strong financial reporting environments. The inconsistency in prior findings is attributed to variations in numerous factors that constitute the financial reporting environments. In addition, our cross-country analysis highlights that the factor *Informal Institutions*, encompassing cultural values and social norms, exerts the most significant impact on accrual earnings management under highly competitive pressure. Our main results withstand rigorous testing for endogeneity concerns. Based on our results, we recommend prioritizing the enhancement of cultural values and social norms in countries with weak financial reporting environments, rather than relying on regulatory measures, to curtail accrual earnings management in competitive markets or industries.

Keywords Market competition · Managerial financial reporting behavior · Accrual earnings management · Financial reporting environments · Country-level factors

JEL Classification G34 · M41 · N20

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1 Introduction

Voluntary disclosure theory argues that in competitive industries, managers use accounting discretion to withhold proprietary information from peers, as the costs of disclosing proprietary information can be significant (Verrecchia, 1983). Although much of the voluntary disclosure literature studies the role of market competition in managerial financial reporting practice, there is limited research explaining the inconsistent findings regarding the relationship between market competition and accrual earnings management (Cheng et al., 2013; Datta et al., 2013; Laksmana & Yang, 2014; Markarian & Santalo, 2014).[1] In this regard, our study proposes that the mixed evidence could be attributed to omitted variables, such as the legal system, regulatory enforcement, social and organizational culture, and economic and social environment. Beyer et al. (2010) document that managerial discretionary disclosure behavior is influenced by the financial reporting environment, which is shaped by the aforementioned omitted variables. Since country-level attributes represent the financial reporting environment factors, this study uses an international setting. This study is the first empirical research to identify the country-level attribute with the greatest influence on the relationship between market competition and accrual earnings management.

This study examines managerial financial reporting practices within the framework of a trade-off between the benefits and costs of accrual earnings management, particularly when the competitive pressure is high. If the benefits of accrual earnings management outweigh the costs, managers are more likely to engage in higher levels of earnings management. Increased earnings management in financial reporting helps firms meet or beat market expectations and enables a lower cost of capital (Linck et al., 2013). This, in turn, establishes a competitive advantage over industry peers in the market. In addition, managers under intense market pressure have incentives to exercise discretion in financial disclosure as a means to hide proprietary information and diminish potential threats from competitors (Verrechia, 1983).

In contrast, if the costs of accrual earnings management outweigh the benefits, managers under competitive pressure are more inclined to reduce earnings management due to benefits such as a lower cost of capital (Shane et al., 2014), more efficient capital allocation (Barth, 2013; Chen et al., 2014), increased availability of firm-specific information (Choi et al., 2019), and increased firm value (Neel, 2017). Furthermore, the capital market

[1] For example, Datta et al. (2013) suggest that firms with market pricing power may engage in earnings management when faced with high market competition, as sustaining a competitive advantage becomes more challenging with increased competitors. Markarian and Santalo (2014) find that earnings manipulation through both accruals and real activities is more rewarding in highly competitive industries. They contend that competition heightens executive incentives to manipulate earnings, as the stock market tends to punish or reward managers based on financial outcomes. In contrast, Cheng et al. (2013) argue that market competition enhances earnings quality, leading to a lower level of earnings management. They present evidence showing an inverse correlation between the accuracy of earnings forecasts and market competition reflecting the quality of information held by investors and analysts, and market concentration. Laksmana and Yang (2014) find that income-increasing accrual manipulation is more prevalent among firms in low-competition industries than those in high-competition industries, indicating a negative association between market competition and accrual earnings management.

punishes firms engaging in earnings management. This punishment will be harsher for firms under intense market competition since their position can be taken by any of the many competitors in the market.

However, the benefits and costs of accrual earnings management do not remain constant. The dynamics of these benefits and costs are shaped by the financial reporting environment, wherein factors such as regulatory frameworks, monitoring mechanisms, and institutional structures play a crucial role in determining the interplay between the advantages and disadvantages of earnings management. For example, in countries with weak financial reporting environments, where managers are less likely to be monitored or disciplined and investors are not well protected, the benefits of earnings management tend to be more inflated than the associated costs. Accordingly, managers under competitive pressure are more likely to have incentives to exercise discretion in financial reporting, leading to higher levels of earnings management across firms. In contrast, in countries with strong financial reporting environments, where managerial financial reporting practices are well monitored or disciplined, the costs of earnings management tend to be more inflated than the associated benefits; thus, managers under intense market pressure are less likely to engage in discretionary financial reporting.

The international accounting and finance literature provides a multitude of country-level attributes that form financial reporting environments, including geographic features, legal institutions, religious affiliation, cultural development, and even economic factors. However, it is challenging for empirical research to include all country-level attributes. Isidro et al. (2020) construct four all-encompassing factors that categorize most country-level attributes that influence the practice of managerial discretion. Factor one (*Informal Institutions*) comprises cultural values, norms, and social attributes. Factor two (*Investor Protection*) captures variables including creditor and investor rights, securities regulation, and legal system origin. Factor three (*Governance Environment*) includes the number of analysts, domestic institutional holdings, and firm structures—e.g., hierarchical or independent—that can contribute to governance. Last, factor four (*External Investors*) captures a society's openness to external investment. This factor is characterized by US institutional holdings, US cross-listing, audit spending, English proficiency, long-term orientation, and Buddhism. We use these four factors to examine how market competition and country-level attributes jointly affect accrual earnings management.

This paper measures market competition by using the speed of positive abnormal profit adjustment variable and the industry followers indicator variable. We analyze a sample comprising firms from 32 countries employing International Financial Reporting Standards (IFRS) and present two significant findings. First, our results support the notion that less-developed financial reporting environments lead managers to engage in more earnings management through the strategic use of discretion in financial reporting to meet or beat market expectations. This, consequently, helps firms gain a competitive edge over their rivals. Our empirical tests also find that the positive relationship between market competition and earnings management found in weak financial reporting environments becomes a negative one in strong financial reporting environments due to factors such as legal and governance systems, protection of investors' rights, political transparency, cultural and social aspects that are favorable to investors, and openness to external investments. These results suggest that well-developed financial reporting environments can mitigate agency problems and promote a

culture of voluntary disclosure. Such environments align stakeholder interests, reduce information asymmetry, and encourage companies to share information beyond regulatory requirements. This enhances investor confidence, access to capital, and market reputation.

Second, this study finds that *Informal Institutions* (factor 1) has the greatest impact on accrual earnings management when competitive pressure is high. This factor is associated with informal institutions, such as cultural values and social norms. Accordingly, the empirical tests provide evidence that the cognitive limit of accounting discretion use is more influential than regulation, legal policies, or governance in controlling managers' financial reporting behavior. This implies that cultural values and social norms play a crucial role in shaping managers' financial reporting practices by establishing a moral or ethical climate (Yuan et al., 2023; Roszkowska and Mele, 2021). Specifically, Roszkowska and Mele (2021) argue that there is a significant moral deterrent effect on managers' behaviors. Among the various attributes of financial reporting environments, social norms and beliefs are the most effective in curbing managers' incentives for earnings management.

This study contributes to the existing literature in two ways. First, this cross-country approach sheds light on the inconsistency in the association between market competition and accrual earnings management. Previous literature has shown that the negative relationship between market competition and accrual earnings management in the United States (Laksmana & Yang, 2014), does not apply broadly (Datta et al., 2013; Markarian & Santalo, 2014). This paper proposes that the interplay of higher market competition and omitted variables can jointly influence accrual earnings management, with financial reporting environments serving as crucial omitted variables. We observe diverse behaviors in financial reporting practices among managers in different countries, influenced by distinct financial reporting environments. Accordingly, this study reveals that since managers' discretion in financial reporting is affected by financial reporting environments, the relationship between market competition and accrual earnings management can be affected by country-level attributes that form financial reporting environments.

Second, this international study demonstrates the different impacts of various country-level attributes on accrual earnings management. These attributes are indicated by the four factors proposed by Isidro et al. (2020): *Informal Institutions, Investor Protection, Governance Environment,* and *External Investors*. Since the differential impact of each of the four factors is not observable in a within-country study, the international setting enables us to examine the comprehensive effects of financial reporting environments on financial reporting practices. Previous literature suggests that country-level factors affect financial reporting practices (Ball et al., 2000; Leuz et al., 2003). However, none of the extant research uses a comprehensive set of 72 country-level attributes that determine the nature of financial reporting environments. This study is among the first empirical research to use the four all-encompassing factors devised by Isidro et al. (2020) to examine the comprehensive effects of financial reporting environments on financial disclosure. The results demonstrate that among the four factors, *Informal Institutions* has the

greatest impact on managerial financial reporting behaviors when the competitive pressure is high.

2 Literature review and hypothesis development

Managers have discretion in financial reporting, which is afforded to them by accounting standards. This latitude granted to managers has the potential to influence the practice of earnings management, where the reported earnings of a firm are manipulated either upward or downward. This study is motivated by voluntary disclosure theory to explain the relationship between market competition and earnings management. This theory argues managers in competitive industries conceal proprietary information since they feel that the cost of disclosing this information outweighs the benefit (Verrecchia, 1983). Verrecchia (1983) suggests that managers in highly competitive industries strategically conceal proprietary information at their discretion to reduce threats from rivals. This leads to an opaque information environment. Verrecchia and Weber (2006) suggest that competitive pressures compel managers to withhold proprietary information by using discretion because disclosure can result in loss of market share. Ali et al. (2014) argue that low-quality disclosure by firms in concentrated industries can be attributed to the proprietary costs of financial reporting in industries facing stiff competition. The empirical evidence presented above supports the idea that in a competitive environment, managers find it advantageous to disclose proprietary information at their discretion, as it enables them to maintain their competitive advantage within the industry.

In addition to voluntary disclosure theory, agency problem theory can apply to managers' earnings management behavior under competitive market pressure. Agency problem theory suggests that internally, earnings management helps managers who are up against intense competition receive better compensation by meeting or beating the market expectations (agency problem theory). Proprietary costs theory suggests that externally, earnings management contributes to heightened firm value by capitalizing on benefits from the capital market and concealing proprietary information from peers, particularly when the proprietary costs of financial reporting are costly. A model developed by Bagnoli and Watts (2010) illustrates that firms are more likely to engage in earnings management if they believe that their competitors are doing the same. This behavior can become more prevalent in highly competitive industries, leading to widespread earnings management among firms. Linck et al. (2013) argue that earnings management can be used by firms to alleviate financial pressures and obtain financial resources at lower costs.

Conversely, other empirical evidence suggests that the costs associated with earnings management outweigh the benefits. A higher level of earnings management can diminish analyst forecast accuracy and exacerbate information asymmetry (De Franco et al., 2011), which in turn hampers information processing capabilities (Kim et al., 2021). Moreover, the increased information asymmetry resulting from earnings management is associated with higher costs of capital (Shane et al., 2014), less efficient capital allocation (Barth, 2013; Chen et al., 2014), and decreased firm value (Neel, 2017). In

particular, under competitive market pressure, the capital market punishments are more severe since peer firms can readily replace companies that face penalties from the capital market. Given the latitude allowed by accounting standards in disclosing proprietary information, we propose that elevated market competition prompts managers to carefully weigh the advantages and disadvantages of engaging in earnings management in their financial reporting practices.

In countries with weak financial reporting environments, managers are less likely to be monitored and accounting information is potentially less transparent, as there are relatively fewer disclosures and these tend to be of lower quality (DeFond et al., 2007; Haw et al., 2012; Hunton et al., 2006; Li & Yang, 2016). Ball et al. (2000) document that in code-law countries, managers exercise greater discretion in deciding when to incorporate economic gains and losses into financial statements. Behn et al. (2013) provide evidence that classification shifting is more common in weak investor protection countries. Haw et al. (2015) document a positive association between product market competition and accounting conservatism in countries with strong legal institutions but not in countries with weak legal institutions. Weak financial reporting environments enable managers to exert accrual discretion in financial reporting in a way to beat competitors' performances or to prevent proprietary information from rivals.

In contrast, in countries with strong financial reporting environments, rigorous monitoring practices play a crucial role. These practices discourage managers from employing discretion in financial reporting, thereby reducing instances of earnings management. The presence of intense competition acts as an informal governance mechanism in these environments. This helps mitigate the severity of agency problems that may arise (Dhaliwal et al., 2014; LaFond & Roychowdhury, 2008) such as managers being incentivized to safeguard proprietary information and conceal poor performance. Stringent financial reporting environments contribute to an improved quality of disclosure. This includes more accurate and detailed reporting of a company's performance and financial position. Consequently, the company gains a strategic advantage by standing out among peers with more comprehensive transparency. This advantage can lead to increased investor confidence, improved access to capital, and a more favorable market reputation (Roychowdhury et al., 2019). A better quality of financial disclosure can also strengthen the link between firm performance and managers' compensation, aligning the interests of managers and shareholders. Therefore, managers are incentivized to take actions that benefit shareholder interests, including providing a higher quality of earnings. This leads to our first set of hypotheses:

H1(a): In weak financial reporting environments, the relationship between market pressure and accrual earnings management is positive.
H1(b): In strong financial reporting environments, the relationship between market pressure and accrual earnings management is negative.

Prior studies have identified many country-level factors that are closely related to financial reporting environments, including geographic features (e.g., latitude), legal institutions (e.g., the legal system's origin), religious affiliation (e.g., Catholicism,

atheism), cultural development (e.g., masculinity, societal trust), and economic outcomes (e.g., per capita GDP, market capitalization, stock market participation). However, the main challenge of empirically testing the impact of country-level factors is the volume of these factors. Isidro et al. (2020) provide an efficient and accurate mechanism to overcome this challenge. They distill 72 country-level variables from existing literature into four comprehensive factors—*Informal Institutions*, *Investor Protection*, *Governance Environment*, and *External Investors*—that collectively impact financial reporting practices. In the context of examining how these factors influence the relationship between market competition and earnings management, this approach allows for a more focused and systematic analysis, ultimately helping to identify which of these factors has the most significant effect on the relationship.

Informal Institutions encompasses cultural values and norms that impact human behavior (Crossland & Hambrick, 2011). Managerial discretion is a crucial aspect of decision-making (Finkelstein et al., 2009) and is influenced by cognitive limits and the external environment, which includes formal and informal institutions (Liao & Zhang, 2020). While formal institutions involve explicit rules and structures, informal institutions consist of uncodified systems present in customs and values (Deephouse et al., 2016), with the latter influencing the former (Helmke and Leevitsky, 2004). Managerial incentives for financial reporting discretion are shaped by informal institutions. In contexts with high uncertainty avoidance, managers are less likely to manipulate earnings through discretion (Han et al., 2010). In addition, Malagueno et al. (2010) reveal a negative link between accounting quality and perceived corruption in a country, especially in regions with strong informal institutions, where social norms discourage significant use of accounting discretion in earnings management. The strength of informal institutions plays a pivotal role in determining managerial behavior in financial reporting (Sanchez-Ballesta and Yague, 2022). This leads to the first subcomponent of our second hypothesis:

H2(a): Within robust financial reporting environments, *Informal Institutions* and market competition can jointly mitigate accrual earnings management.

Investor Protection primarily encompasses legal systems, regulatory enforcement, and safeguards against managerial control benefits abuse (Shleifer & Vishny, 1997). Managers are incentivized to hide these benefits, which could lead to disciplinary actions, especially in competitive industries; thus, they use discretion to enhance firm performance and protect proprietary information. Legal systems and regulatory enforcement empower investors by granting them the authority to hold insiders accountable through actions such as replacing managers and curbing managerial control benefits (Huang et al., 2020). Research shows that effective legal systems and regulatory enforcement can curb managers' incentives to use discretion in competitive sectors. For instance, some civil laws prescribe accounting standards that limit managers' discretion in recognizing economic gains and losses (Ball et al., 2000; D'Este et al., 2023), while economies with weaker legal enforcement exhibit more earnings management compared to those with strong investor rights and robust legal enforcement (Leuz et al., 2003). Therefore, strong investor

protection systems may make managers more sensitive to the costs associated with earnings management decisions. This leads to the second subcomponent of our second hypothesis:

H2(b): Within robust financial reporting environments, *Investor Protection* and market competition can jointly mitigate accrual earnings management.

Governance Environment encompasses factors such as the number of analysts, domestic institutional holdings, and firm structures, all of which contribute to corporate governance. Corporate governance seeks to address agency problems arising from the separation of ownership and control, particularly in competitive industries where managers are incentivized to safeguard proprietary information and conceal poor performance due to the harsh consequences of underperformance (Tang, 2018; Zhang et al., 2022). In such contexts, a strong governance environment can mitigate these incentives, improving financial reporting quality and reducing the likelihood of financial reporting fraud as seen in cases like Enron and WorldCom. Previous research consistently demonstrates the link between weak governance environments and low-quality financial reporting, increased earnings manipulation, and financial statement fraud (Dechow et al., 1996; Hasnan et al., 2013; Wang et al., 2017). In addition, Degeorge et al. (2013) highlight the role of financial analysts in monitoring and limiting earnings management. Therefore, in countries with robust corporate governance systems, managers are likely to give greater consideration to the costs associated with earnings management, emphasizing the importance of effective governance mechanisms in balancing managerial incentives and promoting transparency and accountability. This leads to the third subcomponent of our second hypothesis:

H2(c): Within robust financial reporting environments, *Governance Environment* and market competition can jointly mitigate accrual earnings management.

External Investors reflects a society's willingness to welcome external investments, and these investors heavily rely on accounting information, emphasizing the need for high-quality and transparent accounting data to overcome potential investment barriers. Information asymmetry and agency problems can complicate external investors' ability to interpret accounting information (Bagnoli & Watts, 2010). Ferreira et al. (2017) suggest that foreign investors may possess less information compared to local investors, leading to a higher level of information asymmetry and consequently requiring transparent and high-quality accounting information. In countries with subpar financial reporting environments, local managers' information becomes more valuable due to intensified competition (Bloom et al., 2010). In competitive industries, managers often have incentives to conceal proprietary information to safeguard their competitive edge and use discretion in financial reporting to elicit positive responses from external investors. However, this strategy may not succeed, as external investors demand high-quality accounting information and a high level of financial transparency, thereby restraining managers' incentives for earnings management. Consequently, in nations with investor-friendly financial reporting environments, managers are more likely to carefully consider the potential costs associated with earnings management, highlighting the importance of fostering such environments to

encourage transparency and accountability. This leads to the fourth subcomponent of our second hypothesis:

H2(d): Within robust financial reporting environments, *External Investors* and market competition can jointly mitigate accrual earnings management.

3 Research design

3.1 Sample selection

Our sample comprises all listed companies from 32 IFRS countries for the period from 2005 to 2022. We obtain the sample data from the Compustat Global, CRSP, and I/B/E/S databases. Following previous studies, we exclude financial firms (SIC 6000–6999) from the initial sample. We obtain financial statement data from the Compustat Global files. We obtain stock price data from the CRSP. We retain only the available observations of country-level attribute measures, as outlined by Isidro et al. (2020), ensuring these observations exist for all 32 countries among the entire set of IFRS countries. We use data after 2005 to align with the EU's requirement for companies to use IFRS after January 1, 2005. Firm-year observations with missing values are excluded from our computations of dependent and independent variables. To mitigate the influence of outliers, we winsorize each firm-level variable at the 1st and 99th percentile values. The final sample consists of 34,931 firm-year observations. Panel A of Table 1 reports the specifics of the sample selection process.

3.2 Main variables

3.2.1 Measures of market competition

The speed of positive abnormal profit adjustment We use Harris' (1998) speed of profit adjustment metric to measure industry-wide market competition. This metric captures the speed with which industry participants with above-average profits see their positive abnormal profitability revert to the industry mean. We compute the proxy for speed of adjustment, *ADJ_SPEED*, separately for each industry *j*. We use the following regression to estimate Harris' (1998) measure of the speed of positive abnormal profit adjustment:

$$X_{ijkt} = \beta_{ojk} + \beta_{1jk}\left(D_n X_{ijkt-1}\right) + \beta_{2jk}\left(D_p X_{ijkt-1}\right) + e_{ijkt} \quad (1)$$

where X_{ijkt} is the difference between firm i's return on assets and the mean return on assets for its industry j and country k in year t.D_n equals 1 if X_{ijkt-1} is less than or equal to 0, and 0 otherwise. D_p equals 1 if X_{ijkt-1} is greater than 0, and 0 otherwise. We estimate this equation separately for each three-digit SIC code industry using pooled cross-sectional time-series data for all firms in each industry and country. The coefficient β_{2jk} represents the persistence of returns on assets above the mean in industry *j* and country

Table 1 Summary Statistics

PANEL A. SAMPLE SELECTION

	Less	Number of Observations
Merge of COMPUSTAT Global, COMPUSTAT North America, CRSP, and I/B/E/S databases		445,942
Exclude observations subject to countries that are not covered by Isidro et al. (2020)	(337,441)	
Exclude Financial industry observations where $6000 \leq SIC \leq 6999$	(20,955)	
Exclude missing data for variables in multiple regressions		
-MISSING OBSERVATIONS FOR PROPRIETARY COSTS VARIABLES	(21,561)	
-MISSING OBSERVATIONS FOR EARNINGS MANAGEMENT	(24,403)	
-MISSING OBSERVATIONS FOR CONTROL VARIABLES	(6,651)	
Final sample		34,931

PANEL B. COUNTRY-LEVEL STATISTICS

Country	Num. of Obs	EM	ADJ_ SPEED	FOLLOWER	Inf_ Ins	Inv_ Prot	Gov_ Env	Ext_ Inv
Argentina	930	0.134	-0.423	0.431	-0.517	-1.150	-0.783	1.786
Australia	1,433	0.055	-0.331	0.512	0.624	1.197	1.192	0.258
Austria	957	0.076	-0.323	0.534	1.382	-1.199	-0.512	0.762
Belgium	899	0.074	-0.357	0.447	0.837	-0.729	-0.333	-0.284
Brazil	1,036	0.185	-0.562	0.349	-0.651	-1.190	0.374	0.949
Canada	946	0.063	-0.344	0.435	0.517	1.243	1.933	0.203
Switzerland	1,443	0.037	-0.396	0.498	1.459	0.096	0.101	-0.344
Chile	921	0.098	-0.317	0.522	0.260	-0.036	-1.716	1.452
Germany	1,277	0.053	-0.294	0.611	1.171	-1.140	0.741	-0.813
Denmark	942	0.044	-0.422	0.416	1.319	0.109	0.681	0.269
Spain	1,023	0.063	-0.338	0.433	0.401	-0.586	0.087	0.122
Finland	1,156	0.043	-0.352	0.423	1.555	-0.215	-0.335	0.172
France	1,316	0.042	-0.315	0.407	0.729	-0.564	0.169	-0.920
United Kingdom	1,432	0.048	-0.324	0.432	0.696	1.560	0.905	-0.424
Greece	945	0.087	-0.513	0.504	0.104	-1.398	-0.756	-0.392
Hong Kong	1,182	0.089	-0.525	0.523	0.662	2.822	-1.827	0.419
India	984	0.135	-0.537	0.544	-1.256	0.674	0.839	-0.026
Ireland	887	0.063	-0.442	0.653	0.990	1.081	-0.716	2.120
Israel	892	0.101	-0.523	0.503	0.064	0.789	-0.207	1.456
Italy	1,345	0.062	-0.420	0.645	0.335	-0.926	0.099	-0.621
Mexico	978	0.123	-0.562	0.416	-0.530	-1.115	-0.871	1.784
Malaysia	1,186	0.135	-0.541	0.399	-1.077	1.856	-1.054	-0.949
Netherlands	998	0.054	-0.426	0.313	1.176	-0.256	0.738	0.424
New Zealand	893	0.052	-0.436	0.302	0.792	0.986	0.582	0.684
Pakistan	807	0.098	-0.621	0.511	-1.848	0.038	1.123	-0.024
Philippines	827	0.162	-0.513	0.446	-1.591	-0.138	0.248	0.319
Portugal	876	0.054	-0.423	0.328	0.471	-1.053	-0.846	0.591
Singapore	1,357	0.032	-0.474	0.302	0.159	2.804	-1.859	0.015
Sweden	1,500	0.033	-0.524	0.586	1.405	-0.443	0.937	-0.164
Thailand	1,255	0.088	-0.502	0.531	-1.136	0.612	-1.075	-1.441
Taiwan	1,240	0.053	-0.592	0.494	-0.093	0.128	-0.562	-1.934
South Africa	1,068	0.152	-0.536	0.503	-0.791	0.840	0.950	0.315

Table 1 (Continued)

TOTAL	34,931				
PANEL C. DESCRIPTIVE STATISTICS					
Variable	Mean	Median	Std. Dev	Q1	Q3
EM	0.093	0.087	0.035	0.070	0.103
ADJ_SPEED	-0.556	-0.589	0.215	-0.633	-0.307
FOLLOWER	0.605	1	0.318	0	1
R&D	3.725	5.272	3.182	0.109	33.965
MKTSIZE	10.975	10.726	3.468	8.898	13.591
HHI_conv	-0.226	-0.198	0.133	-0.264	-0.122
FSIZE	7.562	8.187	2.641	6.057	9.926
MTB	2.345	1.978	0.723	1.083	3.872
LEV	0.612	0.498	0.511	0.158	0.944
CFO	0.117	0.137	0.094	0.069	0.161
Std_CF	0.319	0.331	0.038	0.217	0.423
Std_Sale	0.367	0.348	0.056	0.312	0.378
Std_SaleGrowth	0.196	0.229	0.048	0.154	0.244
Stock Ret	1.207	1.172	0.312	0.966	1.419
Analyst	7.558	4	7.475	2	10

Note: Panel A of Table 1 presents the country-level summary statistics for the research variables for 34,931 observations after IFRS adoption year. The mean values of each variable are calculated and reported for each sample country. Panel C presents the mean, median, and standard deviation statistics for the firm-level variables. See Appendix Table 12 for variable descriptions

k. A significant positive coefficient indicates that firms with above-average profit rates can maintain this profit advantage over time, suggesting less competition. For convenient interpretation, we multiply the coefficient by − 1. Therefore, a higher *ADJ_SPEED* indicates greater competitive pressure.

Industry follower (market share) We use *FOLLOWER* as an alternative measure to capture market competition. The competitive pressure can be lower for firms with a higher market share within a given industry. Market share—defined as company sales divided by the sales for all firms in the industry—measures the percentage of industry sales controlled by the firm. A high market share indicates a position of market power, which refers to a firm's ability to take unilateral action in its product market without serious competitive consequences (Landes & Posner, 1981). Some studies suggest that high-market-power firms may experience lower market pressure because their price-setting ability allows them to pass demand shocks on to customers by adjusting prices (Peress, 2010). Furthermore, according to Li (2010), the effect of competitive pressure on disclosure quality is less pronounced for industry leaders. Dhaliwal et al. (2014) suggest that industry followers face greater competitive pressure. We define *FOLLOWER* as an indicator variable that takes the value of 1 for firm-year observations of firms with market share below the median of their industry (using three-digit SIC codes), and 0 otherwise.

3.2.2 Corporate accrual earnings management measure

This paper employs the modified Jones model, suggested by Kothari et al. (2005), to measure corporate accrual earnings management. To identify the discretionary component of accruals for given firm-year observations, we first estimate the following model using ordinary least squares (OLS) for all sample firms available in Compustat Global at time *t*:

$$\frac{TAC_t}{TA_{t-1}} = \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \frac{\Delta REV_t}{TA_{t-1}} + \alpha_3 \frac{GPPE_t}{TA_{t-1}} + \alpha_4 \frac{ROA_t}{TA_{t-1}} + \varepsilon_{it} \quad (2)$$

where TAC_t is the total accruals in year *t*; ΔREV_t is the change of revenue in year *t*, $GPPE_t$ is the level of gross property, plant, and equipment in year *t*; and ROA_t is the return on assets in year *t*. We deflate each variable in the model by the lagged book value of total assets (TA_{t-1}). The residuals from the regressions are used as a proxy for discretionary accruals to measure corporate earnings management (*EM*). Since our empirical tests focus on the magnitude of accruals rather than the direction, we use the absolute value of discretionary accruals, following prior research (Han et al., 2010).

3.2.3 Country-level factors

As discussed previously, we use the four factors proposed by Isidro et al. (2020) to capture country-level attributes. Isidro et al. (2020) use factor analysis to identify patterns in the 72 country-level attributes. They find that the 72 country-level attributes are very highly correlated and they are largely explained by four underlying latent factors: *Informal Institutions* (the institutional and governance system, along with economic and social welfare), *Investor Protection* (investor rights protection and capital markets development), *Governance Environment* (political transparency and accounting enforcement), and *External Investors* (the society's openness to external investors). These four factors explain approximately 58% of the total variation, with the first two factors explaining a significant proportion (80%) of that variation. Although these four factors cannot fully explain country-level financial reporting differences, they allow us to examine the effects of country-level attributes.[2]Data for the four factors are publicly available in Isidro et al. (2020) (SSRN).

3.3 Regression models

3.3.1 Test of hypothesis 1

We use a baseline regression model to examine the relationship between market competition and accrual earnings management for the entire sample (across countries):

$$EM_{it} = \alpha_0 + \alpha_1 Market\ Competition_{it} + \alpha_2 Controls_{it} + Firm\ and\ Year\ Fixed\ Effects + \varepsilon_{it} \quad (3)$$

[2] The impact of time-series variation on current economic outcomes is widely investigated in social science research.However, international accountingliterature argues that environmental conditions persist over long periods of time. In addition, due to the limitation of data, the time-series effect is not considered in the four country-level factors.

Since we test the effects of the financial reporting environment on the relationship between market competition and accrual earnings management, we develop the following multivariate regression model (4) for two different subsamples categorized by the quality of the financial reporting environments:

$$\begin{aligned} EM_{it} = {} & \alpha_0 + \alpha_1 Market\ Competition_{it} + \alpha_2 Controls_{it} \\ & + Firm\ and\ Year\ Fixed\ Effects \\ & + \varepsilon_{it}(Divided\ into\ strong\ and\ weak\ financial\ reporting\ environments) \end{aligned} \tag{4}$$

where, for firm i in year t, the dependent variable *EM* represents the measure of accrual earnings management provided by Kothari et al. (2005). $Market\ Competition_{it}$ is measured by either the speed of abnormal profit adjustment (*ADJ_SPEED*) or industry followers (*FOLLOWER*). In addition, we include a broad set of determinants of accrual earnings management identified in the literature. We first control for firm size (*SIZE*), as measured by the natural logarithm of total assets, because large firms tend to exercise less discretion as they are subject to continuous stock market monitoring (Lang et al., 2010). We also control for the natural logarithm of the market-to-book ratio (*MTB*) because it is one of the major factors influencing financial reporting practice (Lang et al., 2010). In addition, earnings attributes are influenced by both inherent factors and managerial discretionary reporting decisions (Dechow & Dichev, 2002; Francis et al., 2005, 2014). Thus, we include leverage ratio (*LEV*), cash flows from operations (*CFO*), cash flow variance (*Std_CF*), sales variance (*Std_Sales*), growth in sales variance (*Std_Sales Growth*), and stock returns (*Stock Ret*) in our empirical models as control variables. Since analyst following affects managerial behavior and consequently lowers the level of accrual-based earnings management (Hong et al., 2014), we also control for analyst following (*Analyst*).

In model (4), we categorize the entire sample by summing up the weighted scores of the four factors provided by Isidro et al. (2020). Isidro et al. (2020) provide time-invariant scores for each country based on these four factors. A country is considered to have a strong financial reporting environment if its total score for the four factors is greater than the median of the total scores for the entire sample; otherwise, it is considered to have a weak financial reporting environment. Finally, we include firm and year fixed effects to control for time-variant firm-level variables in the empirical model.

3.3.2 Test of hypothesis 2

Next, we examine whether country-level attributes interact with competitive pressure. We extend regression model (3) by adding an interaction term for country-level factors and market competition to investigate the joint effect of country-level factors and competitive pressure on accrual earnings management for all firms and countries.

$$EM_{it} = \alpha_0 + \alpha_1 Market\ Competition_{it} + \alpha_2 Country\ attributes_{it} + \alpha_3 Market\ Competition_{it} \times Country\ attributes_{it} + \alpha_4 Controls_{it} + Firm\ and\ Year\ Fixed\ Effects + \varepsilon_{it} \quad (5)$$

We include the same dependent variable and firm-level control variables from regression model (4), such as firm size (*SIZE*), leverage (*LEV*), and market-to-book ratio (*MTB*). However, for the independent variable, we add a country-level factor and the interaction term for the country-level factor and market competition variable. Since the economic mechanism of the test is centered around cross-country variation in each country-level factor, the regression cannot include country fixed effects. Finally, we include firm and year fixed effects to control for time-variant firm-level variables in the empirical model.

4 Results

4.1 Descriptive statistics

Table 1, Panel B provides the descriptive statistics for the dependent variable, independent variable, and four country-level factors. The mean value of each variable is calculated and reported for each country. The "Number of Observations" column in Panel B shows that the country samples ranged from having 807 observations (Pakistan) to 1,500 observations (Sweden). Brazil (0.185) and the Philippines (0.162) demonstrate higher degrees of earnings management, while Sweden (0.033) and Singapore (0.032) demonstrate lower degrees of earnings management. Panel C reports the descriptive statistics for the firm-level variables. The mean and median values for *ADJ_SPEED* are − 0.556 and − 0.589, respectively, while for *FOLLOWER*, they are 0.605 and 1, respectively. These values suggest that competitive pressure on managers is prevalent throughout the entire sample.

Table 2 reports the Pearson correlation matrix among firm-level regression variables. The Pearson correlation results demonstrate that as the values of ADJ_SPEED and FOLLOWER increase, the values of EM also tend to increase. It indicates that higher values of ADJ_SPEED and FOLLOWER are associated with higher levels of earnings management. We also observe that *EM* is positively related to leverage and firm size. However, these correlation results should be interpreted with caution as they stem from univariate analyses.

4.2 Empirical findings

4.2.1 Regression results regarding hypothesis 1

Table 3 shows the results of testing the association between competitive pressure and earnings management. It also reports the results of testing the effects of financial reporting environments on managerial financial reporting under competitive

Table 2 Correlation Matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1: EM	1.0000																		
2: ADJ_SPEED	**0.0137**	1.0000																	
3: FOL-LOWER	**0.0218**	0.0041	1.0000																
4: R&D	**0.0119**	0.0059	0.0058	1.0000															
5: HHI_conv	**0.0086**	**0.0068**	**0.0077**	**0.2413**	1.0000														
6: MKT-SIZE	0.0034	**0.0372**	**0.0334**	**0.0298**	**0.0729**	1.0000													
7: FSIZE	**0.0262**	**0.0316**	0.0064	**0.1572**	**0.1886**	0.0159	1.0000												
8: MTB	-0.0169	**-0.0659**	**0.0261**	-0.0135	-0.0139	0.0064	**-0.0172**	1.0000											
9: LEV	**0.0647**	**0.0388**	0.0068	-0.0162	**0.0222**	-0.0065	**0.2612**	**0.1546**	1.0000										
10: CFO	-0.0185	-0.0045	**-0.0259**	**0.0085**	0.0059	**-0.0373**	**0.1402**	**0.0548**	**-0.0457**	1.0000									
11: Std_CF	**0.0416**	-0.0121	0.0223	0.0034	**0.0138**	**0.0189**	**-0.0551**	**0.0528**	**-0.0176**	**0.0239**	1.0000								
12: Std_Sale	**0.0092**	**0.0237**	0.0131	**0.0087**	0.0041	**0.0963**	**-0.0463**	**-0.0879**	**-0.0492**	**-0.0439**	**0.5993**	1.0000							
13: Std_Sale-Growth	**0.0931**	**0.0076**	0.0083	-0.0157	**0.0073**	-0.0035	**0.0853**	-0.0068	**0.0218**	0.0113	**0.0889**	**0.2464**	1.0000						
14: Stock Return	**0.0217**	0.0067	0.0164	0.0049	0.0082	0.0169	0.0138	0.0044	0.0129	-0.0071	**0.0186**	**0.0172**	**0.0274**	1.0000					
15: Ana-lyst	**-0.0029**	**0.0088**	**0.0262**	**0.1788**	**0.0744**	0.0044	**0.5055**	**0.1467**	**0.0774**	**0.1291**	**0.0495**	**0.0502**	**0.0476**	0.0066	1.0000				
16: Corp_Env (Factor 1)	**-0.0312**	**0.0217**	**0.0107**	**-0.0359**	**-0.0585**	0.0074	**-0.5048**	**-0.0338**	**-0.0728**	**-0.0742**	**0.0298**	0.0075	**-0.0574**	0.0046	**0.0193**	1.0000			

Table 2 (continued)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
17: Inv_Prot (Factor 2)	**-0.0274**	-0.0173	0.0086	**-0.0253**	-0.0184	**-0.1113**	**-0.0329**	**0.0336**	**-0.1049**	0.0063	**-0.0381**	**0.0196**	**0.0478**	0.0074	**-0.0774**	**0.1622**	1.0000		
18: Gov_ Env (Factor 3)	-0.0168	**0.0107**	**0.0329**	**-0.0137**	**-0.0676**	**0.0173**	**-0.2025**	**0.0091**	**-0.0124**	**-0.0229**	**0.0363**	**0.0979**	**0.0255**	0.0046	**0.0168**	**0.0884**	**0.2386**	1.0000	
19: Ext_ Invest (Factor 4)	**-0.0351**	**0.0185**	0.0074	**-0.0607**	**0.0821**	**-0.0583**	**0.0627**	**0.0849**	**0.0472**	0.0058	**-0.0171**	**0.0185**	**0.0737**	**0.0156**	0.0054	**0.0314**	**0.1958**	**0.0275**	1.0000

Note: The correlation coefficients in bold are significant at the 10 percent level. This table presents Pearson correlation matrix for the firm-level variables for 34,931 observations over the 2005–2022 period. See Appendix Table 12 for variable definitions

Table 3 Results concerning Hypothesis 1

VARIABLES	Dependent Variable = Earnings Management (EM)					
	Entire Sample		Weak Financial Reporting Environment		Strong Financial Reporting Environment	
	Column (1)	Column (2)	Column (3)	Column (4)	Column (5)	Column (6)
ADJ_SPEED	0.0132**		0.0824***		-0.0145***	
	(0.0047)		(0.0088)		(0.0022)	
FOLLOWER		0.0041**		0.0180***		-0.0025***
		(0.0023)		(0.0038)		(0.0006)
FSIZE	0.0015***	0.0010***	0.0634***	0.0589***	-0.0667***	-0.0677***
	(0.0004)	(0.0003)	(0.0114)	(0.0110)	(0.0099)	(0.0104)
MTB	-0.0011***	-0.0012***	-0.0140***	-0.0137***	-0.0158***	-0.0165***
	(0.0004)	(0.0002)	(0.0042)	(0.0043)	(0.0035)	(0.0037)
LEV	0.0109***	0.0108***	0.0618***	0.0619***	0.0214***	0.0222***
	(0.0027)	(0.0027)	(0.0171)	(0.0170)	(0.0020)	(0.0021)
CFO	0.0098**	0.0097**	0.0216***	0.0230***	0.0059***	0.0056***
	(0.0032)	(0.0031)	(0.0058)	(0.0055)	(0.0008)	(0.0009)
Std_CF	0.0053*	0.0052*	0.0304***	0.0308***	-0.0081***	0.0082***
	(0.0035)	(0.0034)	(0.0090)	(0.0089)	(0.0073)	(0.0009)
Std_Sale	0.0089*	0.0082*	0.0012	0.0014	0.0444***	0.0462***
	(0.0040)	(0.0039)	(0.0078)	(0.0070)	(0.0059)	(0.0054)
Std_Sale Growth	0.0055**	0.0063**	0.0519***	0.0502***	0.0100***	0.0094***
	(0.0025)	(0.0026)	(0.0076)	(0.0071)	(0.0009)	(0.0010)
Stock Ret	-0.0051***	-0.0050***	-0.0042***	-0.0029***	0.0014	0.0019**
	(0.0003)	(0.0003)	(0.0010)	(0.0010)	(0.0011)	(0.0008)
Analyst	-0.0121***	-0.0116***	0.0027*	0.0022	-0.0253***	-0.0330***
	(0.0024)	(0.0023)	(0.0012)	(0.0016)	(0.0026)	(0.0027)
Observations	34,931	34,931	17,257	17,257	17,674	17,674
Adj. R-squared	0.3957	0.3599	0.2549	0.2751	0.2345	0.2354
Fixed Effects (Firm and Year)	Y	Y	Y	Y	Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. We partition the entire sample, based on total financial reporting environment score, which is sum of weighted factor one, two, three, and four, according to Isidro et al. (2020). If a country has the total score of four factors greater than the median of the total scores of entire samples, the country is considered as a strong financial reporting regime; if not, it is considered as a weak financial reporting regime. See Appendix Table 12 for detailed variable definitions

pressure. The results in Columns (1) (0.0132, with p-value < 0.05) and (2) (0.0041, with p-value < 0.05), for the entire sample, support the literature stating that market competition could motivate managers to use excessive discretion in financial reporting, thereby producing an opaque information environment (Verrechia, 1983).

The analysis of subsamples of countries with strong and weak financial reporting environments reveals mixed findings. The results from Columns (3) (0.0824, with p-value < 0.01) and (4) (0.0180, with p-value < 0.01) indicate that managers under competitive pressure are more likely to engage in earnings management in weak financial reporting environments, consistent with the results from previous studies (DeFond et al., 2007; Haw et al., 2012; Hunton et al., 2006; Li & Yang, 2016). Therefore, the positive coefficients imply that weak financial reporting environments place greater weight on the benefits of earnings management under intense pressure, despite the potential risks involved. However, both Columns (5) (−0.0145, with p-value < 0.01) and (6) (−0.0025, with p-value < 0.01) document that the positive coefficients of market competition variables change to negative coefficients, consistent with the findings of Leuz et al. (2003). The empirical results from Table 3 suggest that strong financial reporting environments can effectively monitor and restrict managers' incentives to use excessive discretion in financial reporting under competitive pressure. This, in turn, leads to a reduction in earnings management, as managers perceive that the costs of earnings management outweigh the benefits.

We also find that the positive coefficient of firm size and analyst following in a weak financial reporting environment changes to a negative one in a strong financial reporting environment. This suggests that in a strong financial reporting environment, a larger firm size and a higher analyst following effectively constrain managers' discretion in financial reporting. However, higher stock returns increase accrual earnings management in a stronger financial reporting environment, contrasting with the negative coefficient observed in a weak financial reporting environment. It appears that managers of companies with higher stock returns face more intense pressure regarding earnings management.

To assess economic significance, we calculate the one-standard-deviation impact of the independent variables (*ADJ_SPEED* and *FOLLOWER*) by multiplying their coefficients by their standard deviations. The entire sample's standard deviations of *ADJ_SPEED* and *FOLLOWER* are 21.5% and 31.8%, respectively. Therefore, economically, a one-standard-deviation increase in *ADJ_SPEED* is associated with a 0.28% (=21.5% * 0.0132) more positive response in accrual earnings management, as shown in Column (1) of Table 3. In Column (2), a one-standard-deviation increase in *FOLLOWER* is associated with an accrual earnings management increase of 0.13% (=31.8% * 0.0041). In Columns (3) and (4), the respective standard deviations of 22% and 32% imply that an increase of one standard deviation is associated with accrual earnings management increases of 1.81% and 0.58%, respectively. In Columns (5) and (6), the respective standard deviations of 20.5% and 30.2% indicate that an increase of one standard deviation is associated with decreases in accrual earnings management of 0.31% and 0.08%. These results suggest that market competition is positively and economically associated with accrual earnings management in weak financial reporting environments, while it is negatively and economically associated with accrual earnings management in strong financial reporting environments.

4.2.2 Regression results regarding hypothesis 2

The results in Tables 4, 5, 6, and 7 illustrate how managers react to stiff competition in their financial reporting, depending on the four country-level factors of *Informal*

Table 4 Results regarding Hypothesis 2(a)

	Predicted Sign	Dependent Variable = Earnings Management (*EM*)	
ADJ_SPEED	(+)	0.0565***	
		(0.0090)	
Inf_Ins (Factor 1)	(−)	-0.0538***	
		(0.0165)	
ADJ_SPEED × Inf_Ins	(−)	-0.0113*	
		(0.0103)	
FOLLOWER	(+)		0.0031***
			(0.0001)
Inf_Ins (Factor 1)	(−)		-0.0360***
			(0.0018)
FOLLOWER × Inf_Ins	(−)		-0.0183***
			(0.0023)
FSIZE		-0.0215***	-0.0227***
		(0.0070)	(0.0069)
MTB		-0.0126***	-0.0132***
		(0.0034)	(0.0034)
LEV		0.0165***	0.0168***
		(0.0010)	(0.0010)
CFO		0.0056***	0.0057***
		(0.0002)	(0.0004)
Std_CF		-0.0695***	-0.0701***
		(0.0059)	(0.0057)
Std_Sale		0.0303***	0.0309***
		(0.0042)	(0.0041)
Std_Sale Growth		0.0873***	0.0862***
		(0.0037)	(0.0038)
Stock Ret		-0.0012	-0.0015
		(0.0068)	(0.0071)
Analyst		-0.0133*	-0.0227***
		(0.0058)	(0.0059)
Constant		0.0216***	0.0228**
		(0.0033)	(0.0078)
Observations		34,931	34,931
Adj. R-squared		0.2651	0.2842
Fixed Effects (Firm and Year)		Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. See Appendix Table 12 for detailed variable definitions

Table 5 Results regarding Hypothesis 2 (b)

	Predicted Sign	Dependent Variable = Earnings Management (*EM*)	
ADJ_SPEED	(+)	0.0558***	
		(0.0093)	
Inv_Prot (Factor 2)	(−)	-0.0322***	
		(0.0105)	
ADJ_SPEED × Inv_Prot	(−)	-0.0063**	
		(0.0023)	
FOLLOWER	(+)		0.0027***
			(0.0007)
Inv_Prot (Factor 2)	(−)		-0.0349**
			(0.0163)
FOLLOWER × Inv_Prot	(−)		-0.0095***
			(0.0032)
FSIZE		-0.0215***	-0.0234***
		(0.0072)	(0.0071)
MTB		-0.0129***	-0.0133***
		(0.0032)	(0.0034)
LEV		0.0167***	0.0170***
		(0.0016)	(0.0015)
CFO		0.0052***	0.0049***
		(0.0005)	(0.0007)
Std_CF		-0.0718***	-0.0724***
		(0.0059)	(0.0061)
Std_Sale		0.0303***	0.0312***
		(0.0047)	(0.0049)
Std_Sale Growth		0.0871***	0.0866***
		(0.0051)	(0.0053)
Stock Ret		-0.0024**	-0.0034**
		(0.0012)	(0.0018)
Analyst		-0.0137**	-0.0144**
		(0.0064)	(0.0062)
Constant		0.0213***	0.0228***
		(0.0042)	(0.0043)
Observations		34,931	34,931
Adj. R-squared		0.2554	0.2798
Fixed Effects (Firm and Year)		Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. See Appendix Table 12 for detailed variable definitions

Institutions, *Investor Protection*, *Governance Environment*, and *External Investors*. In Table 4, the coefficient on the interaction between *ADJ_SPEED* and *Inf_Ins* is negative and statistically significant (−0.0113, with p-value < 0.1). In Table 5, the coefficient on the interaction between *ADJ_SPEED* and *Inv_Prot* is negative and statistically significant

Table 6 Results regarding Hypothesis 2 (c)

	Predicted Sign	Dependent Variable = Earnings Management(*EM*)	
ADJ_SPEED	(+)	0.0559***	
		(0.0094)	
Gov_Env (Factor 3)	(−)	-0.0290**	
		(0.0148)	
ADJ_SPEED × Gov_Env	(−)	-0.0038**	
		(0.0013)	
FOLLOWER	(+)		0.0027***
			(0.0006)
Gov_Env (Factor 3)	(−)		-0.0275*
			(0.0137)
FOLLOWER × Gov_Env	(−)		-0.0078**
			(0.0027)
FSIZE		-0.0217**	-0.0224**
		(0.0072)	(0.0074)
MTB		-0.0120***	-0.0124***
		(0.0031)	(0.0033)
LEV		0.0156***	0.0159***
		(0.0014)	(0.0013)
CFO		0.0049***	0.0050***
		(0.0005)	(0.0006)
Std_CF		-0.0717***	-0.0732***
		(0.0059)	(0.0057)
Std_Sale		0.0303***	0.0309***
		(0.0045)	(0.0043)
Std_Sale Growth		0.0861***	0.0851***
		(0.0049)	(0.0048)
Stock Ret		-0.0028**	-0.0076*
		(0.0011)	(0.0048)
Analyst		-0.0137***	-0.0275***
		(0.0033)	(0.0039)
Constant		0.0204***	0.0216***
		(0.0037)	(0.0084)
Observations		34,931	34,931
Adj. R-squared		0.2578	0.2845
Fixed Effects (Firm and Year)		Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. See Appendix Table 12 for detailed variable definitions

(−0.0063, with p-value < 0.05). In Table 6, the coefficient on the interaction between *ADJ_SPEED* and *Gov_Env* is negative and statistically significant (−0.0038, with p-value < 0.05). In Table 7, the coefficient on the interaction between *ADJ_SPEED* and *Ext_Inv* is negative and statistically significant (−0.0017, with p-value < 0.05).

Table 7 Results regarding Hypothesis 2 (d)

	Predicted Sign	Dependent Variable = Earnings Management(*EM*)	
ADJ_SPEED	(+)	0.0555***	
		(0.0092)	
Ext_Inv (Factor 4)	(−)	-0.0015**	
		(0.0008)	
ADJ_SPEED × Ext_Inv	(−)	-0.0017**	
		(0.0006)	
FOLLOWER	(+)		0.0028***
			(0.0005)
Ext_Inv (Factor 4)	(−)		-0.0036***
			(0.0009)
FOLLOWER × Ext_Inv	(−)		-0.0062***
			(0.0014)
FSIZE		-0.0210***	-0.0217***
		(0.0072)	(0.0071)
MTB		-0.0118**	-0.0123***
		(0.0028)	(0.0030)
LEV		0.0157***	0.0161***
		(0.0011)	(0.0012)
CFO		0.0050***	0.0052***
		(0.0006)	(0.0007)
Std_CF		-0.0711***	-0.0716***
		(0.0053)	(0.0054)
Std_Sale		0.0305***	0.0310***
		(0.0044)	(0.0042)
Std_Sale Growth		0.0863***	0.0857***
		(0.0042)	(0.0045)
Stock Ret		-0.0020**	-0.0087*
		(0.0008)	(0.0048)
Analyst		-0.0130***	-0.0179*
		(0.0022)	(0.0085)
Constant		0.0206***	0.0219***
		(0.0041)	(0.0083)
Observations		34,931	34,931
Adj. R-squared		0.2576	0.2867
Fixed Effects (Firm and Year)		Y	Y

Note: ***, ** denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. See Appendix Table 12 for detailed variable definitions

Similarly, in Table 4, the coefficient on the interaction between *FOLLOWER* and *Inf_Ins* is negative and statistically significant (−0.0183, with p-value < 0.01). In Table 5, the coefficient on the interaction between *FOLLOWER* and *Inv_Prot* is negative and

statistically significant (−0.095, with p-value < 0.01). In Table 6, the coefficient on the interaction between *FOLLOWER* and *Gov_Env* is negative and statistically significant (−0.0078, with p-value < 0.05). In Table 7, the coefficient on the interaction between *FOLLOWER* and *Ext_Inv* is negative and statistically significant (−0.0062, with p-value < 0.01).

These findings provide support for H2 (a), (b), (c), and (d), suggesting that weak financial reporting environments allow managers to exercise more discretion, thereby reinforcing the negative association between market competition and earnings management. These findings also provide evidence that firms operating in countries with weak financial reporting environments may experience the negative consequences associated with increases in earnings management practice. These consequences may be in the form of increased information asymmetry and limited access to capital markets. However, in strong financial reporting environments, managers respond differently to competitive pressure because of monitoring and control mechanisms that restrict managers' incentives to engage in excessive discretion, thus lowering earnings management. Furthermore, we find that the impact of different factors within financial reporting environments varies, with *Informal Institutions* having the largest magnitude of coefficient and *External Investors* having the smallest coefficient, with the order of impact being *Informal Institutions* > *Investor Protection* > *Governance Environment* > *External Investors*. Overall, this study provides a detailed explanation of how the different factors within financial reporting environments can influence the reporting behaviors of managers, shedding light on the underlying mechanisms that drive these influences.

To assess economic significance, we calculate the one-standard-deviation impact of the interaction terms between market competition variables and country-level attributes by multiplying their coefficients by their standard deviations. The entire sample's standard deviations of *ADJ_SPEED* and *FOLLOWER* are 21.5% and 31.8%, respectively. Table 4 shows that a one-standard-deviation increase in *ADJ_SPEED* and *FOLLOWER* is associated with an increase in the negative impact of the interaction term by 0.24% and 0.33%, respectively. Similarly, in Table 5, a one-standard-deviation increase in *ADJ_SPEED* and *FOLLOWER* is associated with an increase in the negative impact of the interaction term by 0.14% and 0.30%, respectively. In addition, Table 6 shows that a one-standard-deviation increase in *ADJ_SPEED* and *FOLLOWER* is associated with an increase in the negative impact of the interaction term by 0.08% and 0.24%, respectively. In Table 7, a one-standard-deviation increase in *ADJ_SPEED* and *FOLLOWER* is associated with an increase in the negative impact of the interaction term by 0.04% and 0.20%, respectively. These results suggest that market competition and country-level attributes reduce accrual earnings management both statistically and economically.

5 Robustness checks

5.1 Alternative measure of market competition

As a market becomes more innovative, it is crucial for a firm to allocate increased resources toward research and development (R&D) to maintain its market position,

secure future prospects, and discourage potential competitors from entering the market (Cohen, 2002). Ellis et al. (2012) document that firms allocating greater resources to R&D tend to divulge fewer details about their customers, which subsequently results in elevated proprietary costs. Since managers under intense market pressure consider the disclosure of proprietary information to peers to be detrimental (Imhof et al., 2022; Verrecchia, 1983), we use R&D expense, scaled by beginning period total assets, as an alternative measure of market competition. Table 8, Panel A reports the results, which support the main findings.

Another alternative proxy is the Herfindahl–Hirschman index (HHI). HHI is a measure of industry concentration and is calculated as the sum of the squared market share of each competitor in each industry. The lower the value of the ratio, the less concentrated the industry and the higher the competition. Thus, we multiply HHI by − 1 so that higher values are associated with greater competition. Li (2010) shows that firms in less concentrated industries typically face more competition. Table 8, Panel B presents the results of the analysis using the *HHI_conv* as an alternative measure of market competition, and they are consistent with the baseline results.

5.2 Alternative measure of accrual earnings management

In this study, we employ a measure of accrual earnings management provided by Kothari et al. (2005). However, some studies suggest that using accrual-based discretion measures may include errors in estimating discretionary accruals. As an alternative measure for accrual-based earnings discretion, following Lemma et al. (2018), we utilize the ratio of cash flow volatility to earnings volatility. This ratio reflects the extent to which managers have smoothed reported earnings using accruals beyond the volatility inherent in business operations. If managers aggressively exercise accounting discretion, earnings volatility will be relatively lower than cash flow volatility. Therefore, as earnings management increases, the ratio also increases. The results of this analysis are reported in Table 9 and support the primary findings.

5.3 Endogeneity issue

Endogeneity concerns arise as a significant factor that impedes the establishment of a clear-cut relationship in the empirical framework. This is due to the possibility that both market competition and earnings management might be simultaneously influenced by unobserved variables. To address these endogeneity concerns, this study employs the two-stage least squares (2SLS) method, a widely utilized approach in empirical accounting research.

This study estimates the 2SLS regressions as follows. In the first-stage regression model, we consider the market competition variable (independent variable) to be an endogenous variable. We then regress the competition proxies on instrumental and control variables and obtain the predicted value of the competition proxies.

Following Karuna et al. (2015), we choose market size as an instrumental variable, measured by the natural logarithm of industry sales. Specifically, a larger market size implies a higher density of consumers in that market or industry. This increased consumer base can attract a greater number of firms to enter the market or industry. This phenomenon aligns with

Table 8 Sensitivity analyses using other potential proxies of proprietary costs

Panel A. R&D expenses as alternative proxy for proprietary costs				
	Dependent Variable = EM			
	Test regarding H2(a)	Test regarding H2(b)	Test regarding H2(c)	Test regarding H2(d)
R&D	0.0376**	0.0242*	0.0329**	0.0535**
	(0.0179)	(0.0188)	(0.0169)	(0.0187)
R&D × Inf_Ins	-0.0122**			
	(0.0062)			
R&D × Inv_Prot		-0.0066**		
		(0.0025)		
R&D × Gov_Env			-0.0036	
			(0.064)	
R&D × Ext_Inv				-0.0033***
				(0.0007)
Observations	34,931	34,931	34,931	34,931
Adj. R-squared	0.2638	0.2635	0.2632	0.2637
Fixed Effects (Firm and Year)	Y	Y	Y	Y
Panel B. Herfindahl index as alternative proxy for proprietary costs				
	Dependent Variable = EM			
	Test regarding H2(a)	Test regarding H2(b)	Test regarding H2(c)	Test regarding H2(d)
HHI_conv	0.0214***	0.0137***	0.0225***	0.0260***
	(0.0074)	(0.0082)	(0.0071)	(0.0071)
HHI_conv × Inf_Ins	-0.0142*			
	(0.0082)			
HHI_conv × Inv_Prot		-0.0114**		
		(0.0059)		

Table 8 (continued)

HHI_conv×Gov_Env			-0.0077	
			(0.0069)	
HHI_conv×Ext_Inv				-0.0058**
				(0.0028)
Observations	34,931	34,931	34,931	34,931
Adj. R-squared	0.2292	0.2219	0.2173	0.2124
Fixed Effects (Firm and Year)	Y	Y	Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses**.** For the sake of brevity, we only report the coefficients of main variables and interaction terms. The coefficients of control variables are consistent with main empirical tests**.** R&D expenses are provided by COMPUSTAT. We scale R&D expenses by total assets. Higher ***R&D*** indicates higher proprietary costs. See Appendix Table 12 for detailed variable definitions

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. For the sake of brevity, we only report the coefficients of main variables and interaction terms. The coefficients of control variables are consistent with main empirical tests. The HHI is defined as the sum of the squared market shares of all firms in the market. The lower HHI reflects greater proprietary costs. Thus, we multiply HHI by negative one so that higher values are associated with greater competition, a new variable ***HHI_conv***. We use ***HHI_conv*** for convenient interpretation. See Appendix Table 12 for detailed variable definitions

Table 9 Robustness tests using an alternative measure of earnings management

Panel A. The speed of profit adjustment measure				
	Dependent Variable = EM2			
	Test regarding H2(a)	Test regarding H2(b)	Test regarding H2(c)	Test regarding H2(d)
ADJ_SPEED	0.0167***	0.0166***	0.0166***	0.0167***
	(0.0063)	(0.0062)	(0.0063)	(0.0063)
ADJ_SPEED × Inf_Ins	-0.0085***			
	(0.0008)			
ADJ_SPEED × Inv_Prot		-0.0042***		
		(0.0006)		
ADJ_SPEED × Gov_Env			-0.0036***	
			(0.0007)	
ADJ_SPEED × Ext_Invest				-0.0035***
				(0.0010)
Observations	34,931	34,931	34,931	34,931
Adj. R-squared	0.3017	0.3118	0.3117	0.3009
Fixed Effects (Firm and Year)	Y	Y	Y	Y
Panel B. Industry Follower measure				
	Dependent Variable = EM2			
	Test regarding H2(a)	Test regarding H2(b)	Test regarding H2(c)	Test regarding H2(d)
Follower	0.0086***	0.0086***	0.0086***	0.0086***
	(0.0023)	(0.0022)	(0.0022)	(0.0023)
Follower × Inf_Ins	-0.0045**			
	(0.0021)			
Follower × Inv_Prot		-0.0038**		
		(0.0019)		
Follower × Gov_Env			-0.0036**	

Table 9 (continued)

Follower×Ext_Invest			(0.0012)	
				-0.0027
Observations				(0.0028)
	34,931	34,931	34,931	34,931
Adj. R-squared	0.4105	0.4033	0.3987	0.3938
Fixed Effects (Firm and Year)	Y	Y	Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. For the sake of brevity, we only report the coefficients of main variables and interaction terms. The coefficients of control variables are consistent with main empirical tests. See Appendix Table 12 for detailed variable definitions

the economic notion that an upsurge in market demand for a particular product tends to correspond with an increase in the sales of that product, even without substantial alterations in prices. The instrumental variable influences the market competition variables (independent variables) but does not influence the earnings management variable directly. We also include the control variables. In the second-stage regression, we regress the earnings management variable on the predicted values of competition variables obtained from the first-stage regression and explanatory variables.

Table 10 reports the results of the second-stage regression from the 2SLS regression analysis. The coefficients on the predicted values of the market competition variables (*PRED_ADJ_SPEED* and *PRED_ FOLLOWER*) are positively significant in both Columns (1) and (2). The coefficients on the interaction term are significantly negative for both firm value measures, supporting our main results. These results remain robust to endogeneity concerns. Furthermore, although the coefficients for control variables are not presented in the table for the sake of brevity, they are consistent with those reported in the main results. Therefore, the main findings are not affected by endogeneity issues.

5.4 Standardized errors clustered by country

The observations in the sample vary by country. Since the economic mechanism of this study is centered around cross-country variation, the empirical tests cannot include country fixed effects. As an alternative approach, we run clustered regressions by country without country fixed effects, as detailed in Gow et al. (2010), to adjust for the possibility that observations within a given country are more similar to each other than to observations in other countries. This could occur if countries have similar institutional or cultural factors that affect the managers' financial reporting behaviors. By clustering the standard errors by country, we can obtain more accurate estimates of the standard errors and avoid overstating the precision of our estimates. This is important because it can affect the statistical significance of the results and the conclusions. Table 11 presents the regression results, which are consistent with those reported earlier in Tables 4, 5, 6, and 7.

6 Conclusions

This study explores the intricate relationship among market competition, country-level factors, and accrual earnings management, utilizing four comprehensive country-level factors: *Informal Institutions*, *Investor Protection*, *Governance Environment*, and *External Investors*. Two pivotal findings emerge from our analysis. First, the initially observed positive relationship between market competition and accrual earnings management transforms into a negative one in strong financial reporting environments. Second, among the country-level factors, *Informal Institutions*, encompassing norms, values, and beliefs that establish moral or ethical deterrence against earnings management, exerts the most substantial impact on managers' incentives to engage in earnings management amidst intense market competition. These results withstand rigorous testing through 2SLS regressions. These results imply that under heightened market competition, managers

Table 10 Endogeneity issues (two-stage lease square regression)

	Dependent variable = EM	
	(1)	(2)
Panel A. Test regarding H2(a)		
PRED_ADJ_SPEED	0.0605***	
	(0.0119)	
PRED_ADJ_SPEED × Inf_Ins	-0.0157*	
	(0.0109)	
PRED_ FOLLOWER		0.0048***
		(0.0017)
PRED_ FOLLOWER × Inf_Ins		-0.0123***
		(0.0031)
Fixed Effects (Firm and Year)	Y	Y
Observations	34,931	34,931
Adjusted R-squared	0.2055	0.2056
Endogeneity test	p-value < 0.001	p-value < 0.001
Panel B. Test regarding H2(b)		
PRED_ADJ_SPEED	0.0605***	
	(0.0120)	
PRED_ADJ_SPEED × Inv_Prot	-0.0129***	
	(0.0038)	
PRED_ FOLLOWER		0.0048***
		(0.0018)
PRED_ FOLLOWER × Inv_Prot		-0.0103***
		(0.0029)
Fixed Effects (Firm and Year)	Y	Y
Observations	34,931	34,931
Adjusted R-squared	0.2148	0.2118
Endogeneity test	p-value < 0.001	p-value < 0.001
Panel C. Test regarding H2(c)		
PRED_ADJ_SPEED	0.0605***	
	(0.0120)	
PRED_ADJ_SPEED × Gov_Env	-0.0092**	
	(0.0035)	
PRED_ FOLLOWER		0.0048***
		(0.0017)
PRED_ FOLLOWER × Gov_Env		-0.0098***
		(0.0030)
Fixed Effects (Firm and Year)	Y	Y
Observations	34,931	34,931
Adjusted R-squared	0.2221	0.2209
Endogeneity test	p-value < 0.001	p-value < 0.001
Panel D. Test regarding H2(d)		
PRED_ADJ_SPEED	0.0605***	
	(0.0121)	

Table 10 (continued)

	Dependent variable = EM	
	(1)	(2)
PRED_ADJ_SPEED × Ext_Inv	-0.0057**	
	(0.0023)	
PRED_ FOLLOWER		0.0048***
		(0.0018)
PRED_ FOLLOWER × Ext_Inv		-0.0055**
		(0.0016)
Fixed Effects (Firm and Year)	Y	Y
Observations	34,931	34,931
Adjusted R-squared	0.2289	0.2354
Endogeneity test	p-value < 0.001	p-value < 0.001

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. For the sake of brevity, we only report the coefficients of main variables from the two-stage least squares (2SLS) regression and the results from the second-stage regression of the 2SLS procedure. The coefficients of control variables are consistent with main empirical tests. Also, we conduct the test of endogeneity to check whether our variables, ADJ_SPEED and Prospector, are endogenous. The null hypothesis is that variables are exogenous. At the bottom of each panel in the table, we indicate that the null hypothesis is rejected. See Appendix Table 12 for detailed variable definitions

may be incentivized to exercise more accounting discretion, deeming that the benefits of accrual earnings management outweigh the associated costs. Furthermore, social norms, values, and cultures favoring discretion amplify the benefits of accrual earnings management more than the costs, contributing to an increase in accrual earnings management.

This international study contributes significantly to the literature on market competition and earnings management by offering a fresh perspective on the influence of country-level factors. First, we propose that higher market competition and omitted variables jointly influence accrual earnings management, with country-level factors acting as crucial omitted variables that contribute to the formation of financial reporting environments. Second, through this international lens, we determine that *Informal Institutions* has the most significant impact on the relationship between market competition and accrual earnings management.

These findings carry potential implications for standard setters in regions with weak financial reporting environments, emphasizing the need for urgent efforts to enhance informal institutions, such as cultural values and social norms. This approach is crucial in mitigating corporate earnings management, as the cognitive influence of discretion surpasses the impact of regulation, legal policies, or governance on managers' financial reporting behavior.

Table 11 Robustness tests using standard errors clustered by Country

Panel A. The speed of profit adjustment measure				
	Dependent Variable = EM			
	Test regarding H2(a)	Test regarding H2(b)	Test regarding H2(c)	Test regarding H2(d)
ADJ_SPEED	0.0555***	0.0554***	0.0554***	0.0542**
	(0.0053)	(0.0052)	(0.0053)	(0.0053)
ADJ_SPEED × Inf_Ins	-0.0071***			
	(0.0008)			
ADJ_SPEED × Inv_Prot		-0.0035***		
		(0.0009)		
ADJ_SPEED × Gov_Env			-0.0028***	
			(0.0007)	
ADJ_SPEED × Ext_Inv				-0.0023**
				(0.0008)
Observations	34,931	34,931	34,931	34,931
Adj. R-squared	0.2105	0.2216	0.2215	0.2097
Fixed Effects (Firm and Year)	Y	Y	Y	Y
Panel B. Industry Follower measure				
	Dependent Variable = EM			
	Test regarding H2(a)	Test regarding H2(b)	Test regarding H2(c)	Test regarding H2(d)
FOLLOWER	0.0029***	0.0025*	0.0028***	0.0025***
	(0.0015)	(0.0013)	(0.0014)	(0.0015)
FOLLOWER × Inf_Ins	-0.0026**			
	(0.0013)			
FOLLOWER × Inv_Prot		-0.0024**		
		(0.0011)		

Table 11 (continued)

FOLLOWER × Gov_Env			-0.0023*	
			(0.0014)	
FOLLOWER × Ext_Inv				-0.0017
				(0.0013)
Observations	34,931	34,931	34,931	34,931
Adj. R-squared	0.2105	0.2206	0.2205	0.2097
Fixed Effects (Firm and Year)	Y	Y	Y	Y

Note: ***, **, * denote statistical significance at the 1 percent, 5 percent, and 10 percent levels, respectively. The standard errors are reported in parentheses. We run clustered regressions by country without country fixed effects as detailed in Gow et al. (2010). For the sake of brevity, we only report the coefficients of main variables and interaction terms. The coefficients of control variables are consistent with main empirical tests. See Appendix Table 12 for detailed variable definitions

Appendix

Table 12 Main Variable Definitions

Market Competition	ADJ_SPEED	An estimate of the speed of abnormal profit adjustment in the firm's three- digit industry. Harris (1998) measures the speed with which abnormal profits adjust to the industry mean. Specifically, she estimates: $X_{ijkt} = \beta_{ojk} + \beta_{1jk}(D_n X_{ijkt-1}) + \beta_{2jk}(D_p X_{ijkt-1}) + e_{ijkt}$, where X_{ijkt} is the difference between firm i's return on assets and the mean return on assets for its industry j (three-digit SIC code) and country k, in year t; D_n=1 if X_{ijkt-1} is less than or equal to zero, and 0 otherwise; and D_p=1 if X_{ijkt-1} is greater than zero, and 0 otherwise. The coefficient β_{2jk} captures the persistence of abnormally high ROA in industry j, where a low value of β_{2jk} is assumed to indicate intense competition. For the convenient interpretation, we multiply by -1 to the coefficient β_{2jk}
	FOLLOWER	Set equal to 1 for a firm-year classified as industry followers if its market share is lower than median of an industry based on three-digit SIC code and 0 otherwise
Accrual Earnings Management measure	EM	Following Kothari et al. (2005), we estimate accrual earnings management using ordinary least squares (OLS) for all sample firms at time t: $\frac{TAC_t}{TA_{t-1}} = \alpha_1 \frac{1}{TA_{t-1}} + \alpha_2 \frac{\Delta REV_t}{TA_{t-1}} + \alpha_3 \frac{GPPE_t}{TA_{t-1}} + \alpha_4 \frac{ROA_t}{TA_{t-1}} + \varepsilon_{it}$, where TAC_t is the total accruals in year t, ΔREV_t is the change of revenue in year t, $GPPE_t$ is the level of gross property, plant, and equipment in year t, and ROA_t is the return on asset in year t. We deflate each variable in the model by the lagged book value of total assets. The residuals from the regressions are used as a proxy for discretionary accruals, which measures corporate earnings management (EM). We use the absolute value of discretionary accruals

Table 12 (continued)

Country-level factors	Inf_Ins	Standardized scores of country factor one in Isidro et al. (2020). It is associated with good institutional and governance systems, and economic and social welfare. The high score of Inf_Ins indicates better Corporate Environment
	Inv_Prot	Standardized scores of country factor two in Isidro et al. (2020). It is associated with strong protection of investors' rights and capital markets development. The high score of Inv_Prot indicates better investor protection
	Gov_Env	Standardized scores of country factor three in Isidro et al. (2020) It is associated with political transparency, and tax and accounting enforcement. The high score of Gov_Env indicates better corporate governance
	Ext_Inv	Standardized scores of country factor four in Isidro et al. (2020). The high score of Ext_Inv captures openness of society to external investment
Alternative measures of Market Competition	R&D	Ellis et al. (2012) shows that firms with larger R&D expenses tend to disclose less information about their customers, resulting in higher proprietary costs. This study scales R&D expenses by beginning total assets. Higher R&D expenses indicate higher proprietary costs
	HHI_conv	The HHI is defined as the sum of the squared market shares of all firms in the market. The lower HHI reflects greater proprietary costs. Thus, we multiply HHI by -1 so that higher values are associated with greater competition, a new variable HHI_conv. We use HHI_conv for convenient interpretation
Alternative measure of Accrual Earnings Management	EM2	We follow Lemma et al. (2018) in utilizing an alternative measure of accrual earnings management. This measure is defined as the ratio of the standard deviation of EBIT to that of net cash flow from operating activities, both scaled by lagged total assets

Table 12 (continued)

Control variables	FSIZE	Firm size is the natural logarithm of the total assets (in millions of U.S. dollars) at the end of fiscal year t
	MTB	Market value of equity divided by book value of equity
	LEV	Leverage is the total debt deflated by the average total assets
	CFO	Operating cash flow deflated by beginning of period prices. This data is drawn from COMPUSTAT Global files
	Std_CF	Standard deviation in quarterly cash flows from operations, scaled by total assets for preceding four years
	Std_Sale	Standard deviation of preceding four years' sales, scaled by total assets
	Std_Sale Growth	Standard deviation of growth in quarterly sales for preceding four years
	Stock Ret	12-month stock return for the current fiscal year
	Analyst	The number of analysts covering at a company
	ADR	ADR indicator variable that equals 1 if a firm is cross listed in the U.S., using ADR data from BNY Mellon website (https://www.adrbnymellon.com/directory/dr-directory), and 0 otherwise
Instrumental variable	MKTSIZE	Natural log of industry sales based on three-digit SIC code (for measure constructed from COMPUSTAT data, industry sales is computed as the sum of segment sales for firms operating in the industry)

Data availability Data used are available from public sources identified in the study.

Declarations

Conflict of interest We have no financial or proprietary interests in any material discussed in this Article.

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