




## Article

# Earnings Management in Frontier Market: Do Institutional Settings Matter?

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**Abstract:** We analyse whether differences in earnings management practices in frontier countries can be explained by institutional settings, considering their diverse corporate governance environments, legal regimes, and accounting standards. Across 22 frontier market countries from 2000–2017, we find that financial disclosure, legal environments, and the number of analysts following to be correlated with reduced levels of earnings management (EM). The impact of wealth, GDP growth, firm size, and the use of Big-4 auditors were also associated with reduced EM. Contrary to developed markets and novel to this study, higher levels of societal trust failed to show significance in its ability to constrain EM, suggesting informal institutions are less influential as control monitors. Findings herein verify that the factors that moderate EM are not universally applicable, and help highlight international differences in the management of earnings.

**Keywords:** investor protection; earnings management; frontier markets; institutional settings



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## 1. Introduction

The extent to which managers alter reported earnings is a significant concern for the accounting profession (Mostafa 2017). Although extensive academic research in the earnings manipulation arena exists, empirical work focusing on a wide spectrum of frontier markets and the constraint provided by institutional factors is limited. Frontier market countries have unique earnings management (EM) dynamics due to their developmental infancy, relative illiquidity, weak fiscal monitoring, and low correlation with developed markets.<sup>1,2</sup> Lin and Wu (2014) note that the degree to which firms manipulate earnings is higher in frontier markets than in developed markets as managers are less constrained by corporate governance. This study reduces the literature imbalance and illuminate institutional settings' constraints on accruals earnings management (AEM), an earning management technique customarily practised in frontier market countries. We conjecture that information asymmetry between managers and investors is exacerbated by weak institutional fiscal monitoring. The significant variation of institutional settings between and within frontier market countries and firms and the need to understand the appropriateness of EM constraint factors, provide sufficient justification for a dedicated frontier market study. In the paragraph that follows, we outline why institutional factors are expected to differ in their ability to constrain in frontier markets.

<sup>1</sup> Frontier market median correlation with US and EU markets are 0.54 and 0.39, respectively (InvestmentFrontier 2017).

<sup>2</sup> Table 1 provides a breakdown of this study's respective countries' correlation figures with US and European (EU) markets.

Table 1. Investor Protection, Trust, Macro Factors, and Market Correlation Table.

Country	Minority Investor Rights	Legal Enforcement	Disclosure Index	Analyst Following	Societal Trust	GDP Change (%)	GPD per Capita	Inflation Change (%)	Trade Openness	Big-4 Ratio (%)	Correlation to US Markets	Correlation to EU Markets
Argentina	6.0	3.3	7	2.0	4.1	2.5	9455	14.4	33.1	40.1	0.30	0.40
Bahrain	4.8	6.0	8	5.5	6.9	4.6	22,649	2.0	149.4	0.5	0.15	0.16
Bangladesh	5.3	4.1	6	0.0	4.8	3.6	734	7.2	37.8	13.7	−0.05	−0.19
Bulgaria	7.2	5.1	10	13.3	5.1	3.3	6306	3.5	115.9	63.2	0.15	0.15
Croatia	6.5	5.6	3	4.5	3.9	1.4	13,535	1.9	85.9	95.8	0.36	0.25
Estonia	5.5	7.9	8	0.6	8.1	3.2	15,267	3.2	145.4	36.9	0.18	0.33
Jordan	3.7	5.5	4	4.9	2.6	4.5	3353	3.7	120.6	38.2	0.18	0.09
Kazakhstan	6.7	4.0	9	11.8	7.7	5.6	7907	8.5	75.9	78.1	0.40	0.30
Kenya	4.7	3.9	3	0.6	2.0	4.8	956	9.7	53.4	59.3	0.33	0.30
Kuwait	5.7	4.8	4	1.6	6.2	3.7	40,167	3.8	94.0	98.9	0.31	0.30
Lebanon	4.3	3.6	9	0.3	3.0	4.2	7339	2.4	85.1	100	-	-
Lithuania	6.2	6.7	7	0.5	5.3	3.7	12,156	2.6	133.8	87.0	0.20	0.28
Mauritius	6.5	6.6	6	11.7	0.0	4.0	7610	4.2	112.6	68.8	0.20	0.09
Morocco	5.0	4.8	6	0.6	4.8	4.3	2720	1.6	74.4	37.1	-	-
Nigeria	6.8	2.9	7	1.0	1.6	5.8	2043	11.7	47.0	26.5	0.22	0.15
Oman	4.3	6.0	8	1.4	3.8	3.6	17,946	2.6	94.5	47.2	0.30	0.07
Pakistan	6.7	3.5	6	1.2	3.9	4.3	990	8.3	31.4	93.3	0.23	0.26
Romania	5.8	5.4	9	4.2	0.0	3.8	7858	7.3	76.3	30.6	0.53	0.28
Serbia	5.5	4.9	4	1.2	3.4	2.5	5002	8.1	85.7	27.9	0.18	0.43
Slovenia	7.5	6.6	5	4.7	3.9	1.9	22,574	2.4	131.4	28.0	0.33	0.35
Sri Lanka	6.0	4.6	6	2.4	0.0	5.8	2719	8.2	57.7	57.6	0.20	0.15
Tunisia	5.0	4.6	4	1.0	3.4	3.1	3799	3.9	98.1	17.0	0.01	−0.11
Vietnam	4.5	4.1	7	1.7	3.9	6.2	1204	7.8	161.9	18.9	0.36	0.24
Average	5.7	5	6.3	3.3	3.8	3.9	9317	5.6	91.4	50.6	0.24	0.20
Median	5.7	4.8	6.0	1.6	3.9	3.8	7339	3.9	85.9	40.1	0.22	0.25
Std. Dev	1.0	1.3	2.0	3.9	2.2	1.2	9449	3.5	38.1	30.1	0.13	0.16

Country mean data for 2000–2017. *Strength of Investor Protection* Data scaled 0–10, with higher numbers indicating greater investor protection. Source: World Economic Forum’s Global Competitiveness Index. *Legal Enforcement*: mean of the following 3 variables: (1) judicial system efficiency, (2) assessment of the rule of law, and (3) corruption index (re-scaled from 0–10). Source: Items 1 & 2: World Bank’s Worldwide Governance Indicators. Item 3: Transparency International *Disclosure Requirements*. Data scaled from 0–10. Source: World Bank’s Extent of Business Disclosure Index. *Minority Investor Rights* Source: World Economic Forum’s Global Corruption Index on ‘Strength of Investor Protection’. *Analyst Following* is the number of analysts following per firm-year per country. Source: Datastream *Societal Trust* data scaled from 0–10. Source: World Values Survey *GDP Per Capita* in constant USD in 2005. Source: World Bank *Big4 Ratio* is the percentage of firms that employ a Big4 auditor firm. Source: Thomson Reuters. *Correlation with USA and Europe* is the mean of a rolling 48-month end of month close of each market’s major indices. Data is for the years 2014 to 2017. Source: Investment Frontier. [Reimann \(2000\)](#).

In frontier markets, firm insiders often have a greater opportunity to expropriate investors' benefits (Tang and Chen 2013), hence the need to examine AEM constraint factors. Studies demonstrate that well-structured institutional settings constrain EM (Boonlert-U-Thai et al. 2006; Enomoto et al. 2015; Shen and Chih 2005). Prior research has also identified that good corporate governance mechanisms may reduce or eliminate AEM (Bekiris and Doukakis 2011; Man and Wong 2013). The lower levels of governance and disclosure in emerging and frontier markets (Odell and Ali 2016) provides a unique setting for EM practices and is an avenue that has been under-examined. The application of AEM to manage earnings is significantly lower in firms exhibiting superior fiscal governance environments and normative transparency (Zhu et al. 2015). As an inverse relationship between EM and investor returns ultimately places EM's cost on a firms' shareholders (Kim and Sohn 2011; Wu et al. 2012), managers shift between AEM and other EM techniques, depending upon each techniques' respective costs and constraints (Kim and Sohn 2011; Sohn 2016). A clear understanding of whether institutional settings constrain AEM is crucial to broaden the literature and proper policy gap identification and firm development.

The empirical results of our study extend current literature in several significant and innovative ways. First, we apply both discretionary accruals and non-discretionary accruals detection models. Second, this study is the first to examine the institutional settings' ability to constrain AEM in frontier market countries exclusively. Third, contrary to expectations, we find that societal trust was not influential in curbing the level of AEM in frontier markets. Fourth, the ability of minority investors' rights to curb AEM was mixed when examined with macro and firm-level control variables.

The remainder of this paper is organised as follows: Section 2 reviews related literature and develops this study's hypothesis. Section 3 describes the research design and methodology. Section 4 presents the empirical results. Section 5 presents the findings of additional robustness tests. Section 6 concludes with a discussion of the study's implications and recommendations for future research.

## 2. Related Literature and Hypothesis Development

### 2.1. Accruals Earnings Management

Manipulation of operating accruals is the oft favoured EM method due to its detection difficulties and the absence of direct cash flow consequences (Wang et al. 2018). Many researchers view the accrual component of income as a greater measure of current and future performance,<sup>3</sup> and as a measure of earnings quality (Ma and Ma 2017; Sloan 1996; Xie et al. 2003). The accrual component of earnings is closely related to sales growth, is less persistent than cash flow (Jones 1991; Sloan 1996), and is negatively associated with future stock prices (Pincus et al. 2007). Given the importance of accruals, researchers often decompose total accruals into normal (expected or non-discretionary) and abnormal (unexpected or discretionary) to examine its information content. Subramanyam (1996) provides evidence that abnormal accrual income has higher information content than the cash-based components.

The Jones (1991) AEM detection model has played a significant role in EM studies. Many studies employ this method (or variants thereof) to determine abnormal accruals. In examining the model's detection power via the occurrence of Type I and Type II errors, Dechow et al. (1995) concluded that the Jones model outperformed other models in detecting AEM. All models, however, are subject to significant measurement errors (Pae 2005). Chen et al. (2018) report that AEM models that rely on residuals can lead to incorrect inferences. To avoid reliance on a single method, this study applies three detection methods.

<sup>3</sup> As opposed to the cash component of income.

## 2.2. Characteristics of Frontier Markets

Morgan Stanley Capital International (MSCI) separates markets into three categories of development based on size and liquidity: Developed, Emerging, and Frontier. Differentiating frontier markets from other markets is their degree of corporate governance, regulatory environment, level of investor protection, education, and accessibility—for which they score only ‘modest’ (MSCI 2020). Underscoring the characteristics and uniqueness of frontier markets, Lang and Maffett (2011) find inconsistent legal regimes and low transparency levels to be a significant hurdle for foreign investors and cultivates an environment in which earnings are more easily managed. Chen et al. (2014) state that frontier markets require the most private capital for development and often present the most problems. Despite problems, Bley and Saad (2012) find that frontier markets possess a significantly positive relationship between returns and volatility—a relationship not explained by risk factors. Berger et al. (2011) and Guesmi and Nguyen (2011) note frontier markets’ low integration with other markets provides greater return and diversification benefits (Girard and Sinha 2008). More recently, the linkages between markets have increased over time (Baumöhl and Lyócsa 2014), causing them to experience greater contagion impacts from global turmoils (Mohti et al. 2019).

## 2.3. Institutional Setting Variables

Prior studies document that institutional settings variables<sup>4</sup> restrict EM when investor protection is more robust (La Porta et al. 2002; Leuz et al. 2003; Williams et al. 2017). Chapple et al. (2018) find that corporate governance influences EM by requiring more frequent and accurate earnings guidance. Although the AEM constraint provided by institutional setting is greater in developed markets with greater governance (Leuz et al. 2003), questions remain on the level of constraint provided in frontier markets where oversight and governance is lower. To extend earlier studies, we examine the following four institutional settings variables: (1) minority (outside) investor rights, (2) legal enforcement, (3) disclosure regulations, and (4) analysts following.

### 2.3.1. Minority Investor Rights

Strong *Minority Investor Rights* limits firm insiders’ ability to acquire private control benefits (Enomoto et al. 2015; Leuz et al. 2003). El-Helaly et al. (2018) state that minority investors’ rights are significant determinants of EM on a country level. Atwi et al. (2017) note that investor rights are a significant concern for investors in developing markets as unchecked controlling shareholders’ power can lead to the expropriation of minority investor rights. Strong minority investor rights consequently reduce incentives to engage in AEM. Researchers highlight the role of governance as a factor associated with the rights of minority investors and results in higher quality financial reporting with a lower likelihood of qualified audit reports (Pucheta-Martínez and García-Meca 2014)

Following Haidar (2009), *Minority Investor Rights* data is sourced from the World Economic Forum’s Global Competitiveness Index on the ‘Strength of Investor Protection’ index. From the above, the first hypothesis (H1) is formalised as follows:

**Hypothesis 1 (H1):** *Greater minority investor rights constrains accruals earnings management.*

### 2.3.2. Legal Enforcement

*Legal Enforcement* is often associated with a country’s judicial system’s efficacy and its enforcement of laws (Ippoliti et al. 2015). In environments with strong legal enforcement, firm audit quality is notably higher (Persakis and Iatridis 2016) and can substitute for weak rules as active and well-functioning courts provide recourse for investors abused by management (Hutchison 2002). Esty and Megginson (2003) note that in countries with weaker legal enforcement, legal risks increase, and governance’s focus shifts to deterring

<sup>4</sup> examples include: investor protection, political risks, firm and, management factors, laws, market mechanisms, and regulations.

defaults. The degree of protection that investors receive in various jurisdictions depends on the characteristics of the legal rules themselves and the quality of legal enforcement (Kothari et al. 2012; La Porta et al. 1997). Due to their weak legal and enforcement environment around shareholders' interests, emerging and frontier markets may not sufficiently protect shareholders' interests (Ahmed et al. 2018; Ma et al. 2009). In a separate legal enforcement study, La Porta et al. (2002) and Chen et al. (2020) note that countries governed by civil laws provide investors with weaker legal rights,<sup>5</sup> as civil law tends to be associated with lower financial development levels.

Following Leuz et al. (2003) and Enomoto et al. (2015), we calculate the degree of *Legal Enforcement* as the mean score across three legal variables: (1) the efficiency of the judicial system, (2) an assessment of the rule of law, and (3) the corruption index. World Bank's Worldwide Governance Indicators is the source for the first two variables; Transparency International provides the third. From the above, the second hypothesis (H2) is formalised:

**Hypothesis 2 (H2):** *Greater legal enforcement constrains accruals earnings management.*

### 2.3.3. Disclosure Requirements

Corporate disclosure pertains to information asymmetry between investors and managers (Lobo and Zhou 2001); higher disclosure quality is negatively associated with EM. (Alzoubi 2016b). Lobo and Zhou (2001) hypothesised that it was more challenging to implement EM in countries with stricter disclosure regulations. Poor disclosure and financial opacity is common among companies in emerging markets (Fan et al. 2011). While Patel et al. (2002) find that transparency and disclosure in selective emerging markets have increased over time, Crittenden and Crittenden (2014) suggest poor disclosure may be even more pervasive within frontier markets.

We draw data from the World Bank's 'Doing Business' survey, which reports an Investor Protection Index. The index measures minority shareholders' strength against a director's misuse of corporate assets for personal gain. From the above, the third hypothesis (H3) is formalised:

**Hypothesis 3 (H3):** *Greater disclosure requirements constrains accruals earnings management.*

### 2.3.4. Analysts Following

Analysts significantly influence investors' and managements' behaviour, as analysts' forecast impacts corporate share price (Graham et al. 2005; Hsiao et al. 2016). To compose forecasts, analysts regularly track corporate financial statements, interact with managers directly, and raise questions on earnings data periodically (Yu 2008). Firms that fail to perform as analysts predict often experience stock price declines (Bozanic et al. 2019; Yu 2008). Chan et al. (2014) find a negative correlation between analysts following and AEM, indicating increased analysts following reduces AEM. Financial analysts may also play a role in expanding AEM because the pressure to meet or beat analysts' forecasts may drive managers to manipulate earnings (Coën and Desfleurs 2016; Hong et al. 2014).

Due to the role analysts play in influencing management's behaviour, analysts' role in constraining AEM in frontier markets is also assessed. *Analysts Following* data is drawn from Datastream and calculated as the mean number of analysts following per firm-year in each country. From the above, the fourth hypothesis (H4) is formalised:

**Hypothesis 4 (H4):** *Greater analyst following constrains accruals earnings management.*

## 2.4. Culture Effect

There has been much scholarly interest in how national culture explains individual behaviour and the systematic differences across nations (Chui et al. 2002; Dougnik and Tsakumis 2004; Hofstede 1980; Kwok and Tadesse 2006; Zhang 2018). These studies show that culture shapes individual values and influences behaviour. Furthermore, the studies

<sup>5</sup> relative to those governed by common law.

reveal that when the perceived risk of negative repercussions is low, systematic exploitation of existing legal voids may spur illegal or immoral behaviours.

Khanna (2014) argues against the uniform application of management practices across geographies, markets, and cultures, as conditions<sup>6</sup> differ enormously from place to place—particularly in heterogeneous frontier markets. Lessons garnered in one market do not necessarily transfer to other markets (Kutz and Bamford-Wade 2014); therefore, localisation or contextualised intelligence is required before lessons can be applied to unique settings (Arnold and Quelch 1998; Wiprächtiger et al. 2019). Consequently, cultural differences cannot be ignored when examining investors' protection across countries (Stulz and Williamson 2003). Bao and Bao (2004) suggest that culture might contribute to the variation in earnings smoothing across countries. Motivated by the literature, this study investigates how the cultural variable of societal trust shapes how management prepares and reports financial information.

#### 2.4.1. Societal Trust

In frontier markets where financial statement quality is questionable (Alfraih 2016), trust serves to connect information in an unbiased manner informally. Countries possessing relatively high trust levels tend to possess relatively low levels of corruption (Lin and Wu 2014). Guan et al. (2020) find a stronger relationship between firm-level commitment to credible disclosure and earnings forecasts in low-trust countries, suggesting that country-level societal trust relates to the effectiveness of firm-level credibility. Investors in high trust countries view these voluntary disclosures as more credible information. Insufficient societal trust may exacerbate moral hazards because of low social costs (Ho et al. 2020).

Following Papanastasopoulos and Tsiritakis (2015), data is obtained from the World Values Survey and based on the theory underpinning AEM and culture. Trust scores obtained are re-scaled from 0–10 in line with institutional variables. From the literature, the fifth hypothesis (H5) is introduced:

**Hypothesis 5 (H5):** *Greater societal trust constrains accruals earnings management.*

Table 1 provides descriptive statistics of institutional setting variables and the cultural variable of societal trust for each country in the study.

### 3. Research Design and Hypothesis Development

#### 3.1. Sample and Data Selection

This study's firm-level data is taken from Datastream for the years 2000 to 2017.<sup>7</sup> Publicly listed (and delisted) firms were included to avoid survivorship bias. Financial institutions and utilities are excluded due to their unique regulatory environments. Countries experiencing hyperinflation were also removed.<sup>8</sup> Eligible firms for the analysis must have at least three consecutive years of income statement and balance sheet data. As displayed in Table 2, the final sample consists of 22 frontier countries, 2509 firms, and 30,969 observations. The study uses an unbalanced data set due to differences in capital market development, country size, and firm entrances or exits. Vietnam has the most firm-year observations (3530), while Lebanon has the least (94). During the study period, firm-year observation increased annually, except for 2017, due to limited data availability. The industry segments in the study, Manufacturing, and Food products, were the most numerous (8551 and 6296 observations, respectively). Retail was the smallest segment in the study, with 302 firm-year observations.

<sup>6</sup> institutional character, physical geography, market dynamics, infrastructure, and educational norms.

<sup>7</sup> Data was taken in USD for all years and countries.

<sup>8</sup> Serbia, a frontier market country, was excluded due to periods of hyperinflation.

**Table 2.** Composition of Sample by Calendar Year, by Country, and by Industry.

Sample by Calendar Year			Sample by Country of Listing				Sample by Industry		
Year	n	%	Country	n	Observations	%	Industry	Observations	%
2000	332	1.07	Argentina	85	1348	4.35	Chemical Products	3176	10.26
2001	570	1.84	Bahrain	30	459	1.48	Communications	1773	5.73
2002	759	2.45	Bangladesh	96	704	2.27	Durable goods	1237	3.99
2003	1116	3.60	Bulgaria	255	3116	10.06	Electric, gas and sanitary services	385	1.25
2004	1421	4.59	Croatia	90	1185	3.83	Electronic Equipment	468	1.51
2005	1605	5.18	Estonia	15	214	0.69	Entertainment Services	605	1.95
2006	1739	5.62	Jordan	177	2305	7.44	Food Products	6236	20.00
2007	1847	5.96	Kazakhstan	57	566	1.83	Health	942	3.04
2008	1941	6.27	Kenya	41	630	2.03	Manufacturing	8551	27.61
2009	2017	6.51	Kuwait	165	2299	7.42	Oil & Gas	2237	7.22
2010	2084	6.73	Lebanon	6	94	0.30	Paper and paper products	3359	10.85
2011	2166	6.99	Lithuania	19	247	0.80	Retail	302	0.98
2012	2274	7.34	Mauritius	73	728	2.35	Scientific instruments	739	2.39
2013	2339	7.55	Morocco	67	961	3.10	Transportation	959	3.10
2014	2367	7.64	Nigeria	147	1481	4.78			
2015	2362	7.63	Oman	108	1634	5.28			
2016	2377	7.68	Pakistan	221	2910	9.40			
2017	1653	5.34	Romania	148	1803	5.82			
			Slovenia	38	501	1.62			
			Sri Lanka	258	3462	11.18			
			Tunisia	68	792	2.56			
			Vietnam	345	3530	11.40			
Total	30,969	100	Total	2509	30,969	100		30,969	100

Hayn (1995) was the first to evaluate earnings distribution as an assessment of EM evidence. Similarly, in Figure 1, we include a display of the distribution of mean net income scaled by total assets for each country in the study. The results show that the distribution of earnings near or below zero and, thus, left-skewed. Burgstahler and Dichev (1997) interpret a discontinuity at zero in the cross-sectional earnings distribution as evidence of misreported earnings. In examining the earnings distribution after the passage of the Sarbanes-Oxley Act of 2002 (SOX), Gilliam et al. (2015) suggest that the lack of zero-earnings after SOX does not necessarily mean that earnings manipulation does not exist. The distribution displayed is consistent with organisations managing their taxable income by shifting income out of their taxable activities.

### 3.2. Accrual Earnings Management Detection Methods

As stated, to avoid reliance on a single AEM detection method, we apply three. The first measure follows Leuz et al. (2003). The second and third methods are adaptations of Yoon et al. (2006) and Kothari et al. (2005)'s methods. An outline of each method follows.

#### 3.2.1. The Leuz Model Described

Leuz et al. (2003)'s AEM detection method comprises of three separate measures (AEM1, AEM2, and AEM3), which combine to form this study's first detection method. The three measures combined form a single composite measure of an average of a firm's scaled rank score per country per year by N, as per Lemma et al. (2019).<sup>9</sup> The individual AEM values are calculated as per Equations (1), (3), and (4). The composite score is denoted as  $AEM_L$ .

<sup>9</sup> scaling the score neutralises the effect of country size on the aggregate measure of AEM.

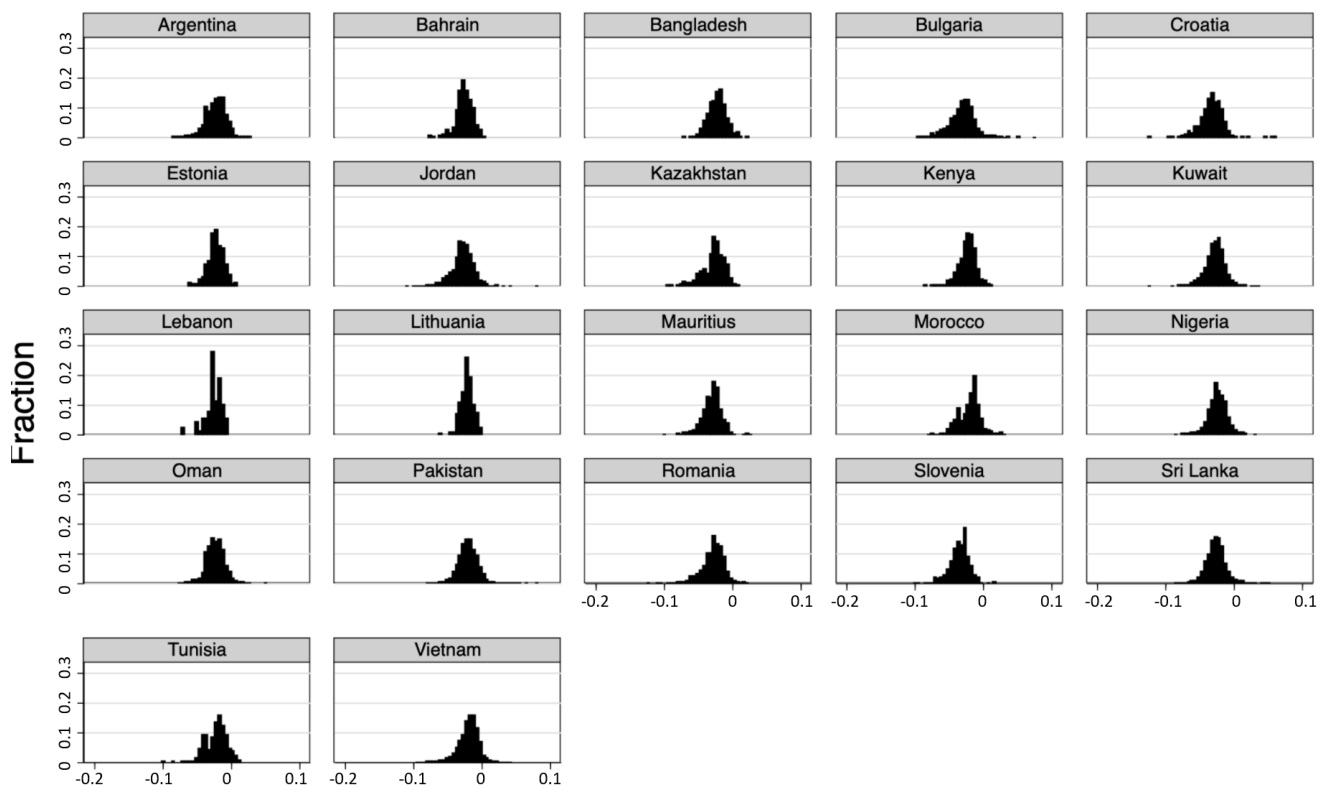


Figure 1. Distribution of Net Income scaled by Assets by Country.

$AEM1$  is the first measure of the composite score and is a measure of income smoothing. Firms engaged in income smoothing exhibit a lower standard deviation of earnings than a standard deviation of cash flow. A higher  $AEM1$  value indicates a lower degree of EM.  $AEM1$  is outlined as per Equation (1).

$$AEM1 = \frac{\sigma(OperInc)}{\sigma(CFO)} \quad (1)$$

where  $AEM1$  is the ratio of the standard deviations of Operating income (OperInc) to cash flow from operations (CFO). Lagged total assets scale both values.

$AEM2$  measures the extent to which firms conceal shocks to their operating performances using accruals and is calculated as the correlation between change in accruals and change in CFO. Greater negative correlation between inputs indicates greater EM. The accrual input is calculated as per Equation (2), while Equation (3) outlines  $AEM2$ .

$$Accruals (ACC) = (\Delta CA_{it} - \Delta Cash_{it}) - (\Delta CL_{it} - \Delta STD_{it} - \Delta TP_{it}) - Dep_{it} \quad (2)$$

$$AEM2 = \rho(\Delta ACC, \Delta CFO) \quad (3)$$

where  $ACC$  is accruals,  $CA$  is total current assets,  $Cash$  is cash and cash equivalents,  $CL$  is total current liabilities,  $STD$  is the debt in the current portion of liabilities,  $TP$  is income tax payable,  $Dep$  is depreciation and amortisation. and  $\Delta$  is the change operator. Following Lemma et al. (2019); Leuz et al. (2003),  $AEM2$  is the Spearman correlation between  $ACC$  and  $CFO$ . Lagged total assets scale both values. The dependent and independent variables are briefly described above; details are in Appendix A Table A1.

$AEM3$  measures the extent to which firms mask their economic performance using accruals. This measure is calculated as the ratio of the absolute accruals to absolute CFO. Larger  $AEM3$  values signify greater levels of EM.  $AEM3$  is shown via Equation (4).

$$AEM3 = \frac{|ACC|}{|CFO|} \quad (4)$$

where  $|ACC|$  and  $|CFO|$  are the absolute values of accruals and cash flow from operations.



### 3.2.2. The Yoon Model Described

Our second detection model follows Yoon et al. (2006) and is denoted as  $AEM_Y$ .  $AEM_Y$  has been shown to outperform other residual dependant models in developing markets (Alareeni and Aljuaidi 2014; Islam et al. 2011; Yoon et al. 2006). This model estimates total accruals (TA) as per Equation (5).  $AEM_Y$  is calculated by subtracting the fitted accrual values from total accruals, as expressed by Equation (6).

$$\frac{TA_i}{REV_{it}} = \beta_1 \left( \frac{\Delta REV_{it} - \Delta REC_{it}}{REV_{it}} \right) + \beta_2 \left( \frac{\Delta EXP_{it} - \Delta PAY_{it}}{REV_{it}} \right) + \beta_3 \left( \frac{DEP_{it} + PEN_{it}}{REV_{it}} \right) + \epsilon \quad (5)$$

$$AEM_{it} \equiv \epsilon_{it} = \frac{TA_{it}}{REV_{it-1}} - \left[ NA_{it} \equiv \hat{\beta}_1 \left( \frac{\Delta REV_{it} - \Delta REC_{it}}{REV_{it}} \right) + \hat{\beta}_2 \left( \frac{\Delta EXP_{it} - \Delta PAY_{it}}{REV_{it}} \right) + \hat{\beta}_3 \left( \frac{DEP_{it} + PEN_{it}}{REV_{it}} \right) \right] \quad (6)$$

where  $REV$ ,  $REC$ ,  $EXP$ ,  $PAY$ , and  $PEN$  are net sales revenue, trade receivables, expenses,<sup>10</sup> trade payable, and retirement benefits expense, respectively. Much like Sloan (1996) and Lee and Lee (2015), this study ranks accruals per country per year by N.

### 3.2.3. The Kothari Model Described

The third AEM detection method follows Kothari et al. (2005)'s performance-matched approach and is denoted  $AEM_K$ . This method is both well-specified and powerful at estimating discretionary accruals (Cai et al. 2020), as it considers a company's past and present economic performance. To begin, each year and every two-digit industry is estimated as per Equation (7), then the coefficients from Equation (8) are used to calculate the non-discretionary accruals (NDA). NDA is subtracted from total accruals (TA) to arrive at discretionary accruals.

$$\frac{TA_{it}}{A_{it-1}} = \beta_1 \left[ \frac{1}{A_{it-1}} \right] + \beta_2 \left[ \frac{(\Delta REV_{it} - \Delta AR_{it})}{A_{it-1}} \right] + \beta_3 \left[ \frac{PPE_{it}}{A_{it-1}} \right] + \beta_4 ROA_{it-1} + \epsilon_{it} \quad (7)$$

$$AEM_{it} \equiv \epsilon_{it} = \frac{TA_{it}}{REV_{it-1}} - \left[ NDA_{i,t} = \hat{\beta}_0 + \hat{\beta}_1 \left( \frac{1}{A_{i,t-1}} \right) + \hat{\beta}_2 (\Delta REV_{i,t}) + \hat{\beta}_3 (PPE_{i,t}) + \hat{\beta}_4 (ROA_{i,t}) \right] \quad (8)$$

where  $A$  is total assets (used to proxy for firm size),  $AR$  is accounts receivable,  $PPE$  is property, plant, and equipment, and  $ROA$  is the return on assets. Subscripts  $i$  and  $t$  refer to firm  $i$  and year  $t$ , respectively. Additionally, this study ranks accruals per country per year by N, to arrive at  $AEM_K$ .

### 3.3. Regression Models

To test the hypotheses, firm-level data is used to analyse the link between AEM, institutional setting variables, and societal trust. Equations (12)–(14) outline the regressions models used to examine AEM relationship to the study's variables.

$$AEM_L, AEM_Y, AEM_K = \beta_0 + \beta_1 (\text{Analyst Following}) + \epsilon \quad (9)$$

$$AEM_L, AEM_Y, AEM_K = \beta_0 + \beta_1 (\text{Disclosure Index}) + \epsilon \quad (10)$$

$$AEM_L, AEM_Y, AEM_K = \beta_0 + \beta_1 (\text{Legal Enforcement}) + \epsilon \quad (11)$$

$$AEM_L, AEM_Y, AEM_K = \beta_0 + \beta_1 (\text{Minority Investor Rights}) + \epsilon \quad (12)$$

$$AEM_L, AEM_Y, AEM_K = \beta_0 + \beta_1 (\text{Societal Trust}) + \epsilon \quad (13)$$

$$AEM_L, AEM_Y, AEM_K = \beta_0 + \beta_1 (\text{Analyst Following}) + \beta_2 (\text{Disclosure Index}) + \beta_3 (\text{Legal Enforcement}) + \beta_4 (\text{Minority Investor Rights}) + \beta_5 (\text{Societal Trust}) + \epsilon \quad (14)$$

Equations (12) and (13) are single regression models, whereas Equation (14) is a multiple regression model inclusive of variables from the earlier regressions.

<sup>10</sup> The sum of cost of goods sold and selling and general administrative expenses, excluding non-cash expenses.

## 4. Empirical Results

### 4.1. Descriptive Statistics

Table 3 presents the summary statistics of key variables. Mean scores for AEM<sub>L</sub>, AEM<sub>Y</sub>, and AEM<sub>K</sub>, variables are fairly similar, yet their standard deviation exhibits greater dispersion at 0.17671, 0.2890, and 0.2891, respectively. Mean scores for the four investor protection variables of *Analysts Following*, *Disclosure Index*, *Legal Enforcement*, and *Minority Investor Rights* are 5.17, 6.45, 4.69, and 5.70, respectively. The stability of the four anterior variables (as noted by their low standard deviation compared to the mean) is a common property in survey-based data (Callen et al. 2011). The cultural variable of *Societal Trust* has a mean score of 3.4, with a standard deviation of 2.03.

Table 3. Descriptive Statistics of Key Variables.

Variable	Mean	Std. Dev	Q1	Median	Q3	Min	Max
AEM_L	0.5101	0.1671	0.3948	0.5086	0.6250	0.0230	1.0000
AEM_Y	0.5100	0.2890	0.2600	0.5088	0.7600	0.0030	1.0000
AEM_K	0.5101	0.2891	0.2602	0.5091	0.7610	0.0030	1.0000
Analyst Following	5.1785	8.4176	1.3665	1.9720	4.9270	0.2930	47.7660
Disclosure Requirements	6.4587	2.0042	5.0000	6.0000	8.0000	3.0000	10.0000
Legal Enforcement	4.6966	0.9561	4.0660	4.7710	5.4060	2.8830	7.8720
Minority Investors Rights	5.7057	1.0496	4.7000	5.8000	6.7000	3.7000	7.5000
Societal Trust	3.4013	2.0364	2.0000	3.9000	4.8000	0.0000	8.1000
Big-4 Auditor Following	0.5166	0.2769	0.2800	0.4718	0.6320	0.0050	1.0000
GDP Per Captia (log)	113.9067	100.2616	46.7000	74.8000	154.5000	6.6000	464.3000
GDP Growth (%)	4.2564	3.4025	2.5900	4.7400	6.4200	−14.8100	17.3200
Trade Openness	91.2884	42.1611	55.9500	88.8600	120.5100	20.7200	200.3100

Table 4 presents the correlation table of key metrics. Consistent with expectations, we find *Disclosure Index*, *Legal environment*, *Analysts Following*, and *Minority Investor Rights* negatively correlated with all AEM detection proxies. The level of *Societal Trust* shows a positive relationship with the AEM proxies. To further understand the relationship between the AEM proxies and the institutional settings variables, these variables are regressed in the following section.

Table 4. Correlation of key variables in the study.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) AEM_L	1							
(2) AEM_Y	0.485 ***	1						
(3) AEM_K	0.476 ***	0.758 ***	1					
(4) Analysts Following	−0.0198 *	−0.0339 ***	−0.0359 ***	1				
(5) Disclosure Index	−0.268 ***	−0.251 ***	−0.249 ***	0.0920 ***	1			
(6) Legal Enforcement	−0.160 ***	−0.166 ***	−0.168 ***	0.203 ***	0.0843 ***	1		
(7) Minority Investor Rights	−0.0483 ***	−0.0832 ***	−0.0863 ***	0.245 ***	0.310 ***	−0.0907 ***	1	
(8) Societal Trust	0.160 ***	0.138 ***	0.137 ***	0.209 ***	0.137 ***	−0.308 ***	0.390 ***	1

Significance is denoted  $p \leq 0.05$  level for \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

### 4.2. Regression Results

We hypothesise that the effects of AEM are moderated by investor protection variables and greater societal trust. Negative coefficients are expected when variables provide AEM constraint. Panels A, B, and C of Table 5 display the results of the AEM<sub>L</sub>, AEM<sub>Y</sub>, and AEM<sub>K</sub> models, respectively, via Pooled OLS regression. Coefficient signs for the individual regressions tests are mostly analogous to the multiple regression test; thus, only the latter results are described.

**Table 5.** Pooled OLS Regression Results of AEM, Institutional Settings, and Trust.

<b>Panel A-AEM_L</b>						
Constant	57.4878 *** (38.4411)	3.6038 (0.8789)	98.1515 *** (16.0532)	79.3471 *** (12.0074)	44.3968 *** (17.4969)	108.4712 *** (11.7814)
Analyst Following	−0.308 ** (−2.152)					−0.0753 (−0.5474)
Disclosure Index		−7.7137 *** (−12.978)				9.7555 ** (−16.0529)
Legal Enforcement			−9.3783 ** (−7.2708)			−11.1189 *** (−8.6184)
Minority Investor Rights				−4.3545 *** (−3.8141)		−13.4551 *** (−11.364)
Societal Trust					0.2945 *** (4.5797)	0.3196 *** (4.8845)
Number of observations	17,136	17,136	17,136	17,136	17,136	17,136
R2 (or adjusted R2)	0.0026	0.084	0.028	0.0079	0.0113	0.1825
<b>Panel B-AEM_Y</b>						
Constant	57.2011 *** (46.8657)	5.8752 (1.7765)	96.3802 *** (19.3719)	89.1008 *** (16.5167)	47.198 *** (22.7636)	118.3319 *** (16.3301)
Analyst Following	−0.3786 *** (−3.1976)					−0.0617 (−0.5676)
Disclosure Index		−7.3599 *** (−15.2126)				−9.7382 *** (−20.416)
Legal Enforcement			−9.1133 *** (−8.6823)			−11.0163 *** (−10.9826)
Minority Investor Rights				−6.1755 *** (−6.612)		−14.8405 *** (−15.9982)
Societal Trust					0.198 *** (3.7763)	0.248 *** (4.9479)
Number of observations	17,136	17,136	17,136	17,136	17,136	17,136
R2 (or adjusted R2)	0.0053	0.1046	0.0367	0.0216	0.0071	0.2526
<b>Panel C-AEM_K</b>						
Constant	57.3058 *** (44.64)	4.3185 (1.2397)	96.1639 *** (18.3453)	89.6948 *** (15.8017)	47.0118 *** (21.5649)	118.2039 *** (15.3851)
Analyst Following	−0.3605 *** (−2.8946)					−0.0825 (−0.7157)
Disclosure Index		−7.6184 *** (−14.9504)				−10.0412 *** (−19.8546)
Legal Enforcement			−9.0377 *** (−8.1723)			−11.0182 *** (−10.3601)
Minority Investor Rights				−6.2564 *** (−6.3662)		−15.2311 *** (−15.4859)
Societal Trust					0.2072 *** (3.76)	0.2615 *** (4.9212)
Number of observations	17,136	17,136	17,136	17,136	17,136	17,136
R2 (or adjusted R2)	0.0044	0.1014	0.0326	0.02	0.0071	0.2398

The use of ordinary least squares (OLS) regression is supported by the Hausman test for fixed vs. random effect, which finds a chi-square of 0.25 and a  $p$ -value of 0.9694. Breusch-Pagan Lagrangian multiplier test for random effects vs. OLS finds a chi-square of 0.00 and a  $p$ -value of 1.0. These indicate that OLS is efficient.  $t$ -statics are reported in parenthesis. Significance is identified at two levels: \*\*  $p < 0.01$ , and \*\*\*  $p < 0.001$ .

As predicted, the coefficients for *Disclosure Index*, *Legal Enforcement*, and *Minority Investor Rights* are negative and support the hypothesis that AEM is less prevalent when these variables increase. *Analysts Following* failed to show significance when tested collectively, suggesting it does not constrain AEM. Similar to the results from Table 4, the *Societal Trust* coefficient is positive, indicating it is not instrumental in constraining AEM activity. The statistical significance of the coefficients in the regression outputs with the AEM detection proxies point to the variables' appropriateness for further analysis.

## 5. Robustness Checks

To cross-check initial findings, Equation (14) is reexamined using both quantile regression and two-stage least squares (2SLS). In the event of heterogeneity, then quantile regression will provide a more comprehensive view of the relationship between variables

through the effects of independent variables across quantiles of the response distribution (Ma and Pohlman 2008). Ma and Pohlman (2008) further suggest that if the distribution is not Gaussian but fat-tailed, quantile regression estimates will be more robust and efficient than the conditional mean estimates. The use of 2SLS follows Leuz et al. (2003). The authors note that institutional factors are often complementary, and thus, to control for the potential impact of other factors and disentanglement from investor protection's direct effect is difficult. The application of 2SLS estimation addresses this concern.<sup>11</sup> Table 6 presents the additional estimations and the original Pooled OLS regression for ease of comparison.

**Table 6.** Pooled OLS, Quantile Regression, & 2SLS Regression Results.

Variable	Pooled OLS Model			Quantile Regression Model			2SLS Regression Model		
	AEM_L	AEM_Y	AEM_K	AEM_L	AEM_Y	AEM_K	AEM_L	AEM_Y	AEM_K
Constant	108.4712 *** (11.781)	118.3319 *** (16.3301)	118.2039 *** (15.3851)	31.945 *** (8.32)	34.383 *** (9.92)	34.671 *** (10.00)	89.296 *** (27.37)	100.592 *** (32.67)	101.043 *** (32.79)
Analyst Following	−0.0753 (−0.5474)	−0.0617 (−.5676)	−0.0825 (−0.7157)	−0.071 (−1.11)	−0.124 * (−2.47)	−0.123 * (−2.46)	−0.035 (−0.64)	−0.007 (−0.17)	−0.006 (−0.14)
Disclosure Index	−9.7555 *** (−16.0529)	−9.7382 *** (−20.416)	−10.0412 *** (−19.8546)	−7.252 *** (−29.23)	−6.935 *** (−30.80)	−6.934 *** (−30.78)	−8.804 *** (−41.76)	−8.830 *** (−44.15)	−8.834 *** (−44.13)
Legal Enforcement	−11.1189 *** (−8.6184)	−11.0163 *** (−10.9826)	−11.0182 *** (−10.3601)	−4.191 *** (−7.65)	−4.189 *** (−8.43)	−4.239 *** (−8.53)	−8.999 *** (−19.32)	−9.920 *** (−22.49)	−9.953 *** (−22.54)
Minority Rights	−13.4551 *** (−11.364)	−14.8405 *** (−15.9982)	−15.2311 *** (−15.4859)	−4.880 *** (−9.87)	−4.848 *** (−10.76)	−4.842 *** (−10.74)	−11.339 *** (−26.99)	−12.254 *** (−30.62)	−12.310 *** (−30.73)
Societal Trust	0.3196 *** (4.8845)	0.248 *** (4.9479)	0.2615 *** (4.9212)	0.286 *** (9.93)	0.237 *** (9.20)	0.236 *** (9.15)	0.425 *** (17.37)	0.369 *** (16.15)	0.370 *** (16.17)
N	17,136	17,136	17,136	15,674	17,336	17,336	15,674	17,336	17,336
adj R2/PseudoR2	0.1825	0.2526	0.2398	0.055	0.052	0.052	0.145	0.147	0.148

Note: t-statistics reported in parenthesis. Significance is identified at two levels: \*  $p < 0.01$ , and \*\*\*  $p < 0.001$ .

2SLS regression results are largely consistent with Pooled OLS regression. *Analysts Following*, *Disclosure Index*, *Legal Enforcement*, and *Minority Investor Rights* continue to show an inverse relationship with all three AEM detection methods. A slight difference is noted in the Quantile regression method, where *Analyst Following* only shows significance under the Yoon and Kothari detection methods. While not conclusive, preliminary results suggest that analysts influence accounting earnings and inhibit the practice of AEM. Previous studies suggest that EM practices increase during optimistic moments, yet firms monitored by analysts are more prone to restrain this behaviour. Our findings aligns with Miranda et al. (2018); Yu (2008), who also find greater analysts following to constrain EM activity yet is at odds with Enomoto et al. (2015)'s mixed market study where a similarly significant relationship was not found.

The positive relationship between *Societal Trust* and the three AEM detection proxies is contrary to expectations, and Chen et al. (2019) and Dong et al. (2018)'s China-based studies. Of note, however, is that greater media coverage was instrumental in curbing corporate misconduct in their studies. Furthermore, Cui (2017) states that social trust's effect depends on the institution level, which weakens with institutional strength.

Researchers suggest that western guidelines and recommendations have dramatically transformed developing country's visage via trade and institutional development (Bhattacharyya 2012; Reddy et al. 2013). Cornett et al. (2008) suggest that if institutional factors impact earnings and performance, then reported performance might be partially cosmetic, requiring the control for performance measures on the influence of managerial choice. Accordingly, this study's second robustness check reexamines Equation (14) with the addition of firm and country-level control variables. Results of this second robustness test are presented in Table 7. Kim and Yi (2006) state that the use of cross-country data may raise concerns over potential endogeneity. Country-wide, macroeconomic factors jointly influence the extent of AEM and institutional factors. Following Saona and Muro (2018),

<sup>11</sup> Dubin-Wu-Hausman endogeneity test rejects that null of the instrument variables being exogenous at an alpha of 0.10.

this study posits that AEM cannot be adequately analysed unless its internal and external determinants are considered.

Enomoto et al. (2018) suggest that managers' opportunistic behaviour is lower under more developed financial systems because higher quality accounting information is necessary. Conversely, Saona and Muro (2018) find that managers have less need for EM in less developed and less competitive markets. As financial market development is higher in countries with higher GDP per capita (Deltuvaitė and Sinevičienė (2014)), positively associated with economic growth (Levine et al. 2000) and growth significantly impacted by trade liberalisation (Hye et al. 2016), these are controlled for via GDP per capita, GDP growth, and Trade Openness. Also included is a dichotomous variable if the country has adopted International Financial Reporting Standards (IFRS) for it has been associated with increased earnings quality and decreased AEM (Capkun et al. 2016; Martens et al. 2020; Wijayana and Gray 2019).

Firm-level variables also exhibit linkages in developing markets where owner-agency problems increase (Hoskisson et al. 2013). Chung and Zhang (2011) suggest that institutional shareholders can better analyse firm performance and detect financial misreporting, much like Big-4 auditors are more apt to spot internal control weaknesses (Kanagaretnam et al. 2016). This study, therefore, includes a dichotomous variable if the firm employs a Big-4 auditor. Capital structure and company growth opportunities are also items controlled for via firm leverage and book-to-market ratios. When firms maintain relatively low debt levels, managers engage in active opportunistic manipulation of financial statements, whereas relatively high debt constrains EM (Saona and Muro 2018). This study also controls for firm size as size may affect corporate governance characteristics and financial performance (Shawtari et al. 2016). Time and industry dummies variables are also included to control for possible time and industry effects.

The second robustness test highlights the relationship between *Analysts Following* and the Yoon and Kothari AEM proxies. *Analyst Following* now exhibits significance across all three regression methods, suggesting earlier results may have suffered from omitted variable bias due to negative cofounders or extreme outliers.<sup>12</sup> The inverse relationship between AEM and *Disclosure index* and *Legal Enforcement* remains unchanged; however, *Minority Investors Rights* fails to show a relationship under quantile estimation. The level of *Societal Trust* also continues to remain positive and significant.

Country-level control variables of GDP per capita, GDP growth show a significantly negative relationship with AEM activity, suggesting that managers in wealthier frontier countries and firms from countries with greater growth engage in less AEM activity. In contrast, Dimitras et al. (2015) note that AEM activity is not connected to GDP changes, Chen et al. (2020) find that firms operating in areas where GDP is lower than adjacent areas, engage in more EM.

Firm-level control variables show firm size is inversely related to AEM activity; smaller firms engage in more AEM activity than larger firms. This is consistent with Siregar and Utama (2008) and Dimitras et al. (2015), yet is at odds with Barton and Simko (2002) and Ali et al. (2015), who find that information asymmetry in large firms motivates earnings manipulation. Our Big-4 auditor finding is consistent with findings from Krishnan (2003) and Alzoubi (2016a), who suggest large auditors have greater capital, technology, human resources, and experiences from which higher audit quality flows and EM is constrained. The leverage coefficient was generally positive but not always significant, thus inconclusive. Leverage findings align with Anagnostopoulou and Tsekrekos (2017), who find leverage had no significant effect on income-increasing AEM.

<sup>12</sup> Multicollinearity was ruled out via a variance inflation factor (VIF) test showing factors less than 2.2 for all AEM proxies.

Table 7. OLS, Quantile Regression, &amp; 2SLS Regression with control variables.

Variables	Pooled OLS Model			Quantile Regression Model			2SLS Regression Model		
	AEM_L	AEM_Y	AEM_K	AEM_L	AEM_Y	AEM_K	AEM_L	AEM_Y	AEM_K
Constant	47.700 *	72.748 ***	75.733 ***	113.379 ***	93.995 ***	87.331 ***	92.724 ***	65.091 ***	60.618 ***
Analyst Following	−0.106	−0.227 ***	−0.254 ***	0.008	−0.291 ***	−0.313 ***	−0.633 ***	−0.475 ***	−0.473 ***
Disclosure Index	(−1.80)	(−4.35)	(−4.88)	(0.09)	(−3.49)	(−3.95)	(−7.91)	(−6.65)	(−6.56)
Legal Enforcement	−6.767 ***	−6.925 ***	−7.273 ***	−6.109 ***	−6.855 ***	−7.109 ***	−2.284 ***	−2.466 ***	−2.664 ***
Minority Rights	(−32.58)	(−34.81)	(−36.68)	(−18.70)	(−21.61)	(−23.53)	(−6.64)	(−7.54)	(−8.08)
Societal Trust	−4.827 ***	−5.649 ***	−5.544 ***	−4.354 **	−6.292 ***	−6.205 ***	−49.509 ***	−53.212 ***	−54.743 ***
Big-4	(−4.70)	(−5.94)	(−5.85)	(−2.69)	(−4.15)	(−4.30)	(−15.56)	(−17.64)	(−18.01)
GDP per capita (ln)	−1.052 *	−1.787 ***	−1.518 **	−0.795	−0.178	−0.108	−16.110 ***	−18.108 ***	−18.387 ***
Trade openness	(−2.09)	(−3.64)	(−3.10)	(−1.00)	(−0.23)	(−0.15)	(−16.00)	(−17.68)	(−17.82)
GDP Growth (%)	0.179 ***	0.145 ***	0.131 ***	0.182 ***	0.161 ***	0.182 ***	0.973 ***	0.999 ***	1.014 ***
Book to Market	(5.92)	(5.06)	(4.60)	(3.83)	(3.53)	(4.19)	(16.45)	(17.37)	(17.51)
IFRS	−38.503 ***	−28.546 ***	−25.823 ***	−36.558 ***	−31.194 ***	−30.668 ***	14.187 ***	27.387 ***	32.004 ***
Leverage	(−15.39)	(−12.15)	(−11.03)	(−9.29)	(−8.33)	(−8.59)	(3.45)	(6.86)	(7.95)
Size	−9.409 ***	−8.794 ***	−8.986 ***	6.085 ***	5.384 ***	6.048 ***	−10.664 ***	−12.535 ***	−13.077 ***
Industry Dummy	(−12.42)	(−12.49)	(−12.81)	(5.11)	(4.80)	(5.66)	(−6.72)	(−8.38)	(−8.67)
Year Dummy	0.155 ***	0.088 ***	0.060 *	0.091 *	0.046	0.025	1.001 ***	0.990 ***	0.994 ***
Adjusted R-squared	(6.05)	(3.62)	(2.48)	(2.27)	(1.20)	(0.67)	(16.56)	(17.06)	(16.99)
	−0.797 ***	−0.718 ***	−0.771 ***	−0.634 **	−0.752 ***	−0.703 **	−1.497 ***	−1.693 ***	−1.780 ***
	(−5.22)	(−5.02)	(−5.41)	(−2.64)	(−3.30)	(−3.24)	(−8.11)	(−9.40)	(−9.80)
	−0.006	−0.011	−0.013	0.005	−0.002	−0.039 **	−0.012	−0.019	−0.021
	(−0.58)	(−1.15)	(−1.34)	(0.32)	(−0.11)	(−2.60)	(−1.09)	(−1.62)	(−1.78)
	0.008	0.012 *	0.016 **	0.005	0.013	0.014	0.001	0.020 ***	0.025 ***
	(1.72)	(2.38)	(3.24)	(0.72)	(1.67)	(1.89)	(0.24)	(3.45)	(4.19)
	−2.781 ***	−1.444 ***	−0.699 **	−3.521 ***	−1.902 ***	−0.780 *	−2.273 ***	−0.763 **	−0.005
	(−12.52)	(−6.59)	(−3.20)	(−10.08)	(−5.44)	(−2.34)	(−8.79)	(−2.92)	(−0.02)
	yes	yes	yes	yes	yes	yes	yes	yes	yes
	yes	yes	yes	yes	yes	yes	yes	yes	yes
Observations	7193	7944	7944	7193	7944	7944	7193	7944	7944
Adjusted R-squared	0.338	0.306	0.300	0.174	0.155	0.158	0.110	0.030	0.001

note: t-statistics reported in parenthesis. Significance is identified at three levels: \*  $p < 0.05$ , \*\*  $p < 0.01$ , and \*\*\*  $p < 0.001$ .

## 6. Conclusions

Using a large sample of 2509 firms across 22 frontier market countries from 2000 to 2017, we developed hypotheses relating to institutional settings on AEM. Applying AEM detection models from [Leuz et al. \(2003\)](#), [Yoon et al. \(2006\)](#), and [Kothari et al. \(2005\)](#) on several regression models, our results extend previous research ([Leuz et al. 2003](#); [Shen and Chih 2005](#)) by providing evidence that increased disclosure and greater legal enforcement are negatively associated with AEM. We also find that as the number of analysts following a firm increases, AEM decreases when examined with the addition of country and firm-level control variables. Novel to this study and contrary to the expected hypotheses is the inability of societal trust to influence AEM activity. Also notable was that larger firms were found to engage in less AEM than smaller firms. This latter finding is consistent with [Kothari et al. \(2005\)](#) and [Scholtens and Kang \(2013\)](#) and suggests stronger internal control systems and reputation concerns are extant in larger firms. Additionally, consistent with [Watts and Zimmerman \(1986\)](#) and [Hoang and Phung \(2019\)](#), leverage was positively related to AEM, suggesting managers may manage earnings to avoid debt covenant violations. This study's findings also avows [De Jong et al. \(2014\)](#)'s work by providing evidence that firms with superior value showed no greater propensity to manage earnings than those with lower values, advancing the argument that AEM is value-destroying.

The implications of the findings are as follows. First, social norm theory, which suggests that individuals are driven to match what they perceive to be the social norm ([Festinger 1954](#)), failed to play a role in reducing AEM, as shown by the insignificance

of the societal trust variable as employed. Inference from societal trust's failure suggests informal institutions are less influential as control monitors in markets of weak governance and where repercussions for EM behaviour are few. An alternative measure of social trust that controls for the impact of economic development, market development, education, and transportation may, however, produce different results. A second implication from the findings is that formal control monitors of management behaviour is more influential than informal institutions. This finding is shown by analysts' role in providing oversight and discipline on management, and management's tendency to abridge AEM activity when the number of analysts following a firm increases. Third, increased economic growth brings about financial development and limits AEM, suggesting that the need to hide poor economic performance is greater in times of low economic growth. Conversely, there is no strong incentive to exercise discretion on earnings in times of stable economic growth. Fifth, while the scope of our study is limited to frontier markets, the results herein, complemented by the growing internationalisation of capital markets, show that distortions in AEM practices merit further segregated market research.

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## Appendix A

**Table A1.** Country and Firm Variable Description.

Variable	Description
<i>Firm-level</i>	
Assets	Long-term assets and items of both current and non-current assets)
Accounts Receivables	Gross receivables less allowance for doubtful accounts
Revenue	Revenues from the sale of merchandise goods, manufactured products and services,
Property Plant & Equipment	Property/Plant/Equipment, Total items assumed to be used for operations
Return on Assets	Measure of management's effectiveness in using assets to generate earnings. Generally obtained using Ordinary Profit , divided by Total Assets
Trade Receivables	Trade Receivables, receivables from the sale of merchandise or services provided to affiliates or other related companies
Expense	Selling/General/Administrative Expense, the operating costs of running a business other than the costs of readying products or services for sale
Trade payables	Trade Payable, payables for the receipt of merchandise or services provided to affiliates or other related companies
Pension	Pension, all incomes and expenses associated with the company's pension plan.
Current assets	Total Current Assets, the sum of Cash and Short Term Investment, Total Receivables, Net Total Inventory, Prepaid Expenses, and Other Current Assets,
Cash	Cash and cash equivalent
Current Liabilities	Total Current Liabilities, liabilities incurred from operating activities and expected to be due within one year.
Short term debt	Short-Term Debt, short-term bank borrowings. It also represents notes payable that are issued to suppliers and other short-term interest-bearing liabilities
Taxes payable	Taxes Payable, represents changes in taxes payable during the period.
Depreciation	Depreciation and amortisation
Accruals	Accruals, measured as the change in current assets minus the change in current liabilities minus depreciation expense as per <a href="#">Dechow et al. (1995)</a>
Cash flow from operations	Cash From Operating Activities
<i>Firm Control Variable</i>	
Analyst Following	Calculated as the natural log plus one of the number of analysts following a stock. Source: Thomson Reuters Datastream
Book to market ratio	Calculated as the quotient of the book value of equity by the market value of equity
Leverage	Calculated as the quotient of total assets by total liabilities
Size	Calculated as the natural logarithm of the market value of equity
Year Dummies	Year Dummy variables for each year in the study
Industry Dummies	Industry dummy variables for each industry in the study

Table A1. Cont.

Variable	Description
<i>Country-Level</i>	
Legal Enforcement	Source: WDI's Governance Indicators and Transparency International
Disclosure Requirements	Source: WDI's Worldwide Extent of Business Disclosure Index.
Minority Investors Rights	Source: World Economic Forum Global Corruption Index on the Strength of Investor Protection
Societal Trust	Source: World Values Survey
<i>Country Control Variables</i>	
Big-4	The percentage of firms that employ a Big4 auditing firm
IFRS adoption	A dichotomous variable of 1 if the country has adopted IFRS, 0 otherwise. Source: IFRS.org
GDP per Capita	Log of GDP per capita (constant 2005 US\$). Source: WDI.
GDP growth rate	Rate of change in real GDP: Source
Trade openness	Trade openness 100 (Exports + imports/GDP. Source: WDI

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