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Article

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GENERAL & APPLIED ECONOMICS | RESEARCH ARTICLE

Does macroeconomic misery index matter in the micro firm-level earnings Management – performance nexus? Evidence from dynamic Panel threshold regression

Emmanuel Mensah^{1*}, Joseph Kwadwo Tuffour² and Mamdouh Abdulaziz Saleh Al-Faryan³

Abstract: Earnings management (EM) and its association with firm performance has been a subject of research interest for decades. This study re-examines the EM—firm performance nexus in a novel way using a nonlinear framework and introducing macro-economic misery index (MI) as a possible threshold variable in the analysis. 52 sampled non-financial listed firms are drawn from nine emerging sub-Saharan African countries spanning a period of 2007–2019. The study employs the dynamic panel threshold estimation approach in analyzing its models. By using MI as a threshold variable, the results show new findings of the performance effect of EM contingent on a uniquely identified MI threshold of 22.51. The study finds that the performance-enhancing effect of EM is realized only when a firm's MI is below the identified threshold. Above this threshold, the effect of EM on performance is negligible or sometimes adverse. The estimated nonlinear effect of EM on firm performance and the threshold of MI can be benchmarks for Africa and other emerging countries. The findings suggest important implications for national governments in adopting policies that help to minimise the economic misery of the citizenry, as they would generally inure to the greater good of businesses and their varying stakeholders.

Subjects: Economics; Finance; Business, Management and Accounting

Keywords: earnings management and firm performance; macroeconomic misery index; national governance quality; Sub-Saharan Africa

JEL Classification: A12; C24; C33; C38; G30; G34; M41

1. Introduction

Earnings management (EM) has been a core topic in financial accounting and reporting owing to its acclaimed role in accounting scandals and corporate failures over the last few decades. The performance effects of Initial Public Offers, mergers and acquisitions, etc., have often been explained in light of EM or aggressive use of accruals (Pereira & Sousa, 2017; Piosik & Genge, 2020). Doubtless, the theme of EM and its attendant effects continue to excite academic debates in top accounting and finance journals (Chhillar & Lellapalli, 2022; Feng & Huang, 2020; Tran et al., 2020). The motives of EM lie on a continuum from practices which are informative and acceptable

within the bounds of accounting norms to opportunistic and even fraudulent financial reporting intended to deceive stakeholders (Giroux, 2004; Nasir et al., 2018). Despite the contributions of extant literature, there are gaps which motivate and justify the present study. First, prior studies have made progress by looking at the effects of EM on firm performance (Boachie & Mensah, 2022), growth (Lee et al., 2016), cost of capital (Kim et al., 2020), investment efficiency (Jiang & Xin, 2022), financial distress (Luu Thu, 2023) as well as the mechanisms through which the negative consequences of EM practices could be mitigated such as instituting sound internal controls (Gong et al., 2021; Komal et al., 2021) and effective corporate governance systems (Boachie & Mensah, 2022; Feng & Huang, 2020; Proimos, 2005). These studies have occupied the attention of researchers for a considerable length of time without a focus on including aggregate economic conditions in the analysis.

Second, EM has been observed to have a relationship with firm performance, with the literature generally ascribing opportunistic motives where EM affects performance adversely (Shoaib & Siddiqui, 2022), or efficiency motives where EM affects performance favourably (Boachie & Mensah, 2022; Elkalla, 2017; Rezaei & Roshani, 2012). The known interdependence of macroeconomic variables with micro-level outcomes (Cheong et al., 2021) has not been included in these studies. Thus, the intermediation of these relationships with general economic well-being could turn the results around and produce useful policy implications.

Third, recent stream of research has noted the roles that national governance institutions, macro-economic factors and even national religion as well as overseas culture play in the earnings management cum performance nexus (Abdou et al., 2021; Hao et al., 2021; Xiong et al., 2022). Oskoueï and Sureshjani (2021) found that managerial ability and economic and financial crises have negative effects on real EM, with the negative effect of managerial ability on real EM increasing in conditions of economic crisis. Elkalla (2017) also tested and provided empirical evidence that there exist a significantly positive association between gross domestic product (GDP) as well as Kaufmann et al. (2011) national governance variables and firm discretionary accruals within the MENA region. The study however found no evidence of an association between financial development and firm discretionary accruals. The evidences show that, most of the studies that consider the effect of macro-economic variables in EM investigations generally identify isolated fundamental macro-economic indices such as growth rate of GDP, unemployment rate, and consumer price index (CPI) in relation to EM (Elkalla, 2017). The present study however intimates that, an aggregation of economic variables, which reflects the general economic health, well-being or state of misery or happiness of a nation would produce a more comprehensive and accurate picture of the role that external macro-economic factors collectively play in relation to EM practices and its attendant effects on firm performance.

Thus, the current study considers the macro-economic misery index (MI) by Barro (1999) and Hanke (2017) as an aggregate economic variable capable of presenting a comprehensive picture and explanation of changes regarding some micro-corporate behaviour such as EM. The study's macro-economic MI variable is reflective of the level of economic misery or state of economic happiness experienced within a nation. We hypothesize that, misery index does matter in relation to the EM—performance nexus, in that, the higher the level of misery in an economy, the more opportunistic the managerial behaviour in relation to EM becomes, whereas the lower level of economic misery experienced in a country, the more efficient the managerial behaviour in relation to EM will become.

Moreover, not only do most prior EM investigations ignore the role of macro-economic and national governance variables in their analysis, but also, many of these studies have examined the EM—performance relationship from linear frameworks which sometimes make them miss certain indirect channels through which EM is translated to performance. To fill this gap as well, the current study attempts to re-examine the EM—performance nexus in a novel way by using

a nonlinear threshold regression framework and macro-economic MI as the threshold variable in the analysis.

The contributions of this study to the debate can be deciphered in the following ways. Firstly, it demonstrates how MI may alter the EM—performance relationship from a non-linear threshold framework which hitherto has not been considered by prior research. Second, the study's usage of macro-economic MI to capture macro-economic influences on EM and firm performance instead of separate economic indicators permits a more comprehensively nuanced analysis of diverse economic factors examined in a unified framework. Thirdly, the findings of the study extend the traditional agency theory by demonstrating the performance effect of EM being contingent on macro-economic MI.

Given the above, the objective of the study is in two-fold, examining the relationship between EM and firm performance contingent on the level of MI, and ascertaining an MI threshold over which the performance-effects of EM changes from efficient to opportunistic. The rest of the paper is organised as follows. A brief description of the theoretical and empirical arguments on how economic MI may alter the EM and firm performance relationship which safely leads to the formulation of the study's hypotheses is carried out in Section 2. This is followed by a description of the data coupled with a discussion of the methods used in analysing the hypotheses of the study in Section 3. Section 4 thereafter, presents the findings of the study. Finally, Section 5 concludes the study with attendant limitations and proffered recommendations.

2. Literature review

2.1. Theoretical review

Theoretically, the performance effect of EM (be it opportunistic or efficient) may be explained using the agency and signaling theories (Boachie & Mensah, 2022; Lin et al., 2016; Sun, 2021). Periods of economic growth are also periods where investors and analysts expect firms to perform well. Firms desirous to meet the expectations of analysts and investors often engage in greater extent of accruals-based and real activities-based EM in order to avoid lagging behind the economy's growth rate, and also to signal to other industry players that the firm is maturing(ed) and responsive with economic upturns. Investors in their quest to profit from the economic upturn may dispense with more investible funds to the firm thus allowing the firm to exploit some real available growth opportunities and enhance its performance.

The contrary would hold that, in an economic downturn, the general expectation for firms is a possible decline in performance. Hence, firms are less inclined to utilise aggressive income-increasing accruals or real activities-based EM. Such a situation may even allow performance to drop further by deferring current period income as a measure of saving for a future "rainy day" (a technique which is sometimes called a "big bath") while also flowing with the downward economic tide. On account of the role that macroeconomic MI (otherwise known as "economic health") plays with respect to managerial EM behaviour, the agency theory ordinarily predicts an inverse relationship between MI and EM, whereas a positive association is predicted between MI and firm performance. In addition, the causal relationship predicted by agency theory implies that the causality should run from EM to firm performance.

2.2. Empirical review and hypothesis development

Empirically, evidences exist regarding the association between the degree of economic growth of a country and the extent of earnings management in its firms, albeit mixed (Elkalla, 2017; Wang et al., 2015). Wang et al. (2015) argues that earnings management, whether accruals-based or real activities-based, can be a consequence of changing economic conditions such as periods of growth or decline. Further, Filip and Raffournier (2014) argued that a firm's propensity to manipulate earnings, as well as the sign of these manipulations, is impacted by dramatic changes in the economic environment of the firm. According to Hoque et al. (2012), during periods of economic

Table 1. Sample selection

Country of sampled firms	Number of non-financial firms whose annual reports data were sourced from the Library of African Markets, AfricanFinancials and Machameratios databases for the study period	Number of firms with missing annual reports data over the study period	Number of firms annual reports data retained in the study sample
Ghana	5	0	5
Kenya	11	5	6
Malawi	2	0	2
Mauritius	5	3	2
Nigeria	40	27	13
Namibia	2	0	2
South Africa	35	18	17
Tanzania	3	0	3
Zambia	4	2	2
Total	107	55	52

Source: Authors' compilation of annual reports from Library of African Markets, African Financials and Machameratios websites.

growth, firms are expected to expand their operations. However, during periods of decline, firms are expected to contract their operations. Elkalla (2017) argued that, during periods of economic growth, investors and analysts are likely to expect firms to perform well. Hence, if the economy is growing then firms are likely to experience pressure to meet the expectations of analysts and investors, therefore greater economic growth may lead firms to engage in a greater extent of accruals-based and real activity-based earnings management in order to avoid lagging behind the economy's growth rate and thereby meet the expectations of analysts and investors. He finds a positive relationship between GDP and accruals-based EM.

Conversely, periods of economic decline may lead firms to engage in a higher extent of income-increasing accruals-based earnings management to offset losses. Cohen et al. (2008) argue that poor economic conditions cause higher levels of accruals-based earnings management. They investigate US firms and find a negative relationship between GDP growth and discretionary accruals. Similarly, Gopalan and Jayaraman (2012) conduct a study across 22 countries and find a negative association between GDP growth and the extent of accrual-based earnings management. The argument therefore holds that, periods of economic growth are likely to result in a boost in revenue-generating activities for firms and thus these firms are likely to require a lower extent of earnings management.

As has become evident, changes in macroeconomic factors seem to have an influence on micro-level firm EM practices and consequently its performance. However, the divergencies in previous evidences call for further research. Besides, the previous studies reviewed tend to utilise linear frameworks in their investigation, under serious assumptions. From the foregoing, the current study thus seizes the opportunity to introduce a novel approach in examining EM and firm performance from a nonlinear threshold framework. The current study intimates that, its economic misery index (MI) variable will be capable of altering the EM—performance relationship and shed some light on evidences from past investigations. We would consider MI to matter if as a threshold variable, it is capable of altering the performance effect of EM as well as the study's other

Table 2. Measurement of variables used in the study's models

Variable	Scale	Source	Expected Sign
Dependent Variable: ROA Return on Assets (Proxy for Firm-Performance/ Profitability)	This is measured by $ROA_{it} = EBIT_{it}/TA_{it}$ Where: $EBIT_{it}$ = Profit before interest and tax for firm i in year t TA_{it} = Total Assets for firm i in year t	Annual reports of firms	
Independent Variable: DA Discretionary Accruals (Proxy for Earnings Management)	This is measured using the Pae (2005) Discretionary Accrual's Model; $NA_t = 1/A_{t-1} + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1}$ Where: A_{t-1} = total assets in the year t-1 ΔRev_t = the change in revenues from the preceding year PPE_t = the gross value of property, plant and equipment in the year t CFO_t = operating cashflows in the year t CFO_{t-1} = operating cashflows in the year t-1 $1, 2, 3, 4, 5$ = firm-specific parameters Estimates of the firm specific parameters are done via the model: $TA_t/A_{t-1} = \alpha_1 + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1} + \epsilon_t$ Where: Total accruals (TA) is defined as income before extraordinary items and discontinued operations minus operating cash flows, that is, $TA_t = NOPIt - CFO_t$ ϵ_t is discretionary accruals (DA) in the year t.	Annual reports of firms	\pm
Threshold Variable: MI Macro-economic Misery Index	The MI is used as a measure of the economic health of a country; be it one of misery or happiness. It is measured as the sum of inflation rate, interest rate and unemployment rate less GDP growth rate (Barro, 1999; Hanke, 2017).	World Development Indicators (WDI) from the World Bank.	
Control Variables: NGQ National Governance Quality	NGQ is measured as an index constructed via rotated principal components of Government Effectiveness, Regulatory Quality, and Rule of Law. All components of this index are developed by Kaufmann et al. (2011). The indicators are displayed in standard normal units ranging approximately from -2.5 to +2.5, of which a larger value indicates better national governance quality (Kaufmann et al., 2011). The study's index construction follows that of Nguyen et al. (2015).	World Governance Indicators (WGI)	\pm

(Continued)

Table 2. (Continued)

Variable	Scale	Source	Expected Sign
CGQ Corporate Governance Quality	This is measured as an index for firm i in year t , on the basis of firm-level disclosures regarding corporate governance mechanisms. The CGQ index for each firm is computed via means of a rotated principal component analysis (Larcker et al., 2007).	SEC CG Codes for respective countries, Annual reports of firms	\pm
LEV Leverage	This is measured by the total liabilities to total assets. It is represented in logarithm form	Annual reports of firms	-
SIZE Firm size	This is measured the logarithm of a firm's total assets	Annual reports of firms	+
GROP Growth Opportunities	This is measured by calculating the price-to-book ratio for firm i in year t .	Annual reports of firms	+
AGE Age of Firm	The is measured as the age of a firm from the date of incorporation to the end of the sample period. It is represented in logarithm form.	Annual reports of firms	+
IFRS IFRS Adoption	This is a dummy variable measured as 1 since a firm's adoption of IFRS and 0 otherwise.	Annual reports of firms	\pm
AT Asset Tangibility	This is measured as the ratio of tangible assets to total assets of firm i in year t .	Annual reports of firms	+
$\epsilon_{i,t}$ Error term	The error term		

Source: Authors' Compilation, 2022.

Table 3. Descriptive statistics of the study's variables

	(1)	(2)	(3)	(4)	(5)
VARIABLES	N	Mean	SD	Min	Max
SIZE	676	5.294	0.724	3.705	7.183
GROP	676	3.724	5.620	−0.0900	62.34
IFRS	676	0.846	0.361	0	1
AT	676	0.364	0.213	0.00140	0.995
DA	676	0.0159	0.250	−2.268	4.131
MI	676	24.91	9.530	0.671	40.12
CGQ	676	−0.209	0.917	−1.544	2.334
NGQ	676	0.0267	1.001	−1.294	2.039
AGE	676	3.802	0.745	0	5.136
LEV	676	3.814	0.685	−1.643	4.553
ROA	676	8.029	15.63	−122.1	295.7
TOB_Q	676	1.882	1.897	0.115	17.87
ROE	676	17.82	20.24	−29	67.03

Note: This table reports descriptive statistics based on aggregate samples of which the sizes may be various because of missing values. The variables are as defined in Table 2. For interpretation purposes, the descriptive statistics are calculated on the basis of levels with the exception of *IFRS Adoption* which was computed from a dummy scale, *CGQ* and *NGQ* which were calculated as indices from normalized rotated principal component analysis, and *Firm Size, Age and Leverage* were calculated on the basis of logarithmic form. The *ROA*, being the dependent variable in our model, was not transformed but allowed to retain its original form for 1) ease of interpretations, 2) because its histogram distribution appears normal.

explanatory variables across a clearly identified threshold. Again, the study hypothesizes a non-monotonic relationship between EM and performance contingent on macroeconomic MI, such that, an increasing macroeconomic MI should be associated with opportunistic EM practices whereas decreasing macroeconomic MI should be associated with efficient EM practices. Finally, in tandem with Elkalla's (2017) argument, the current study, from its preliminary linear estimations expects its macroeconomic MI to linearly have a positive relationship with firm performance.

The following null hypotheses are therefore tested:

H₁: *The relationship between EM and firm performance is not contingent on the level of MI.*

H₂: *There exists no MI threshold over which the performance-effects of EM changes from efficient to opportunistic.*

H₃: *The level of MI in a country is not positively related with its firms' performance.*

3. Data and method

A sample of 52 out of 107 companies' annual reports sourced from various databases was used for the study's investigation. These listed companies whose annual reports were gathered covering a period of 2007 to 2019 came from nine sub-Saharan African countries. Table 1 gives details about how the study arrived at its final sample.

The choice of the sample and the study period (2007–2019) was guided by the availability of firms' annual reports and corresponding financial data. Financial companies and banks were excluded from the study's sample because of the fundamental differences in their financial

Table 4. Pair-wise correlation coefficients among the study's variables

Variables	(1)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) ROA	1.000										
(2) LROA	0.331*** (0.000)	1.000									
(3) DA	0.585*** (0.000)	0.115*** (0.004)	1.000								
(4) CGQ	0.084** (0.028)	0.076* (0.059)	0.002 (0.951)	1.000							
(5) SIZE	-0.029 (0.458)	0.000 (0.996)	-0.008 (0.842)	-0.148*** (0.000)	1.000						
(6) GROF	0.304*** (0.000)	0.371*** (0.000)	-0.061 (0.116)	0.126*** (0.001)	0.027 (0.486)	1.000					
(7) AGE	0.007 (0.851)	0.018 (0.658)	0.007 (0.849)	-0.004 (0.923)	0.290*** (0.000)	0.043 (0.260)	1.000				
(8) LEV	-0.033 (0.391)	-0.031 (0.433)	-0.027 (0.480)	0.063* (0.101)	-0.025 (0.515)	0.116*** (0.002)	0.174*** (0.000)	1.000			
(9) IFRS	-0.065* (0.090)	-0.064* (0.110)	0.023 (0.551)	-0.060 (0.117)	0.126*** (0.001)	-0.073* (0.058)	0.053 (0.167)	1.000			
(10) AT	0.142*** (0.000)	0.145*** (0.000)	-0.033 (0.390)	0.197*** (0.000)	0.055 (0.154)	0.165*** (0.000)	0.160*** (0.000)	-0.129*** (0.001)	1.000		
(11) NGQ	-0.033 (0.385)	-0.034 (0.391)	0.064* (0.097)	-0.357*** (0.000)	0.286*** (0.000)	-0.097** (0.012)	-0.131*** (0.001)	0.446*** (0.000)	-0.237*** (0.000)	1.000	
(12) MI	-0.047 (0.224)	-0.090** (0.025)	-0.002 (0.949)	-0.384*** (0.000)	0.317*** (0.000)	-0.111*** (0.004)	-0.182*** (0.000)	0.316*** (0.000)	-0.299*** (0.000)	0.340*** (0.000)	1.000

Note: This table presents pair-wise correlation coefficients and VIF coefficients which are based on a balanced sample of 676 firm-year observations. The variables are as defined in Table 2. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***).

Table 5. Linear regression results of the EM – performance nexus using OLS and FE Estimators from a Static approach with no endogeneity considerations

	(1)	(2)
VARIABLES	Pooled OLS with DKSE Model	Fixed Effect with DKSE Model
DA	37.29*** (10.34)	34.01*** (9.895)
CGQ	1.076 (0.681)	1.618 (1.872)
SIZE	–1.551 (1.187)	–8.958 (6.824)
GROP	0.884*** (0.200)	0.728* (0.382)
AGE	0.987 (0.746)	3.561 (3.929)
LEV	–1.568*** (0.414)	–2.662 (2.523)
IFRS	–0.212 (0.903)	0.606 (0.798)
AT	8.780*** (1.977)	0.0350 (2.260)
NGQ	0.119 (0.390)	–1.595 (1.615)
MI	0.132 (0.0815)	0.0662 (0.103)
Constant	952.7*** (154.9)	0 (0)
Country fixed-effects	Yes	Yes
Firm fixed-effects	Yes	Yes
Year fixed-effects	Yes	Yes
Observations	676	676
R-squared	0.490	
Number of groups	52	52
F-statistic	18,288.97***	1,870.96***

Note: This table reports empirical results from estimating equation (1) through the use of OLS and FE with Driscoll-Kraay Standard Errors Estimators. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2.

accounting relative to non-financial firms, which makes computing discretionary accruals for such entities problematic (Dittmar & Mahrt-Smith, 2007; Schultz et al., 2010).

Company annual reports and financial statement data were drawn from the Library of African Markets, AfricanFinancials, MachameRatios databases, all of which have been publishing annual reports for companies in Africa since 2006. To ensure data reliability and minimise missing values, the study consulted the respective Stock Exchanges of the nine selected countries as well as the websites of the sampled firms. Firm-specific data covering the study's variables were collected from the annual reports whereas data on national governance quality (NGQ) and economic health proxied by the misery index (MI) (Barro, 1999; Hanke, 2017) were sourced from the World Bank's World Development Indicators (WDI) and Worldwide Governance Indicators (WGI) (Kaufmann et al., 2011).

Table 6. Linear regression results of the EM – performance nexus using OLS and FE Estimators from a Static approach with consideration for endogeneity

	(1)	(2)
VARIABLES	Pooled OLS with DKSE Model	Fixed Effect with DKSE Model
DA	39.92*** (11.11)	37.38*** (10.36)
CGQ	1.327* (0.652)	3.105 (2.182)
SIZE	–1.509 (1.136)	–9.988 (7.127)
GROP	0.761*** (0.194)	0.315 (0.329)
AGE	1.431 (0.805)	11.83*** (1.823)
L.LEV	–0.855** (0.326)	4.335 (3.484)
IFRS	–0.914 (0.971)	0.180 (0.926)
AT	10.20*** (2.048)	–3.667 (3.697)
NGQ	0.118 (0.385)	–0.499 (0.796)
MI	0.138 (0.0865)	0.0287 (0.116)
Constant	898.9*** (164.1)	0 (0)
Country fixed-effects	Yes	Yes
Firm fixed-effects	Yes	Yes
Year fixed-effects	Yes	Yes
Observations	624	624
R-squared	0.507	
Number of groups	52	52
F-statistic	143.88***	24,724.40***

Note: This table reports empirical results from estimating equation (1) through the use of OLS and FE with Driscoll-Kraay Standard Errors Estimators. The lag of leverage is used in the model estimation to mitigate endogeneity of the leverage variable. Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2.

3.1. Description of study variables

3.1.1. Dependent variable: firm financial performance

Firm financial performance refers to how well a firm has generated returns or value for its finance providers and other stakeholders. Firm performance is usually measured in several ways for different organisations including ROA, ROE and Tobin's Q. This study utilises ROA as its measure of financial performance in similitude with other studies (Lin & Fu, 2017; Sow & Tozo, 2019; Zhou et al., 2017), and the Tobin's Q for robustness checks. ROA measures the competitiveness of the company and the efficiency of management. ROA was computed as follows:

$$ROA_{i,t} = EBIT_{i,t} / A_{i,t}$$

Table 7. Linear regression results of the EM – performance nexus using OLS, SGMM, FE and DGMM Estimators from a dynamic approach with no further endogeneity considerations

	(1)	(2)	(3)	(4)
VARIABLES	Pooled OLS with DKSE Model	System GMM Model	Fixed Effect with DKSE Model	Difference GMM Model
L.ROA	0.173 (0.111)	0.148 (0.115)	0.0202 (0.0751)	0.0639 (0.0864)
DA	39.17*** (11.37)	36.01 (24.59)	37.34*** (10.25)	34.78 (27.55)
CGQ	1.363* (0.646)	1.926* (0.995)	2.759 (2.117)	3.551* (2.088)
SIZE	-1.548 (1.101)	-3.101* (1.777)	-9.226 (7.683)	-16.07** (7.066)
GROP	0.597** (0.203)	0.603** (0.288)	0.390 (0.366)	0.259 (0.351)
AGE	1.547 (0.876)	2.233* (1.285)	13.64*** (1.820)	13.10** (6.409)
LEV	-1.552*** (0.474)	-1.923 (1.516)	-2.250 (2.984)	-1.763 (3.820)
IFRS	-1.270 (1.184)	-3.382*** (1.306)	0.109 (0.831)	0.588 (1.174)
AT	9.591*** (2.257)	9.640** (4.826)	-0.797 (3.534)	1.082 (4.672)
NGQ	0.131 (0.424)	0.957 (0.816)	-0.347 (0.840)	-0.882 (2.476)
MI	0.153 (0.0868)	0.151 (0.105)	0.0503 (0.104)	-0.000741 (0.0810)
Constant	670.3*** (207.5)		0 (0)	
Country fixed-effects	Yes	Yes	Yes	No
Firm fixed-effects	Yes	Yes	Yes	No
Year fixed-effects	Yes	Yes	Yes	Yes
Observations	624	624	624	572
R-squared	0.533			
Number of groups	52	52	52	52
F-statistic	343.08***		1,408.81***	
Wald chi-square statistic		502.55***		319.90***

Note: This table reports empirical results from estimating equation (2) through the use of OLS and FE with Driscoll-Kraay Standard Errors Estimators from a dynamic approach. As typical Dynamic Panel Estimators, the SGMM and DGMM were also utilised in estimating equation (2). Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2.

where $EBIT_{it}$ refers to profit before interest and tax for firm (i) in year (t), and A_{it} also refers to total assets for firm (i) in year (t).

Firm performance is a key variable having an association with EM. Gunawan et al. (2015), has argued that, managers will undertake EM to show the best performance of their company. Gopalan and Jayaraman's (2012) and as well as Elkalla (2017) have also demonstrated the association

Table 8. Linear regression results of the EM – performance nexus using OLS, SGMM, FE and DGMM Estimators from a dynamic approach with some further endogeneity considerations

	(1)	(2)	(3)	(4)
VARIABLES	Pooled OLS with DKSE Model	System GMM Model	Fixed Effect with DKSE Model	Difference GMM Model
L.ROA	0.177 (0.112)	0.148 (0.115)	0.0328 (0.0787)	0.0639 (0.0864)
DA	39.30*** (11.42)	36.01 (24.59)	37.45*** (10.38)	34.78 (27.55)
CGQ	1.268* (0.628)	1.926* (0.995)	3.137 (2.206)	3.551* (2.088)
SIZE	-1.410 (1.042)	-3.101* (1.777)	-10.01 (7.113)	-16.07** (7.066)
GROP	0.578** (0.205)	0.603** (0.288)	0.286 (0.360)	0.259 (0.351)
AGE	1.338 (0.824)	2.233* (1.285)	11.70*** (1.826)	13.10** (6.409)
L.LEV	-0.626 (0.454)		4.490 (3.741)	
IFRS	-1.127 (1.140)	-3.382*** (1.306)	0.133 (0.918)	0.588 (1.174)
AT	9.453*** (2.257)	9.640** (4.826)	-3.373 (3.633)	1.082 (4.672)
NGQ	0.0355 (0.377)	0.957 (0.816)	-0.561 (0.813)	-0.882 (2.476)
MI	0.145 (0.0851)	0.151 (0.105)	0.0306 (0.113)	-0.000741 (0.0810)
LEV		-1.923 (1.516)		-1.763 (3.820)
Constant	665.3*** (210.8)		0 (0)	
<i>Country fixed-effects</i>	Yes	Yes	Yes	No
<i>Firm fixed-effects</i>	Yes	Yes	Yes	No
<i>Year fixed-effects</i>	Yes	Yes	Yes	Yes
Observations	624	624	624	572
R-squared	0.530			
Number of groups	52	52	52	52
F-statistic	13,331.31***		883.01***	
Wald chi-square statistic		502.55***		319.90***

Note: This table reports empirical results from estimating equation (2) through the use of OLS and FE with Driscoll-Kraay Standard Errors Estimators from a dynamic approach with the lag of leverage used in the estimation to mitigate endogeneity. As typical Dynamic Panel Estimators, the SGMM and DGMM were also utilised in estimating equation (2). Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2.

Table 9. Test of the dynamic threshold effects of MI on the EM – firm performance relationship with no consideration for possible endogeneity of explanatory variables

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
L.ROA_b	0.0171*** (0.00385)	0.0171*** (0.00385)	0.00194 (0.00173)	
NGQ_b	2.240 (2.189)	2.240 (2.189)	2.044*** (0.560)	4.730*** (0.618)
CGQ_b	0.897 (2.131)	0.897 (2.131)	-8.168*** (0.965)	-3.674*** (0.947)
DA_b	62.31*** (3.513)	62.31*** (3.513)	43.46*** (0.524)	33.86*** (1.007)
SIZE_b	-27.91*** (1.317)	-27.91*** (1.317)	-11.47*** (0.852)	-2.732*** (0.979)
GROP_b	0.180** (0.0762)	0.180** (0.0762)	0.218*** (0.0381)	0.852*** (0.00950)
AGE_b	-12.17*** (4.632)	-12.17*** (4.632)	-2.441 (1.689)	-0.626 (1.184)
IFRS_b	4.096*** (1.355)	4.096*** (1.355)	-5.400*** (0.535)	-0.158 (0.353)
AT_b	32.52*** (3.211)	32.52*** (3.211)	5.808*** (1.422)	-4.452*** (1.524)
LEV_b	-3.160 (2.215)	-3.160 (2.215)	-2.243*** (0.656)	-3.453*** (0.484)
Cons_d	9.273 (23.83)	9.273 (23.83)		
L.ROA_d	0.0422 (0.0439)	0.0422 (0.0439)		
NGQ_d	7.393* (3.858)	7.393* (3.858)		
CGQ_d	-4.047 (2.583)	-4.047 (2.583)		
DA_d	-65.25*** (5.333)	-65.25*** (5.333)		
SIZE_d	-0.0781 (4.126)	-0.0781 (4.126)		
GROP_d	0.0617 (0.209)	0.0617 (0.209)		
AGE_d	10.03*** (3.143)	10.03*** (3.143)		
IFRS_d	-10.89*** (1.759)	-10.89*** (1.759)		
AT_d	-19.22*** (5.652)	-19.22*** (5.652)		
LEV_d	-5.948**	-5.948**		

(Continued)

Table 9. (Continued)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
	(2.440)	(2.440)		
R	22.51***	22.51***	21.76***	36.75***
	(1.471)	(1.471)	(0.712)	(0.156)
kink_slope			−0.238***	2.693***
			(0.0251)	(0.444)
Observations	52	52	52	52
Number of moment conditions	176	120	176	120
Bootstrap <i>p</i> -value for linearity test	0.000	0.000	0.000	0.000

Note: This table reports empirical results from estimating a dynamic GMM panel threshold regression model (i.e., equation 3) with ROA as the dependent variable, MI as the threshold variable, and all the other explanatory variables as region variables. In addition, a kink restriction is introduced in the model for further investigation of a possible kink in the relationship (i.e., equation 4). Again, a static restriction is imposed in each of these models to observe changes. These regression estimations were executed via the community contributed Stata command “xthenreg.” Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2. The parameter estimates with designation (_b) are below the threshold whereas the parameter estimates with designation (_d) are above the threshold.

between macroeconomic variables and firm discretionary accruals and consequently, their performance. These earlier studies give impetus to the current study to consider the connections between these variables using a novel methodology.

3.1.2. Independent variable: earnings management

Earnings management has severally been defined and measured using aggregate accruals models (Dechow et al., 1995; Jones, 1991; Pae, 2005), specific accruals models (Beneish, 1997; McNichols, 2000), earnings distribution models (Bissessur, 2008; McNichols, 2000), discretionary revenues models (Stubben, 2010), and earnings informativeness model (Easton & Harris, 1991). Other studies also utilise real activities models (Kuo et al., 2014; Roychowdhury, 2006; Zamri et al., 2013) and individual case studies on the phenomenon of EM often analysed qualitatively (Jorissen & Otley, 2010). A survey of the literature on EM reveals that, the most commonly used approach to test for EM is the total or aggregate accruals approach (Callao et al., 2014a, b) because it facilitates computation and comparison among wider samples. The current study therefore adopts the aggregate accruals model; specifically the Pae (2005) model of EM because it allows for large sample and cross-country investigations of the phenomenon of EM.

The Pae model for total accruals in the event year is specified as follows:

$$TA_t = \alpha_1 1/A_{t-1} + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1} + \varepsilon_t$$

Whereas the on-discretionary accruals component is specified by the following model:

$$NDA_t = \alpha_1 1/A_{t-1} + \alpha_2 \Delta Rev_t/A_{t-1} + \alpha_3 PPE_t/A_{t-1} + \alpha_4 CFO_t/A_{t-1} + \alpha_5 CFO_{t-1}/A_{t-1}$$

Where; TA_t is total accruals calculated as net operating income (NOPI) minus cashflows from operations for each year t (i.e. $TA_t = NOPI_t - CFO_t$); NDA_t is the non-discretionary accruals for each year t ; $CFO_{t(t-1)}$ is cashflows from operations for each year t , or $(t-1)$; ΔRev_t is the changes in the revenue (from credit sales) for each year t ; PPE_t is the Property, Plant and Equipment for

Table 10. Test of the dynamic threshold effects of MI on the EM – firm performance relationship with the lag of leverage directly used in the model to mitigate endogeneity

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
LROA_b	0.0171*** (0.00575)		−0.0143*** (0.00132)	
NGQ_b	−3.684*** (1.364)	1.041 (1.491)	1.964*** (0.459)	2.852*** (0.807)
CGQ_b	6.985** (3.461)	−7.743*** (2.625)	−0.952 (1.319)	5.267*** (0.624)
DA_b	60.52*** (1.938)	65.30*** (3.765)	44.65*** (0.882)	19.92*** (0.532)
SIZE_b	−21.25*** (2.178)	−24.33*** (2.739)	−12.72*** (1.689)	−3.611*** (0.958)
GROP_b	0.132 (0.0829)	0.118** (0.0499)	0.384*** (0.0273)	0.834*** (0.0233)
AGE_b	−26.10*** (3.204)	5.785 (5.093)	1.253 (1.289)	−6.394*** (1.151)
IFRS_b	5.066*** (1.594)	0.357 (0.944)	−4.206*** (0.449)	−1.319*** (0.394)
AT_b	16.82*** (3.255)	12.23*** (4.426)	2.574*** (0.925)	−14.22*** (1.462)
LLEV_b	9.753*** (0.838)	−4.828*** (1.040)	6.616*** (0.610)	−1.449*** (0.226)
Cons_d	−93.10*** (27.51)	−31.09 (22.56)		
LROA_d	0.192*** (0.0579)			
NGQ_d	10.67*** (2.139)	12.50*** (3.987)		
CGQ_d	−4.315** (1.736)	9.300*** (2.979)		
DA_d	−58.40*** (7.072)	−65.28*** (2.409)		
SIZE_d	10.58*** (3.571)	14.89*** (3.397)		
GROP_d	−0.399** (0.166)	−0.259*** (0.0830)		
AGE_d	11.18*** (3.526)	−11.09*** (3.885)		
IFRS_d	−7.316*** (1.685)	−5.391*** (1.735)		
AT_d	−7.932** (3.440)	−11.89* (6.700)		
LLEV_d	4.519	5.225***		

(Continued)

Table 10. (Continued)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
	(2.884)	(1.230)		
R	22.51***	22.51***	21.01***	14.64***
	(0.553)	(0.994)	(0.916)	(1.662)
kink_slope			−0.201***	−0.187***
			(0.0225)	(0.0181)
Observations	52	52	52	52
Number of moment conditions	176	120	176	120
Bootstrap <i>p</i> -value for linearity test	0.000	0.000	0.000	0.000

Note: This table reports empirical results from estimating a dynamic GMM panel threshold regression model (i.e., equation 3) with ROA as the dependent variable, MI as the threshold variable, and all the other explanatory variables as region variables. The lag of leverage is directly used in the model and its estimation to mitigate endogeneity. In addition, a kink restriction is introduced in the model for further investigation of a possible kink in the relationship (i.e., equation 4). Again, a static restriction is imposed in each of these models to observe changes. These regression estimations were executed via the community contributed Stata command “xthenreg.” Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2. The parameter estimates with designation (_b) are below the threshold whereas the parameter estimates with designation (_d) are above the threshold.

each year t ; A_{t-1} is the total assets at the end of period $(t-1)$; ε_t is the random error, which is used as the estimate for EM (i.e. discretionary accruals which is ordinarily calculated as total accruals minus non-discretionary accruals). The coefficients: $\alpha_1 \alpha_2 \alpha_3$ are estimates of firm-specific parameters $\alpha_1, \alpha_2, \alpha_3$ respectively, through OLS regression of the total accruals model.

As earlier noted, the relationship between EM and firm performance has been a tradition topic among accounting and finance academics albeit with mixed evidences (Chakroun et al., 2022; Moshi, 2016; Ngunjiri, 2017). Hence, the area is still ripe for further investigations.

3.1.3. Threshold variable: macro-economic misery index

A nation's economic health tends to move in tandem with the corporate EM practices and performance (Elkalla, 2017; Gopalan & Jayaraman, 2012). Economic health is proxied by the macroeconomic misery index (Barro, 1999; Hanke, 2017). It is computed as the sum of inflation rate, interest rate and unemployment rate less GDP. Because inflation, interest rates and unemployment impose high costs, the index was suggested as a means of providing a simple yet objective measure of “economic malaise” (Nessen, 2008). A higher level of either of these variables negatively affects national welfare. Therefore, the misery index can be considered a reverse measure of economic well-being (Nessen, 2008).

The economic misery index (MI) seems to provide a valid approximation of the influence of macroeconomic conditions on a population's well-being. It has also been measured by specific indicators such as output and unemployment (Cohen et al., 2014), consumer sentiment (Lovell & Tien, 2000), the crime rate (Tang & Lean, 2009), the poverty rate (Lechman, 2009) and even the suicide rate (Yang & Lester, 1992), among others. When the index is reversed to economic happiness (HI), it should positively correlate with performance at the firm level. Therefore, we expect an increase in the economic well-being of a nation would lead to an increase in the profitability of its firms whiles reducing their EM practices and vice versa

Table 11. Test of the dynamic threshold effects of MI on the EM – firm performance relationship with specification of endogenous variables in the model

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
L.ROA_b	0.0238*** (0.00694)		0.00488** (0.00194)	
NGQ_b	−0.828 (1.761)	2.914 (2.681)	−2.401*** (0.665)	0.415 (0.674)
CGQ_b	−2.782 (2.084)	−0.623 (3.335)	−0.416 (1.434)	−3.280*** (0.550)
DA_b	63.37*** (1.943)	65.58*** (3.499)	44.53*** (0.402)	23.85*** (0.875)
SIZE_b	−22.97*** (2.029)	−11.20*** (4.030)	−10.21*** (1.316)	−13.97*** (1.402)
GROP_b	0.380*** (0.112)	−0.0407 (0.0603)	0.329*** (0.0373)	0.771*** (0.0185)
AGE_b	−7.103 (5.201)	−15.59** (6.317)	−7.126*** (1.249)	−0.0829 (1.289)
IFRS_b	2.445 (1.668)	3.209** (1.432)	−1.017* (0.530)	−0.0105 (0.501)
AT_b	17.79*** (5.958)	11.91** (5.644)	9.864*** (1.636)	13.09*** (3.240)
LEV_b	−4.301** (1.824)	−5.589*** (1.621)	1.309** (0.569)	−3.246*** (0.715)
Cons_d	−35.50** (16.67)	−33.57* (19.54)		
L.ROA_d	0.110*** (0.0395)			
NGQ_d	11.09*** (3.252)	−4.873 (3.853)		
CGQ_d	−2.841 (1.998)	6.034** (2.781)		
DA_d	−69.89*** (2.772)	−63.29*** (2.131)		
SIZE_d	10.47*** (3.852)	−2.844 (2.773)		
GROP_d	−0.111 (0.175)	0.0367 (0.135)		
AGE_d	4.244 (3.059)	10.87** (5.248)		
IFRS_d	−8.064*** (1.510)	−9.038*** (1.714)		
AT_d	−24.81*** (5.934)	−4.657 (9.066)		
LEV_d	−1.202	2.601*		

(Continued)

Table 11. (Continued)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
	(2.533)	(1.549)		
R	22.51***	22.89***	33.00***	32.63***
	(0.929)	(1.088)	(0.474)	(1.072)
kink_slope			−0.624***	0.353***
			(0.120)	(0.0932)
Observations	52	52	52	52
Number of moment conditions	242	186	242	186
Bootstrap <i>p</i> -value for linearity test	0.000	0.000	0.000	0.000

Note: This table reports empirical results from estimating a dynamic GMM panel threshold regression model (i.e., equation 3) with ROA as the dependent variable, MI as the threshold variable, and all the other explanatory variables as region variables. The model specifies endogenous and exogenous variables. In addition, a kink restriction is introduced in the model for further investigation of a possible kink in the relationship (i.e., equation 4). Again, a static restriction is imposed in each of these models to observe changes. These regression estimations were executed via the community contributed Stata command “xthenreg.” Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2. The parameter estimates with designation (_b) are below the threshold whereas the parameter estimates with designation (_d) are above the threshold.

3.1.4. Control variables

Aside EM, other firm-specific variables which have been controlled in the study’s estimations in line with recommendations from the literature include: firm size (Zhou et al., 2017), growth opportunities (Kothari et al., 2002), leverage (Pham et al., 2015), firm age (Lin & Fu, 2017), asset tangibility (Asiedu & Mensah, 2023; Boachie & Mensah, 2022) and IFRS adoption (Key & Kim, 2020). Corporate governance quality (CGQ) and national governance quality (NGQ) are additional variables that have also been controlled for in line with prior studies (Mensah et al., 2023). The current study’s measure of CGQ was developed as an index from 25 corporate governance mechanisms constructed via means of rotated principal component analysis. The NGQ index was constructed using three dimensions of Kaufmann et al. (2011) six dimensions of national governance quality. These three dimensions were deemed the most relevant measures of country-level governance quality to firm operations (Nguyen et al., 2015). The measures for all the study’s variables have been summarized in Table 2.

3.2. Models specification and estimations

The following models are specified for the study’s analysis in eleven sequential steps. Firstly, the study fits linear static and dynamic models and estimates these using the standard fixed effect (FE), ordinary least squares (OLS), system generalized method of moments (SGMM) and difference generalized method of moments (DGMM) estimation techniques in two distinct steps. These estimators were deemed appropriate from the study’s diagnostic tests for suitable panel data estimators.

$$Y_{it} = \alpha_0 + \alpha_1 SIZE_{it} + \alpha_2 GROP_{it} + \alpha_3 AGE_{it} + \alpha_4 LEV_{it} + \alpha_5 IFRS_{it} + \alpha_6 AT_{it} + \alpha_7 DA_{it} + \alpha_8 CGQ_{it} + \alpha_9 NGQ_{it} + \alpha_{10} MI_{it} + \nu_t + \mu_i + \varepsilon_{it} \dots \dots \dots (eqn.1)$$

$$Y_{it} = \alpha_0 + \alpha_1 Y_{it-1} + \alpha_2 SIZE_{it} + \alpha_3 GROP_{it} + \alpha_4 AGE_{it} + \alpha_5 LEV_{it} + \alpha_6 IFRS_{it} + \alpha_7 AT_{it} + \alpha_8 DA_{it} + \alpha_9 CGQ_{it} + \alpha_{10} NGQ_{it} + \alpha_{11} MI_{it} + \nu_t + \mu_i + \varepsilon_{it} \dots \dots \dots (eqn.2)$$

Table 12. Further simulation test of the dynamic threshold effects of MI on the EM – firm performance relationship (using a different grid number of 0.1 & trim rate of 15)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
LROA_b	0.0251*** (0.00446)	0.0251*** (0.00446)	0.0129*** (0.00285)	
NGQ_b	7.306*** (2.779)	7.306*** (2.779)	−0.184 (1.078)	1.263** (0.582)
CGQ_b	−7.342*** (1.640)	−7.342*** (1.640)	−3.728*** (0.670)	−3.874*** (0.869)
DA_b	64.43*** (2.706)	64.43*** (2.706)	44.89*** (0.742)	22.88*** (1.141)
SIZE_b	−22.52*** (2.688)	−22.52*** (2.688)	−9.994*** (0.949)	−12.85*** (0.829)
GROP_b	0.247*** (0.0749)	0.247*** (0.0749)	−0.0308 (0.0286)	0.758*** (0.0170)
AGE_b	11.41* (6.082)	11.41* (6.082)	0.482 (2.148)	2.096 (1.294)
IFRS_b	1.505 (1.484)	1.505 (1.484)	1.152*** (0.378)	−0.361 (0.494)
AT_b	1.412 (5.513)	1.412 (5.513)	3.091*** (0.844)	7.990*** (1.154)
LEV_b	−6.143*** (1.753)	−6.143*** (1.753)	−2.767*** (0.571)	−2.503*** (0.687)
Cons_d	−52.03 (33.29)	−52.03 (33.29)		
LROA_d	0.0747 (0.0490)	0.0747 (0.0490)		
NGQ_d	14.13*** (2.064)	14.13*** (2.064)		
CGQ_d	−3.055 (2.311)	−3.055 (2.311)		
DA_d	−65.84*** (6.611)	−65.84*** (6.611)		
SIZE_d	11.37*** (3.983)	11.37*** (3.983)		
GROP_d	0.672** (0.273)	0.672** (0.273)		
AGE_d	3.741 (4.536)	3.741 (4.536)		
IFRS_d	−14.27*** (2.201)	−14.27*** (2.201)		
AT_d	−34.81*** (6.662)	−34.81*** (6.662)		
LEV_d	2.899	2.899		

(Continued)

Table 12. (Continued)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
	(2.169)	(2.169)		
R	23.32***	23.32***	36.87***	36.87***
	(0.747)	(0.747)	(0.212)	(0.461)
kink_slope			5.761***	2.114**
			(1.537)	(0.908)
Observations	52	52	52	52
Number of moment conditions	242	186	242	186
Bootstrap <i>p</i> -value for linearity test	0.000	0.000	0.000	0.000

Note: This table reports simulation test results from estimating the dynamic GMM panel threshold regression model (i.e., equation 3) using a different grid number and trim rate. The models clearly specified endogenous and exogenous variables where the lag of endogenous variables was used as instruments in the estimation although the endogenous variables maintained their original forms in the respective models. These regression estimations were executed via the community contributed Stata command “xthenreg.” Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2. The parameter estimates with designation (_b) are below the threshold whereas the parameter estimates with designation (_d) are above the threshold.

Where Y_{it} refers to the dependent variable (in this case, ROA) for firm i in year $t/(t-1)$. The independent variables comprise: $SIZE_{it}$ which refers to Firm-Size; $GROP_{it}$, which refers to Growth Opportunities; AGE_{it} which refers to Firm-Age from its date of incorporation; LEV_{it} which refers to Leverage; $IFRS_{it}$ which refers to IFRS Adoption; AT_{it} which refers to Asset Tangibility; DA_{it} which refers to Discretionary Accruals (the proxy for Earnings Management); CGQ_{it} which refers to Corporate Governance Quality; NGQ_{it} which refers to national governance quality; and MI_{it} which refers to economic misery index. μ_i and ν_t are, respectively, additional controls for country heterogeneous effects that are time invariant, and year-fixed effects that are time variant and common to all companies, whereas ε_{it} refers to the error term.

The study re-estimates equations (1) and (2), in its third and fourth steps, after having controlled for the endogeneity of the “leverage” variable which was identified as endogenous in the study’s separate tests for possible endogeneity of individual explanatory variables. This was done so as to mitigate the problem of nuisance parameters, which often results from non-consideration of possible endogeneity of certain explanatory variables in estimations like these. Diagnostically, separate endogeneity tests of individual explanatory variables were carried out via the Durbin-Wu-Hausman (DWH) test for endogeneity of regressors under the null hypothesis that the endogenous regressors may be treated as exogenous variables (Baum et al., 2007). Test statistics followed a Chi-squared (*Chi-sq*) distribution with the degrees of freedom equal to one for each suspected endogenous regressor. The study followed Schultz et al. (2010) and conducted the test based on the equation (in levels) of firm performance and each of the suspected endogenous regressors in which one-year lagged differences of each regressor was employed as instrumental variable. A further combined test of endogeneity was carried out with degrees of freedom equal to nine; which is the number of suspected endogenous regressors (i.e., *EM*, *CGQ*, *NGQ*, *MI*, *SIZE*, *GROP*, *LEV*, *IFRS*, and *AT*). Only firm age was included in all the test specifications and treated as exogenous. The results indicated that the null hypothesis for the individual tests for leverage as well as the combined endogeneity test of all variables could not be accepted at any conventional levels of significance for the individual endogeneity test [i.e., $\chi^2(1) = 7.34401$, $p = 0.0067$], or at the 5% level for the combined endogeneity test [i.e., $\chi^2(9) = 17.6277$, $p = 0.0397$], suggesting that,

Table 13. Robustness test of the dynamic threshold effects of MI on the EM – firm performance relationship using an alternative performance indicator (ROE)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
LROA_b	0.269*** (0.0906)	0.269*** (0.0906)	0.130*** (0.0116)	
NGQ_b	0.197 (6.376)	0.197 (6.376)	1.462 (1.136)	4.187** (1.878)
CGQ_b	8.693 (5.488)	8.693 (5.488)	-6.438*** (1.547)	-1.176 (1.938)
DA_b	61.93*** (11.55)	61.93*** (11.55)	25.72*** (2.257)	12.05*** (0.634)
SIZE_b	3.470 (4.596)	3.470 (4.596)	-8.089*** (0.868)	5.490*** (1.724)
GROP_b	0.275 (0.244)	0.275 (0.244)	0.346*** (0.0534)	1.144*** (0.0360)
AGE_b	-16.96** (8.592)	-16.96** (8.592)	10.13* (6.127)	-8.193** (3.286)
IFRS_b	1.219 (7.178)	1.219 (7.178)	-10.22*** (0.846)	-6.521*** (1.358)
AT_b	-67.89*** (13.95)	-67.89*** (13.95)	28.23*** (3.676)	9.823*** (2.639)
LEV_b	-5.324 (13.04)	-5.324 (13.04)	-2.563** (1.280)	-6.708*** (1.409)
Cons_d	56.62 (80.15)	56.62 (80.15)		
LROA_d	0.0453 (0.126)	0.0453 (0.126)		
NGQ_d	21.27*** (6.627)	21.27*** (6.627)		
CGQ_d	-1.448 (4.460)	-1.448 (4.460)		
DA_d	-70.62*** (10.50)	-70.62*** (10.50)		
SIZE_d	-22.09*** (6.744)	-22.09*** (6.744)		
GROP_d	1.516*** (0.543)	1.516*** (0.543)		
AGE_d	6.831 (7.842)	6.831 (7.842)		
IFRS_d	-5.491 (7.830)	-5.491 (7.830)		
AT_d	33.19** (16.36)	33.19** (16.36)		
LEV_d	8.962	8.962		

(Continued)

Table 13. (Continued)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
	(11.34)	(11.34)		
R	22.14***	22.14***	34.50***	38.99
	(3.342)	(3.342)	(0.510)	(579,386)
kink_slope			−1.608***	−11.84
			(0.330)	(6.102e + 06)
Observations	52	52	52	52
Number of moment conditions	242	186	242	186
Bootstrap <i>p</i> -value for linearity test	0.000	0.000	0.000	0.000

Note: This table reports robustness test results from estimating the dynamic GMM panel threshold regression model (i.e., equation 3) using alternative performance indicators (i.e., ROE). The models clearly specified endogenous and exogenous variables where the lag of endogenous variables was used as instruments in the estimation although the endogenous variables maintained their original forms in the respective models. These regression estimations were executed via the community contributed Stata command “xthenreg.” Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2. The parameter estimates with designation (b) are below the threshold whereas the parameter estimates with designation (d) are above the threshold.

endogeneity should not be ignored in the study's estimations. Hence, the study considered the endogeneity of the leverage variable in its estimations.

In order to investigate the suspected nonlinearities in the EM—firm performance relationship, the study fits a threshold model and estimates this using the dynamic panel threshold regression approach through the generalized method of moments (GMM) which is capable of showing the possible jumps in all explanatory variables including the EM variable (Seo et al., 2019). The study deems appropriate to employ the dynamic threshold model which allows for the asymmetric effect of the exogeneous variables depending on whether the threshold variable is above or below the unknown threshold in our investigation under the premise that, macroeconomic variables may not be linearly related to EM and firm performance but exhibit discontinuities. Moreover, we utilise the dynamic panel threshold model because, the study's threshold variable; macroeconomic MI, is potentially endogenous (Seo & Shin, 2016). The Stata community contributed command “xthenreg” by Seo et al. (2019) was deployed in this analysis carried out in three steps via means of the following model:

$$Y_{it} = X'_{it}\beta + (1, X'_{it})\delta 1\{Q_{it} > \gamma\} + \mu_i + e_{it} \dots \dots \dots \text{eqn}(3)$$

Where Y_{it} refers to the study's dependent variable (in this case, ROA); X'_{it} refers to all the study's independent variables as defined in Table 1. The Q_{it} is the threshold variable (in this case, MI); whereas the μ_i is an incidental parameter that is removed by the first difference transformation and estimation of the unknown parameters $(\beta', \delta', \gamma)'$ through the GMM.

In addition to carrying out a dynamic panel threshold regression estimation where a lagged dependent variable is by default included as additional explanatory variable, a static restriction was also imposed to observe if the results would significantly change. Besides, although the threshold model typically implies the presence of a discontinuity of the regression function, it may mean the presence of a kink, not a jump if $(1, X'_{it})\delta = \kappa(Q_{it} - \gamma)$ for some κ . This happens when

Table 14. Robustness test of the dynamic threshold effects of MI on the EM – firm performance relationship using an alternative performance indicator (Tobin's Q)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
NGQ_b	4.187** (1.878)	0.473*** (0.0999)	0.263*** (0.0357)	0.644*** (0.108)
CGQ_b	−1.176 (1.938)	0.0853 (0.0633)	−0.617*** (0.0444)	−1.638*** (0.127)
DA_b	12.05*** (0.634)	1.172*** (0.0391)	0.703*** (0.0302)	1.305*** (0.0132)
SIZE_b	5.490*** (1.724)	−0.134 (0.128)	−0.613*** (0.0637)	−1.325*** (0.0740)
GROP_b	1.144*** (0.0360)	0.190*** (0.00789)	0.303*** (0.00546)	0.262*** (0.00546)
AGE_b	−8.193** (3.286)	−0.635*** (0.142)	−0.383*** (0.0996)	0.326** (0.137)
IFRS_b	−6.521*** (1.358)	−0.0615 (0.0906)	−0.0774*** (0.0253)	0.155*** (0.0385)
AT_b	9.823*** (2.639)	1.012*** (0.283)	−1.067*** (0.136)	0.288 (0.182)
LEV_b	−6.708*** (1.409)	0.277*** (0.107)	−0.200*** (0.0420)	0.0491 (0.0568)
Cons_d		0 (1.645e + 06)		
NGQ_d		0.0165 (0.101)		
CGQ_d		0.275*** (0.0609)		
DA_d		−0.524*** (0.129)		
SIZE_d		−0.681*** (0.155)		
GROP_d		0.204*** (0.0159)		
AGE_d		0.426*** (0.0999)		
IFRS_d		2.539 (1.645e + 06)		
AT_d		−0.803 (0.553)		
LEV_d		−0.164 (0.112)		
R	38.99 (579,386)	30.75*** (0.741)	33.75*** (0.298)	30.38*** (1.413)
kink_slope	−11.84		−0.0611***	−0.0311***

(Continued)

Table 14. (Continued)

	(1)	(2)	(3)	(4)
VARIABLES	Dynamic Panel Threshold Model	Static Panel Threshold Model	Dynamic Panel Threshold Model with Kink	Static Panel Threshold Model with Kink
	(6.102e + 06)		(0.00830)	(0.00578)
Lag_y_b			0.114*** (0.00282)	
Observations	52	52	52	52
Number of moment conditions	242	186	242	186
Bootstrap <i>p</i> -value for linearity test	0.000	0.000	0.000	0.000

Note: This table reports robustness test results from estimating the dynamic GMM panel threshold regression model (i.e., equation 3) using alternative performance indicators (i.e., TOB_Q). The models clearly specified endogenous and exogenous variables where the lag of endogenous variables was used as instruments in the estimation although the endogenous variables maintained their original forms in the respective models. These regression estimations were executed via the community contributed Stata command “xthenreg.” Asterisks indicate significance at 10% (*), 5% (**) and 1% (***). The notations in all the regression tables are as defined in Table 2. The parameter estimates with designation (_b) are below the threshold whereas the parameter estimates with designation (_d) are above the threshold.

one element of X'_{it} is Q_{it} with the coefficient κ and the first element of δ equal to $-\gamma\kappa$. Under these restrictions, the model becomes:

$$Y_{it} = X'_{it}\beta + \kappa(Q_{it} - \gamma)1\{Q_{it} > \gamma\} + \alpha_i + \varepsilon_{it} \dots \dots \dots \text{eqn(4)}$$

Where the variables are as defined earlier. Again, α_i is an incidental parameter that is removed by the first difference transformation and estimation of the unknown parameters $(\beta', \kappa', \gamma')$ through the GMM.

The three final sequential steps in the study’s estimations followed three separate specifications where: 1) the dynamic panel threshold model was specified without any designations for endogenous and exogenous variables, 2) the model was specified with an ad hoc lag leverage variable used directly in the model to deal with endogeneity issues, and 3) the model was formulated with specific designations for exogenous and endogenous variables in the model. In all these specifications, the bootstrap *p*-value for linearity test was zero, thus confirming the nonlinearity or non-monotonic relationship between firm performance and the included explanatory variables. The number of moment conditions for the first and second specifications involving the dynamic models coincided at 176 whereas that of the third specification recorded 242 moment conditions. In all cases, a single uniquely identified MI threshold estimate was ascertained (i.e., $r = 22.51^{***}$). A simulation test where the grid number was set at grid (15) and the trim rate was set at trim_rate (0.1), yielded identical parameter estimates of almost all explanatory variables although a slightly different threshold estimate was recorded (i.e., $r = 23.32^{***}$).

The results of the study’s sequential estimations of its baseline as well as robustness test models (from Steps 1 to 11) are reported and discussed under Section 4. Noteworthy here is the fact that, as far as practicable, the study carries out estimations of both dynamic as well as static models for all its analyses. Also, the estimations are done both with and without consideration for the endogeneity of the leverage variable.

4. Results and discussion of findings

4.1. Descriptive statistics

Tables 3 and 4 summarise the descriptive statistics and the correlation diagnostics for the study's variables. The mean of ROA is 8.03%, suggesting that the returns generated for all providers of finance of firms in sub-Saharan Africa during the sample period are, on average, low relative to returns on government securities in most of these countries (see www.investing.com). This reflects the poor capability of firms in exploiting their resources to generate decent returns for investors. The mean of CGQ and NGQ indices are, respectively, -0.209 and 0.0267 along a continuum from -1.294 to $+2.334$. This reported aggregate governance indices for sampled firms in sub-Saharan Africa are pretty low, suggesting minimal gains in the effort to strengthen national as well as corporate governance systems within the African sub-region. The average level of discretionary accruals or the proportion of managed earnings for sampled firms was about 2.00%, suggesting that EM practices among sampled firms are relatively high compared to those reported by other developing economies (Tang & Chang, 2013; Zimon et al., 2021). The average size of sampled firms was 5.29 with a standard deviation of 0.72, whereas leverage was 3.81 with a standard deviation of 0.69. The sampled firms showed moderately high growth opportunities represented by a mean market-to-book ratio of 3.72 with a standard deviation of 5.62. An average of 36% of the sampled firms' assets was tangible assets and 85% of the proportion of firm-year observations indicates IFRS had been adopted as the financial reporting standard. Lastly, the average firm-age (of about 55 years or 3.80 when resolved in logarithm form) shows many of the sampled firms are still maturing within their respective industries.

Table 4 shows that most of the firm-specific (Khan et al., 2017; Kim et al., 2021; Muchtar et al., 2018) as well as macroeconomic (Cheong et al., 2021) variables hypothesized in the literature to be correlated with performance are also true in the African context. Again, Table 4 shows that, none of the correlation coefficients among the independent variables is larger than 0.80, indicating the absence of multicollinearity problems in the empirical regression analysis (Damodar, 2004).

4.2. Multiple regression results and analysis

The current study employs a blend of linear and nonlinear threshold regression models in its analysis of the hypothesis of the study. The study initially fits a linear multiple regression model (Equation 1) and estimates this using the standard fixed effect and OLS with Driscoll-Kraay standard errors estimators. In determining the appropriate econometric estimation method to use for the study's linear models, the classical Hausman test was performed to identify whether the fixed or random effect estimator was most suitable. The test selected the fixed effect estimator as the one that comes close to the data generating process. Hence, the study settled on the fixed effect estimator. Moreover, Breusch and Pagan Lagrangian multiplier test failed to reject the fact that $\text{var}(u) = 0$. Therefore, the study also employed the pooled OLS estimator in the linear model analysis for robustness tests. Finally, these two estimations were carried out using Driscoll-Kraay standard errors because of the independently distributed residuals of the study's variables [i.e., $\chi^2(2) = 5.81$, $p = 0.0547$ on the joint test of normality of residuals]. It has been noted that, provided the residuals are independently distributed, standard errors obtained by this estimator are consistent even if the residuals are heteroscedastic (Driscoll & Kraay, 1998). The GMM estimators were also employed as suitable dynamic panel data estimators (Arellano & Bond, 1991; Blundell & Bond, 1998).

The results of the study's multiple linear regression analyses carried out in four sequential steps are provided in Tables 5, 6, 7 and 8.

The study observes from its multiple linear regressions that, EM consistently exhibits a positive association with performance from the static and dynamic estimations using the FE and OLS. However, EM becomes insignificant when estimated via the dynamic GMM approaches which tend to prove superior to the FE and OLS estimations because, they demonstrate dynamic stability by

their estimate of the coefficient of the lagged dependent variable lying in-between the OLS and FE estimates (see, Bond, 2002). These apparent contrasting evidences on the EM—performance relationship gives the current study the impetus to consider nonlinear threshold models for investigating the EM—performance nexus. The study therefore estimates dynamic threshold models in Equations (3) and (4) using the “xthenreg” command for re-examining the EM—performance relationship under the pretext that there is possibly a jump or a kink in the EM—performance association. The results are presented in Tables 9, 10, 11, 12, 13 and 14. The results appear robust even when alternative performance indicators are used in the estimation. This confirms the study’s hypothesis of the EM—performance relationship being contingent on macro-economic factors particularly MI.

The results from the study’s dynamic threshold models further give confidence that, the performance effect of EM varies across an identified MI threshold, such that, below the MI threshold, the effect of EM on performance is positive, whereas above MI threshold, the effect of EM on performance is insignificant or sometimes adverse. The study further observes from its granger causality tests that there is evidence of causality between MI and firm performance which further lends credence to the pivotal role that MI plays in altering the dynamic performance effects of the study’s explanatory variables across its threshold.

In a simulation analysis using a different trim rate of 0.1 and grid number 15, the threshold estimation produces identical parameter estimates of almost all explanatory variables but slightly different threshold estimate; “ r ” of 23.32 (see, Table 12). These findings suggest that, below the optimal MI threshold, efficiency motives or outcomes of EM usually arise, whereas above the optimal MI threshold, opportunistic motives of EM results. These empirical findings are novel and serves as the current study’s contribution to this debate.

4.3. Discussion of findings

The current study recognizes that firm-level events are also influenced by national institutional factors which tend to shape the direction of corporations within respective national jurisdictions. Therefore, it set out to re-investigate the EM—performance nexus from a nonlinear dynamic threshold framework. By using MI as a threshold variable in examining the EM—performance relationship, the study found out that, the effect of EM is contingent on an optimal MI threshold of 22.51, such that, below the optimal MI threshold, the effect of EM on performance is positive. However, above the optimal MI threshold, the effect of EM on firm performance is insignificant or sometimes adverse. This implies that, when the level of economic misery in a country are low up to the threshold limit, EM practices tend to be performance-enhancing or efficient. However, when the level of economic misery of a country exceeds the threshold or have gone over the roof, EM practices tend to become opportunistic with adverse consequences on firm performance.

Besides EM, the study observes from its dynamic threshold models that the other control variables (i.e., CGQ SIZE, GROP, AGE, IFRS, AT, and LEV) in relation to firm performance also seems to change across the MI threshold level. The study further observes from its granger causality tests that, almost all the explanatory variables exhibit bi-directional causality with the performance variable, which allows us to conclude that, these variables are necessary for inclusion in the study’s estimations to mitigate omitted variable bias. The study therefore recognizes that, national governance quality, corporate governance quality, firm-size, age, leverage, asset tangibility and IFRS adoption are also determinants of firm performance (see also, Boachie & Mensah, 2022; Feng & Huang, 2020; Kim et al., 2021), and their determination may be dependent on the level of economic misery or health of countries.

Aside the study’s threshold analysis, we also recognize from our preliminary linear estimations that there are some similarities in findings with previous research. The current study’s MI and NGQ variables exhibit a positive relationship with firm performance from the SGMM estimator, although this result is insignificant. Gopalan and Jayaraman’s (2012) negative results regarding GDP and

discretionary accruals which consequently enhances firm performance corroborate the current study's findings, whereas Elkalla (2017) found contrasting evidence regarding the effect of GDP and national governance index on discretionary accruals and consequently firm performance. IFRS adoption has a significant negative relationship with firm performance. Also, corporate governance quality, asset tangibility and firm growth opportunities all exhibited significantly positive relationship with performance. The results also corroborated that of Boachie and Mensah (2022). Age, although positively related with performance, was insignificant, whereas leverage is significantly negatively related with performance, corroborating those of Zimon et al. (2021) and Tang and Chang (2013). Finally, size was significantly negatively related to performance, whereas discretionary accruals turned out insignificant although positively related to performance. These findings do indicate that, firm-level characteristics and performance can be influenced by macro-level factors, particularly the economic health of a nation and NGQ as well. A concerted effort would be required to balance governance with economic management in such a way as not to erode or neutralize any firm-level or business gains such as performance-enhancing EM.

Overall, the current study empirically shows that EM has a non-monotonic effect on firm performance conditional on the level of MI. Our results generally confirm our proposition that, the performance-enhancing effect of EM, which is reflective of efficiency motives or outcomes of EM practices, may be realized when the level of MI is within an optimal threshold. Beyond this threshold level, the effect of EM on performance might be negligible or even turn adverse. The findings of this study are novel and serve to enhance our understanding regarding the divergencies in empirical findings relating to the EM—performance nexus reported in previous studies.

5. Conclusions and implications

Many erstwhile studies acknowledge the interactive role that national governance and economic institutions play in contributing towards firm-level performance enhancements and growth. EM has also been touted as having a significant effect on firm performance. However, in the presence of mixed evidences regarding the direction of these relationships, it becomes worthwhile to re-investigate the EM—performance nexus from other frameworks, and in conjunction with macro-level factors noted as capable of altering the EM—performance relationship such as the MI variable. By so doing, it may be possible to provide some more explanation or shed light on the evidences from past investigations. The current study thus seized this opportunity to empirically examine the issue of the presence of threshold effects in the association between EM and firm performance using firm-samples from sub-Saharan Africa over the period of 2007–2019, with the level of MI taken as the threshold variable.

This paper is one of the few studies that employ the dynamic panel threshold approach in examining the EM—performance relationship with consideration of macro-level factors such as MI as threshold indicators. Flowing from the study's findings, the study makes the following conclusions: 1) That the EM—performance nexus may be contingent on macro-level factors such as MI. Our hypothesis one (H1) is thus supported. 2) That the EM—performance nexus is neither monotonic nor linear, hence exhibits jumps at certain MI thresholds. Our hypothesis two (H2) is thus supported. 3) That MI has an insignificant direct effect on firm performance, although a causal relationship can be established, thus refuting the study's hypothesis three (H3). Overall, the main conclusion of the study's investigation is that EM has a non-monotonic effect on firm performance conditional on the level of MI. The results generally confirm that the performance-enhancing effect of EM, which is reflective of efficiency motives or outcomes of EM practices may be realized when the level of MI is within an optimal threshold 22.51. Beyond this threshold level, the effect of EM on performance might turn adverse.

The findings have important implications to investors, regulators and policy makers. The estimated nonlinear effect of EM on firm performance and the threshold of MI can be benchmarks for Africa and other emerging and developing countries in assessing their situations. Again, the study's findings serve as pointers to national governments and their agencies on which policies

to adopt so as to enhance the economic health and minimise the level of misery of its people which has attendant consequences on businesses. The level of economic happiness of a people resulting from reducing MI below the optimal threshold, invariably culminates in restrained opportunistic behaviour and consequently, increased performance outcomes for the benefit of a wider stakeholder group. Conversely, when the economic woes of people are heightened by an increasing misery index, managers of firms tend to seek out only their selfish interests in attempt to pressingly satisfy their personal utility to the neglect of other stakeholders, particularly shareholders. This tends to become detrimental to firm performance and ultimately opportunistic outcomes result. Moreover, investors are generally attracted to destinations that are economically stable with prudent macro-economic indicators. Also, countries that are more investor-friendly with their governance systems and investor protection laws, with less corrupt business environments are considered attractive investment destinations. Therefore, the general economic health of a nation is crucial for policy attention as it determines the likelihood of corrupt business dealings such as opportunistic and fraudulent EM practices permeating its business environment, as well as its attractiveness for cross-border investment flows to its capital markets for growth.

Interestingly, national governance quality, unlike EM, tends to move in the opposite direction with EM in relation to firm performance. The more miserable or unhappy a country is (i.e., beyond the optimal threshold), the positive its NGQ affects firm-level performance, and the less miserable a country is (i.e., below the optimal threshold), the negative its NGQ affects firm-level performance. This seems to point to a need for strong and effective national governance institutions to mitigate the negative effects of any economic woes a nation may have been plunged into. The quality of national governance does not seem to be much helpful when a nation is experiencing less economic misery. Regulators and managers of economies therefore, needs to strike a good balance between ensuring and maintaining an economically healthy state while at the same time, not being overbearing with a governance system, which might undo any gains chalked through a healthy economic state.

As with all other studies, this study is not without limitations. Firstly, the study relied on audited annual reports of 52 listed companies sampled from nine sub-Saharan countries. Hence, the findings should be understood and interpreted within that context. Again, the study settled on this limited sample owing to data availability coupled with the time and costs involved in manually converting the data to readily analyzable formats. Abdou et al. (2021) use a similar approach for their data collection and curation. With the availability of more data, it would be desirable for further research to seek to validate the current study's findings using a much larger panel dataset. Future research should also consider samples from other developed and emerging economies for a modest re-test of the current study's findings. Moreover, future research employing a larger panel dataset can also consider classification of sample firms according to sectors of the economies and discussion of results based on sectoral performances. Besides, it would also be illuminating for future studies to employ other non-linear frameworks such as panel smooth transition regression in analysing the associations between EM, as well as other micro and macro-level variables such as Altman's Z-score, Beneish index, institutional quality, corruption index, etc., and firm performance. Finally, as McNichols and Stubben suggested in an editorial commentary on a special issue on earnings management (Jones, 2018), future research selecting among different discretionary accrual proxies, or estimating different discretionary accruals in EM investigations would also serve to authenticate research findings or provide cues for critical revisions or evaluation of research results obtained. It is envisaged that; the findings of this study would ignite further research in this area and contribute towards our understanding of the role that transmission mechanisms both at the firm as well as national levels play in the EM—firm performance nexus.

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Data availability

Data for the study is obtained from publicly available sources

Disclosure statement

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Correction

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