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ECONOMIC POLICY UNCERTAINTY AND EARNINGS MANAGEMENT: DOES INSTITUTIONAL GOVERNANCE MATTER

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ABSTRACT

This study examines how economic policy uncertainty (EPU) affects earnings management (EM), and how institutional governance moderates this relationship, using data from 27,598 firms across 22 countries from 2014 to 2021. We find that higher EPU increases accrual-based earnings management (AEM) and reduces real earnings management (REM), suggesting a shift to less observable EM methods. Strong institutional governance moderates the EPU–AEM relationship but has limited effect on REM. The moderating effect becomes more evident when accounting for complementary effects between AEM and REM, lagged EM, and past EPU. The impact varies by market classification, with AEM tends to respond in a greater extent to EPU in developed markets and REM more so in emerging markets. The findings imply that firms strategically adjust EM practices in response to EPU, with institutional governance playing a critical role in constraining such behavior. These insights highlight the importance of strengthening governance mechanisms, particularly in emerging markets, to enhance financial reporting quality under uncertainty.

Keywords: Accrual-based earnings management, earnings management, economic policy uncertainty, institutional governance, real earnings management.

JEL Classification: G38, M48, M41.

INTRODUCTION

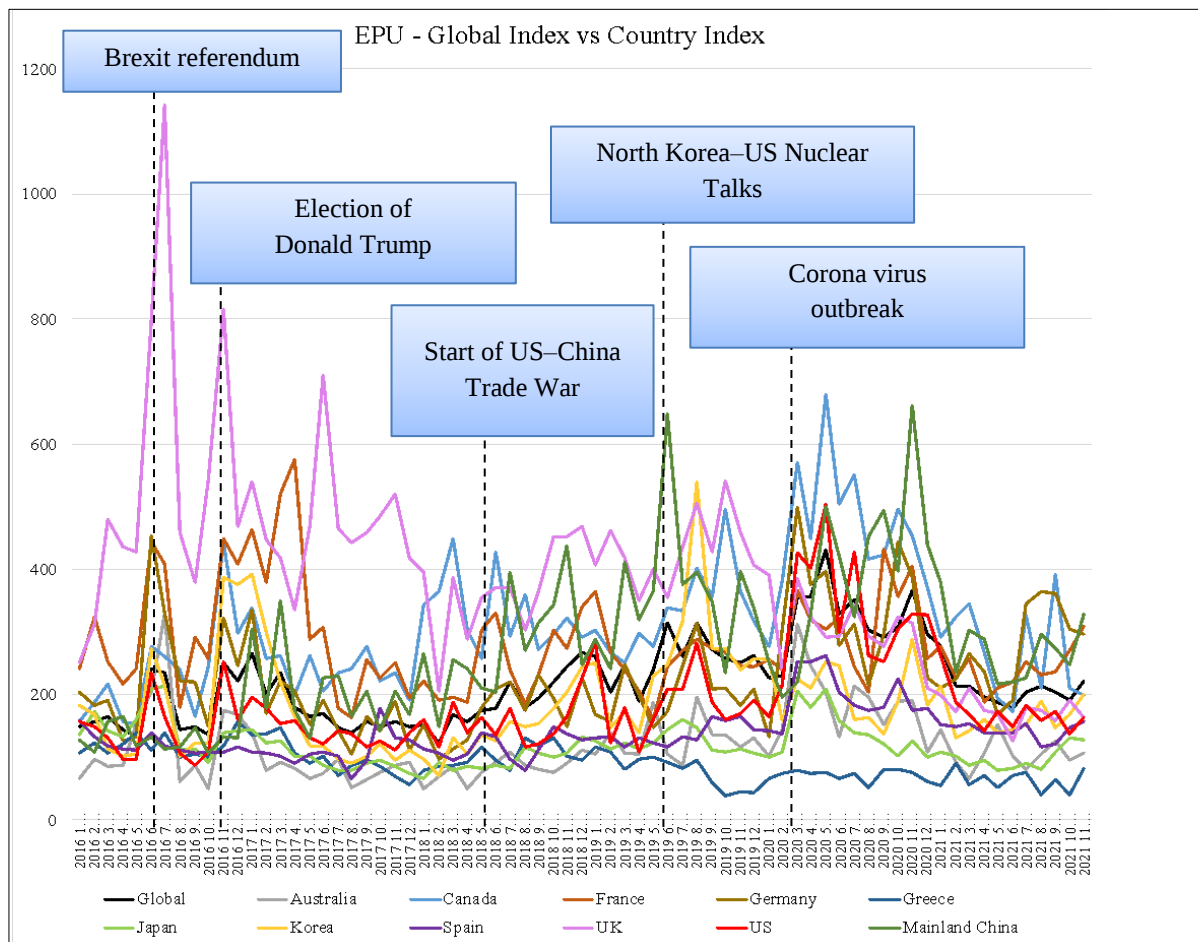
Economic policy uncertainty (EPU), which stems from political and regulatory systems (Drobetz et al., 2018), significantly influences the economic environment and affects corporate decision-making (Bermpei et al., 2019). Arising from political, regulatory, and macroeconomic shocks, EPU has become a defining feature of the post-global financial crisis and post-pandemic environment (Baker et al., 2016; Al-Thaqeb et al., 2020). Elevated uncertainty alters investment, financing, and reporting choices, creating additional challenges for corporate managers and stakeholders. Figure 1 shows the global trend of the EPU index between 2014 and 2021, highlighting pronounced spikes during major events such as Brexit, the U.S.–China trade war, and COVID-19. These fluctuations underscore the importance of understanding how firms adapt their financial reporting practices under uncertain policy conditions.

Managers manipulating earnings to serve their own interests at the expense of shareholders remains a persistent corporate governance concern. Although some forms of earnings management (EM) may be within legal accounting boundaries (Zang, 2012), the practice undermines financial statement reliability and investor trust (Pereira & Alves, 2017; Al-Natsheh & Al-Okdeh, 2020; Li et al., 2022). Recent corporate failures during the COVID-19 period illustrate that EM risks are not only historical but remain pressing in modern capital markets (Al-Begali & Phua, 2023). Managers may be made accountable to the firms' performance that is affected solely by external factors and thus, motivating the practice of exaggerating the earnings during the times of EPU to minimize such impact on personal reputation and market reaction.

Despite growing evidence that uncertainty influences corporate decisions, the interaction between EPU, EM, and institutional environments remains underexamined. First, most studies focus on firm-level governance and overlook the influence of broader institutional contexts (Al-Natsheh & Al-Okdeh, 2020). Second, recent evidence shows contradictory practice by the managers, with some using more accrual-based earnings management (AEM) during uncertainty such as COVID-19 pandemic (Yasar & Yalcin, 2024), some treating real earnings management (REM) as a substitute of AEM during external shocks (Al-Begali & Phua, 2023; Duong, 2023), and some managers using both techniques simultaneously under external shocks (Yan et al., 2022). Third, cross-country comparative studies remain scarce, leaving unanswered questions about whether institutional capacity moderates EM differently in developed versus emerging markets. Addressing this gap is critical for understanding how macro-level governance can constrain EM during times of uncertainty and inform regulatory responses.

Figure 1

EPU—Global Index vs Country Index from January 2016 to November 2021



Source: Baker et al. (2016).

This study explores the link between EM and EPU, focusing on both AEM and REM, recognizing EM as a persistent issue in corporate governance, and examines how institutional governance moderates these relationships. We use a dataset of 188,417 firm-year observations from 27,598 firms across 22 countries between 2014 and 2021 excluding financial, energy, oil and gas, and utilities sectors (Ghoul et al., 2020; Lellis, 2022). EM is measured using AEM via the Kothari et al. (2005) model and REM using Roychowdhury's (2006) approach. EPU is captured using the Baker et al. (2016) index, while country-level governance is measured using the Worldwide Governance Indicators (WGI) developed by Kaufmann et al. (2010).

This study offers five key contributions. First, it extends agency and institutional theories by showing that EPU acts as a political cost influencing EM and highlighting how institutional governance moderates the behavior. Second, it advances the EM literature by providing evidence that AEM and REM are complementary rather than substitutive under uncertainty, offering new insights into reporting strategies. Third, it integrates macroeconomic and organizational perspectives by showing how external shocks and governance interact to shape EM. Fourth, it adds to cross-country comparative research by documenting distinct patterns between developed and emerging markets, highlighting institutional capacity as a key factor. Finally, the findings provide insights for regulators to strengthen oversight mechanisms to enhance financial reporting quality during uncertain times.

LITERATURE REVIEW

EPU Influences Manager's Behavior

There are two main theoretical perspectives on how managers respond to EPU when managing earnings. The first, known as the “lean against the wind” theory, suggests that managers may increase earnings during high uncertainty to reduce the shock of poor performance and reassure market participants (Hirshleifer et al., 2009; Bermpei et al., 2019). The second, the “lean with the wind or do not lean at all” view, posits that external stakeholders are more likely to attribute poor performance to external conditions, such as macroeconomic uncertainty, rather than managerial competence. As a result, managers may feel less pressure to manipulate earnings during such periods (Cohen & Zarowin, 2011; Ghoul et al., 2020).

Recent empirical evidence on the EPU–EM relationship presents mixed results. Studies such as Bermpei et al. (2019) and Hirshleifer et al. (2009) document that managers increase discretionary accruals when uncertainty rises, consistent with the “lean against the wind” perspective. Conversely, Mitton (2002) and Ghoul et al. (2020) report reduced earnings manipulation under high EPU, suggesting that external attribution effects and heightened scrutiny may deter aggressive reporting. More recent work also reveals substitution dynamics, where firms shift between accrual-based and REM depending on feasibility and costs (Kim & An, 2021; He et al., 2020; Yung & Root, 2019). These mixed findings underscore the importance of further empirical examination, especially across different governance contexts.

Agency theory supports the notion that managers may pursue objectives that diverge from shareholders' interests. EPU creates opacity and ambiguity, making it harder for markets to assess the implications of policy changes (Liao et al., 2019; Baker et al., 2016). If performance falls short of expectations, managers' competence may be questioned, motivating them to manage earnings upward to signal stability.

Political cost theory further explains managerial incentives for EM during uncertain times. To reduce regulatory scrutiny and taxation risks, managers may also downplay earnings (Pereira & Alves, 2017). In volatile environments, heightened sensitivity to corporate actions can prompt firms to obscure performance signals to avoid unwanted attention (Stolowy & Breton, 2004).

Regardless of the direction—upward or downward—there appears to be a clear incentive for managers to engage in EM during periods of high EPU. These arguments suggest that EPU is likely to influence managerial reporting behavior, which we formalize later in Hypothesis 1.

Institutional Governance Moderates the Strength of EPU–EM Relationship

A robust body of literature shows that sound corporate governance can mitigate EM. Mechanisms such as board independence, CEO–chairman separation, and managerial ownership help align managerial actions with shareholders' interests (Cornett et al., 2008; Al-Haddad & Whittington, 2019; Sehrawat et al., 2019; Bouaziz et al., 2020; Chatterjee, 2020). Agency theory affirms that governance structures help discipline managerial behavior and reduce agency costs (Skousen & Wright, 2008).

However, most studies focus on firm-level governance, overlooking broader institutional frameworks that influence all firms within a country. These national-level structures—referred to as institutional

governance—can shape corporate behavior by embedding expectations and regulatory standards into the environment (Armitage et al., 2017).

Institutional governance reflects the interaction of public and private institutions, forming a country's overall governance ecosystem (North, 1990; Griffiths & Zammuto, 2005). Through laws, regulations, and enforcement mechanisms, institutional governance can constrain opportunistic behavior. According to institutional theory, firms are pressured to conform to societal norms and expectations (DiMaggio & Powell, 1983), including transparency, accountability, and protection of shareholder interests (Ortiz-de-Mandojana et al., 2014; Seifert & Gonenc, 2018).

In this context, strong institutional governance may reduce the extent to which managers can exploit policy uncertainty for EM. Exploring this moderating effect helps determine whether national-level governance structures can serve as an effective external check on managerial behavior.

The moderating role of institutional governance can also be explained through theoretical lenses. Agency theory posits that external monitoring mechanisms restrict managers' opportunism, while institutional theory highlights how firms conform to the "rules of the game" established by societal norms and legal frameworks (North, 1990; DiMaggio & Powell, 1983). In this regard, institutional governance extends beyond firm-level mechanisms by embedding expectations for transparency and accountability at the national level. Strong institutional settings not only discipline managerial behavior but also enhance the effectiveness of firm-level governance structures (Cumming et al., 2014; Kumar & Zattoni, 2016; Soong et al., 2021). Thus, theoretical perspectives suggest that robust institutional governance constrains the extent to which managers can exploit policy uncertainty for earnings manipulation. These insights imply a potential moderating role of institutional governance, which we formalize later in Hypothesis 2.

Literature Gap

Despite extensive research on EM and governance, several gaps remain. First, existing studies present inconsistent findings on the EPU–EM relationship, with evidence of both increased and reduced manipulation during uncertainty (Bermpei et al., 2019; Ghouli et al., 2020). Second, much of the literature focuses on firm-level governance mechanisms such as board independence and ownership concentration, which may not adequately capture macro-level risks posed by EPU (Chatterjee, 2020). Third, institutional governance—reflecting regulatory quality, enforcement, and broader institutional norms—remains underexplored in this context, even though it may play a more decisive role in constraining managerial discretion (Cumming et al., 2014; Soong et al., 2021). By addressing these gaps, the present study contributes to the literature by (i) clarifying the direction of the EPU–EM relationship, (ii) examining the substitution between AEM and REM during uncertainty, and (iii) investigating the moderating role of institutional governance, thereby extending governance research beyond firm-level mechanisms.

Hypothesis Development

Drawing on the above theoretical and empirical insights, and addressing the literature gaps identified, we develop the following hypotheses:

- H1: There is a positive relationship between EPU and EM.
- H2: Institutional governance has a negative moderating effect on the relationship between EPU and EM.

METHODOLOGY

Theoretical Framework

The study is grounded in Agency Theory and Positive Accounting Theory, which suggest that managers may use discretionary accounting choices to reduce information asymmetry and manage stakeholder perceptions under conditions of uncertainty (Jensen & Meckling, 1976). Political Cost Theory further implies that in high-uncertainty environments, managers may adjust reported earnings to mitigate political or regulatory scrutiny. At the institutional level, Institutional Theory highlights the role of governance structures in constraining opportunistic behaviors by shaping norms, enforcement, and compliance mechanisms (DiMaggio & Powell, 1983). Accordingly, the inclusion of EPU as an independent variable, EM as the outcome, and WGI as a moderator is theoretically justified.

Data Source and Selection

This study utilizes panel data of 27,598 publicly listed firms across 22 countries from 2014 to 2021. Public companies were selected for their greater susceptibility to EM in response to market pressures. To ensure sample consistency, we excluded firms in the financial, energy, oil and gas, and utilities sectors, as these industries are heavily regulated and their accrual patterns may differ from general operating firms (Ghoul et al., 2020; Lellis, 2022; Yung & Root, 2019). After filtering for missing values, the final sample comprises 188,417 firm-year observations.

Measuring EM

EM is assessed using two complementary approaches: AEM and REM. AEM is proxied by the performance-adjusted discretionary accruals model of Kothari et al. (2005), which controls for firm performance via return on assets (ROA). The model residuals, expressed as a percentage of total assets, capture discretionary accruals, and the absolute value of the residual term is used to indicate the extent of AEM regardless of direction (Ghoul et al., 2020). Financial statement data for these calculations are obtained from Compustat Global and Datastream.

REM is proxied following Roychowdhury (2006) using three indicators: abnormal operating cash flow, abnormal production costs, and abnormal discretionary expenses. Each proxy is calculated as the residual from its respective model, scaled by total assets, and expressed as a percentage. The three residuals are then aggregated to construct the REM index (Kim & An, 2021). The underlying financial data are sourced from Compustat Global and Datastream. Full details of these variables, including formulas and units, are reported in Table 1.

Measuring EPU

EPU is proxied by the index developed by Baker et al. (2016), which combines news-based coverage, tax code expiration data, and forecaster disagreement. The original index is available at monthly frequency; in this study, it is annualized by averaging monthly values to align with the firm-year panel data structure. The index is measured as a standardized score with a mean of 100, where higher values represent greater uncertainty (Al-Thaqeb & Algharabali, 2019; Ghoul et al., 2020). The index data are obtained from the Economic Policy Uncertainty database. Definitions and measurement details are provided in Table 1.

Table 1

Variable Definitions, Sources of Data, and Calculation of Variables

Variable	Definition and Source
AEM	Proxy of AEM. The residual of regression $\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \alpha_3 \frac{ROA_{it-1}}{A_{it-1}} + \varepsilon_{it}$
REM	Proxy of REM. Calculated by $-A_CFO + A_PRO - A_DIS$
CFO	Proxy 1 Cash flows of operations in REM model The residual of regression $\frac{CFO_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \beta_1 \frac{S_{it}}{A_{it-1}} + \beta_2 \frac{\Delta S_{it}}{A_{it-1}} + \varepsilon_{it}$
PRO	Proxy 2 Production cost in REM model The residual of regression $\frac{PROD_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \beta_1 \frac{S_{it}}{A_{it-1}} + \beta_2 \frac{\Delta S_{it}}{A_{it-1}} + \beta_3 \frac{\Delta S_{it-1}}{A_{it-1}} + \varepsilon_{it}$
DIS	Proxy 3 Discretionary expenses in REM model The residual of regression $\frac{DISC\ EXP_{it}}{A_{it-1}} = \alpha_0 + \alpha_1 \left(\frac{1}{A_{it-1}} \right) + \beta \frac{S_{it-1}}{A_{it-1}} + \varepsilon_{it}$
EPU	Economic Policy Uncertainty index. Aggregate news-based index constructed by Baker et al. (2016). It is an annualized index calculated by taking average of 12 months' values.
Size	Firm size. The natural logarithm of the company's total assets in millions.
Lev	Firm leverage. The sum of long-term debt divided by the total assets (Sweeney, 1994).
MTB	Market-to-book ratio. The ratio of the market value of equity to the book value of equity (Yung and Root, 2019).
Sales	The sales annual growth rate. The growth rate in sales comparing current period sales level to previous period sales level (Yung and Root, 2019).
Loss	Indicator of 0 representing profit-making companies, and 1 representing loss-making companies (Silva Roma et al., 2020).
CF	Cash flows. Operating cash flow scaled by total assets (Yung and Root, 2019).
ROA	Return on assets. Net income divide by total assets (Ghoul et al., 2020).

(continued)

Variable	Definition and Source
RGDPg	Real GDP annual growth rate. The growth rate in real GDP comparing current period real GDP to previous period real GDP (Ghoul et al., 2020; Bermpei et al., 2019; Silva Roma et al., 2020).
RGDP	The real GDP measured by country (Viana, 2021).
FMD	Financial Market Development. Percentage of market capitalization value divide by real GDP (Viana et al., 2023).
TO	Trade openness. The ratio of country's total trade (sum of exports and imports of goods and services of the country) to its real GDP (Keho & Wang, 2017).
WGI	World Governance Indicators. Country governance score developed by Kaufmann et al. (2010). It is an average value of the six indicators, denoted as WGI (Siddique et al., 2016).
Voice and Accountability (VnA)	Citizens' ability to participate in elections, and freedoms of expression, association, and media (Kaufmann et al., 2010).
Political Stability and Absence of Violence/Terrorism (PS)	Likelihood of political instability or violence, including terrorism (Kaufmann et al., 2010).
Government Effectiveness (GE)	Quality of public services, policy formulation and implementation, and civil service independence (Kaufmann et al., 2010).
Regulatory Quality (RQ)	Ability of the government to create and implement policies promoting private sector development (Kaufmann et al., 2010).
Rule of Law (RoL)	Confidence in rule enforcement, including contract enforcement, property rights, police, and judiciary (Kaufmann et al., 2010).
Control of Corruption (CoC)	Extent to which public power is used for private gain, including corruption and state capture (Kaufmann et al., 2010).

Measuring Institutional Governance

Institutional governance is proxied by the WGI compiled by Kaufmann et al. (2010). The WGI aggregates six dimensions of governance: Voice and Accountability, Political Stability, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption. Each indicator is scaled from -2.5 (weak governance) to +2.5 (strong governance). Following Siddique et al. (2016), the six indicators are averaged to construct a composite governance score for each country-year. The WGI dataset, available from the World Bank database, serves as the source of institutional governance measures. Table 1 presented variable definitions, proxies, scales, and sources in detail.

Empirical Analysis

To test the hypotheses, we estimate a panel fixed-effect regression model with robust standard errors. The dependent variables—AEM and REM—are analyzed separately to assess their relationship with EPU. The base model is as per below:

$$EM_{it} = \beta_0 + \beta_1 EPU_{it} + \sum \beta_j Control_{j,it} + v_i + \zeta_t + u_{it}, \quad (1)$$

where EM consists of two proxies namely AEM and REM. Controls include firm-level control variables (*Size*, *Lev*, *MTB*, *Sales*, *Loss*, *CF*, and *ROA*) and macroeconomic control variables (*RGDPg*, *RGDP*, *FMD*, and *TO*). The detailed description of each control variable is included in Table 1. We include firm-fixed effects (denoted as v_i) and time-fixed effect (devoted as ζ_t).

To test H2, we include the moderating variable WGI and the interaction term ($EPU \times WGI$) in the regression models.

$$EM_{it} = \beta_0 + \beta_1 EPU_{it} + \beta_2 WGI_{it} + \beta_3 (EPU_{it} * WGI_{it}) + \sum \beta_j Control_{j,it} + v_i + \zeta_t + u_{it}, \quad (2)$$

where β_1 measures the direct effect of EPU on EM, β_2 captures the direct effect of institutional governance, and β_3 reflects the moderating role of governance through the interaction term ($EPU \times WGI$). A negative coefficient on β_3 would indicate that stronger governance mitigates the positive impact of EPU on EM. This specification enables testing Hypothesis 2, which posits that institutional governance conditions the extent to which managers respond to policy uncertainty with earnings manipulation.

RESULTS

Summary Statistics

We winsorized six variables—Leverage, Cash Flow, ROA, Market-to-Book Ratio, Sales, and Financial Market Development—at the 1st and 99th percentiles to reduce outlier influence. Mean AEM and REM values are -0.01 and 0.01 , respectively, indicating balanced but contrasting EM practices across countries. India exhibits high EM, while China shows low EM usage. The mean EPU index is 202.14, with significant variation: China, the UK, Russia, and France experience high EPU, while Mexico and India record lower levels.

In terms of institutional governance (WGI), countries such as Canada, Singapore, and Sweden score high, whereas China, Mexico, and Russia show lower scores. Detailed descriptive statistics are provided in Tables 2 and 3.

Table 2*Descriptive Statistics by Country*

Countries	N	AEM	REM	EPU	Size	Lev	MTB	Sales	Loss	CF	ROA	RGDPg	RGDP	FMD	TO
Australia	9203	0.27	-0.02	112.47	2.95	0.27	-672.16	580.86	0.71	-0.36	-0.39	2.29	506495	0.42	0.94
Brazil	1565	-0.09	0.05	227.58	5.98	0.38	2.56	31.24	0.35	0.04	-0.05	-0.10	989853	0.21	0.41
Canada	16240	0.16	0.57	288.42	1.57	0.36	2.42	3843.81	0.83	-1.41	-4.64	1.41	1056104	0.05	0.85
Chile	640	-0.27	0.00	176.87	5.43	0.16	2.02	16.75	0.24	0.04	0.01	5.71	166680	0.56	0.86
China	35805	0.01	-0.02	363.49	5.83	0.05	3.35	49.84	0.13	0.03	-0.06	6.34	13185868	0.02	0.35
Colombia	196	-0.32	-0.05	141.95	5.44	0.11	0.64	12.03	0.34	0.05	-0.01	2.84	241826	0.21	0.38
France	3124	0.01	-0.07	265.19	5.19	0.20	1.18	108.44	0.43	-0.03	-0.09	1.19	1680154	0.25	0.70
Germany	3218	-0.07	0.05	215.36	5.09	0.22	3.95	84.73	0.34	0.00	-0.07	1.09	3505749	0.11	0.76
Greece	959	-0.55	0.07	95.05	4.43	0.18	0.82	13.82	0.49	0.02	-0.09	0.26	203211	0.10	0.46
India	22204	0.53	0.44	75.20	2.20	0.28	2.56	125.84	0.33	0.07	-0.02	5.10	1449635	0.03	0.53
Ireland	528	0.20	-0.09	179.71	6.46	0.20	4.41	119.61	0.43	-0.02	-0.09	9.64	221889	4.77	1.13
Italy	1248	0.07	0.09	122.18	4.62	0.14	1.75	147.76	0.30	0.04	-0.02	0.53	1167468	0.08	0.86
Japan	24562	0.42	0.08	112.71	5.68	0.09	2.00	6.31	0.15	0.06	0.03	0.15	5563615	0.03	0.25
Mexico	610	-0.28	-0.10	63.21	7.28	0.23	2.21	7.67	0.19	0.08	0.03	1.00	990019	0.44	0.86
Netherlands	722	-0.09	0.01	89.84	6.07	0.18	3.72	123.11	0.37	0.02	-0.10	1.70	923485	0.68	1.39
Russia	424	-0.41	0.20	270.76	6.16	0.65	4.55	24.20	0.28	0.07	-0.07	0.75	1725943	0.15	0.37
Singapore	2757	-0.04	0.10	202.34	4.51	0.10	-0.22	32.04	0.40	0.00	-0.13	2.95	231422	0.33	3.17
South Korea	15884	-0.20	0.13	170.15	4.94	0.08	2.02	43.79	0.32	0.03	-0.01	2.57	1178733	0.06	0.89
Spain	840	-0.16	-0.13	136.12	5.41	0.22	2.58	108.28	0.34	0.03	0.00	1.41	790057	0.39	0.86
Sweden	5274	0.40	-0.12	106.64	3.30	0.10	7.13	187.84	0.54	-0.15	-0.20	2.70	406245	0.27	0.78
United Kingdom	6227	0.04	-0.09	336.84	4.66	0.34	4.85	95.61	0.44	-0.08	-0.25	1.36	2230047	0.12	0.50
United States of America	36187	-0.24	-0.18	174.24	4.63	0.46	-5.40	172.95	0.57	-1.29	-6.99	2.11	18484124	0.03	0.22
Grand Total	188417	-0.01	0.01	202.14	4.69	0.21	-34.15	245.68	0.38	-0.43	-1.73	2.95	7375753	0.09	0.54

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The variables to the right of the sample count “*n*” shows the mean value of each dependent, independent and control variables, by country. AEM is the measure on AEM using the model of Kothari et al. (2005). REM is the measure on REM using the model of Roychowdhury (2006). Definitions of the EM models are given in the data and methodology section. Calculations in deriving the proxy are given in Table 1. EPU is the news-based policy uncertainty index developed by Baker et al. (2016). Each country’s index is standardized and normalized to a mean of 100. The 11 variables to the right of EPU are control variables. Definitions and measures are given in Table 1.

Table 3

Descriptive Statistics for Moderating Variables by Country

Countries	N	WGI	VnA	PS	GE	RQ	RoL	CoC
Australia	9203	1.54	1.35	0.93	1.57	1.86	1.73	1.79
Brazil	1565	-0.19	0.37	-0.42	-0.29	-0.18	-0.19	-0.4
Canada	16240	1.59	1.46	1.09	1.72	1.72	1.76	1.8
Chile	640	0.98	1.01	0.28	1	1.26	1.15	1.16
China	35805	-0.35	-1.59	-0.38	0.51	-0.22	-0.23	-0.21
Colombia	196	-0.19	0.1	-0.89	-0.02	0.37	-0.37	-0.3
France	3124	1.10	1.14	0.21	1.37	1.19	1.39	1.28
Germany	3218	1.48	1.41	0.68	1.55	1.71	1.66	1.85
Greece	959	0.28	0.76	0.01	0.31	0.38	0.23	-0.01
India	22204	-0.16	0.31	-0.85	0.16	-0.24	-0.03	-0.28
Ireland	528	1.42	1.33	0.95	1.44	1.64	1.53	1.62
Italy	1248	0.53	1.01	0.42	0.46	0.69	0.31	0.29
Japan	24562	1.35	1	1.04	1.65	1.32	1.54	1.53
Mexico	610	-0.35	-0.04	-0.76	-0.03	0.18	-0.6	-0.83
Netherlands	722	1.65	1.52	0.91	1.84	1.87	1.83	1.93
Russia	424	-0.67	-1.09	-0.75	-0.07	-0.46	-0.78	-0.88
Singapore	2757	1.62	-0.15	1.45	2.24	2.19	1.85	2.13
South Korea	15884	0.87	0.75	0.42	1.22	1.09	1.13	0.59
Spain	840	0.82	1.02	0.35	1.04	0.89	0.97	0.67
Sweden	5274	1.68	1.55	1.01	1.7	1.79	1.87	2.14
United Kingdom	6227	1.39	1.3	0.42	1.49	1.67	1.64	1.79
United States of America	36187	1.15	0.98	0.28	1.46	1.42	1.52	1.26
Grand Total	188417	0.78	0.46	0.27	1.14	0.92	0.98	0.88

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

The variable to the right of the sample count “*n*” shows the mean value of World Governance Index (WGI), by country. WGI is country governance score developed by Kaufmann et al. (2010). The variable WGI shows the average value of the six indicators included in the index. The six variables to the right of WGI show the mean values of each indicator in the index, by country. VnA, PS, GE, RQ, RoL, and CoC are the annotations of the six indicators, namely Voice and Accountability (VnA), Political stability and absence of violence/terrorism (PS), Government effectiveness (GE), Regulatory quality (RQ), Rule of law (RoL), and Control of Corruption (CoC). Definitions are given in Table 1.

Econometric Analysis

Relationship between EPU and EM

Table 4 presents the regression results for Hypothesis 1. We find a significant positive association between EPU and AEM ($\beta = 0.142$, $p < 0.001$) and a negative association with REM ($\beta = -0.141$, $p < 0.01$). The coefficient of 0.142 ($p < 0.001$) on AEM implies that a one-unit increase in the EPU index leads to an approximate 14.2% increase in discretionary accruals scaled by assets, confirming a statistically and economically meaningful effect. Conversely, the coefficient of -0.141 ($p < 0.01$) for REM indicates a 14.1% reduction in abnormal real activities for each unit increase in EPU. This implies that, under policy uncertainty, managers favor accrual-based methods due to their flexibility and

alignment with fiscal periods. In contrast, REM—being more detectable and having direct cash flow impacts—appears less favorable during uncertain times (Cohen et al., 2008; Barton & Simko, 2002). These findings suggest that EPU shifts managerial preference toward AEM rather than increasing all types of EM uniformly.

To address potential endogeneity concerns, the baseline model was further estimated using the two-step system Generalized Method of Moments (GMM) estimator (Arellano & Bover, 1995; Blundell & Bond, 1998). Table 4 reports the results of the dynamic panel GMM estimation for both AEM and REM. Consistent with the fixed effects model, the coefficient of EPU is positive and significant for AEM ($\beta = 0.386, p < 0.10$) and negative and significant for REM ($\beta = -1.052, p < 0.05$). These findings reaffirm that higher policy uncertainty is associated with greater accrual manipulation and lower real manipulation, even after accounting for potential endogeneity and firm-specific dynamics.

The diagnostic tests support the reliability of the GMM estimates. The Arellano–Bond AR (1) test indicates the expected first-order serial correlation ($p < 0.01$), while the AR (2) test shows no evidence of second-order serial correlation ($p > 0.10$). The Sargan test of over-identifying restrictions is insignificant (AEM: $p = 0.959$; REM: $p = 0.356$), confirming the validity of the instruments used. Overall, the GMM results are consistent with the fixed-effect-model estimates, suggesting that endogeneity is not a major concern in the baseline model, and the fixed-effects approach remains an appropriate and robust estimator for subsequent analyses. Hence, for the subsequent analysis, we retained fixed-effect model as the main estimator as fixed-effect model has been widely applied in prior studies on EPU and EM (e.g., Bermpei et al., 2019; Ghoul et al., 2020). Also, as our dataset covers a relatively short time span (2014–2021), it limits the availability of lags required for reliable GMM estimation.

Table 4

Regression of EPU on AEM and REM

	Fixed-effect Estimator		GMM Estimator	
	AEM	REM	AEM	REM
EPU	0.14***	−0.14**	0.3856*	−1.0520**
L.laem			0.013	
L.lrem				−0.3647**
Size	−0.07***	−0.13***	−0.0496	0.018
Lev	−0.09	−0.02	0.0526	−0.4047
MTB	−0.00	−0.00	0	0.0105
Sales growth	0.00	−0.04***	−0.0156	−0.1104
Loss	−0.31***	0.02	−0.3326	0.0359
CF	−1.21***	−0.68***	−1.8498*	−1.2117***
ROA	0.77***	0.31***	0.8023	0.0935
Real GDP growth	−0.00	−0.03***	−0.0891*	0.0404
Real GDP	0.05	1.42***	−0.1574	−0.2898
FMD	0.14*	−0.29	0.2077	−0.1806
TO	−0.18	−0.22	−0.3489	−0.7448
Constant	−2.15	−20.83***		
N	31786	19226	24506	14623

(continued)

	Fixed-effect Estimator		GMM Estimator	
	AEM	REM	AEM	REM
ar1			-6.08	-4.1178
ar1 <i>p</i> value			0	0
ar2			-0.4453	1.2989
ar2 <i>p</i> value			0.6561	0.194
Sargan			2.0072	8.8452
Sargan <i>p</i> value			0.9594	0.3555

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

This table reports regression results of the effect of EPU on AEM and REM. The regression model is two-way robust fixed-effect model, with the two-step GMM estimator included as a robustness check to address potential endogeneity concerns. EPU is the news-based policy uncertainty index developed by Baker et al. (2016). Each country's index is standardized and normalized to a mean of 100. AEM is the measure on AEM using the model of Kothari et al. (2005). REM is the measure on REM using the model of Roychowdhury (2006). Definitions of the EM models are given in the data and methodology section. Calculations in deriving the proxies are given in Table 1.

Institutional Governance as Moderating Variable

Table 5 shows the results of Hypothesis 2. EPU remains positively associated with AEM even after including the interaction term $EPU \times WGI$ ($\beta = 0.237, p < 0.001$). However, the interaction term itself is significantly negative ($\beta = -0.087, p < 0.001$), indicating that for each one-unit increase in governance score, the effect of EPU on AEM decreases by 8.7 percentage points. This indicates that strong institutional governance does not merely weaken but actually reverses the EPU–AEM relationship. Under high governance quality, greater policy uncertainty is associated with reduced accrual manipulation, reflecting the disciplining effect of institutional enforcement mechanisms. Managers are less inclined to engage in AEM when governance systems provide high transparency, accountability, and enforcement.

For REM, EPU remains negatively significant ($\beta = -0.112, p < 0.05$), but the $EPU \times WGI$ interaction is not significant, suggesting governance does not moderate this relationship in a statistically meaningful way. This indicates that institutional governance exerts more influence over AEM than REM.

Table 5

Regression of EPU on AEM and REM with Moderating Effect of Institutional Governance

	Panel A Regression of EPU on AEM						
	AEM	AEM	AEM	AEM	AEM	AEM	AEM
EPU	0.24***	0.17***	0.17***	0.27***	0.24***	0.26***	0.24***
Size	-0.07***	-0.07***	-0.07***	-0.08***	-0.07***	-0.07***	-0.07***
Lev	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10	-0.10
MTB	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Sales growth	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Loss	-0.31***	-0.30***	-0.31***	-0.31***	-0.30***	-0.31***	-0.31***
CF	-1.22***	-1.21***	-1.21***	-1.21***	-1.22***	-1.21***	-1.21***
ROA	0.77***	0.77***	0.77***	0.77***	0.77***	0.77***	0.77***
Real GDP growth	0.00	-0.00	-0.00	-0.00	-0.00	0.00	-0.00
Real GDP	-0.54***	-0.39*	-0.20	-0.22	-0.36*	-0.75***	-0.38*

(continued)

Panel A Regression of EPU on AEM							
	AEM	AEM	AEM	AEM	AEM	AEM	AEM
FMD	0.15*	0.15*	0.14*	0.14*	0.15*	0.16*	0.15*
TO	-0.17	-0.16	-0.16	-0.15	-0.15	-0.11	-0.16
WGI	0.68***						
EPU*WGI	-0.09***						
VnA		0.40***					
PS			0.50**				
GE				0.60**			
RQ					0.65***		
RoL						0.72***	
CoC							0.51***
EPU*VnA		-0.06***					
EPU*PS			-0.09**				
EPU*GE				-0.11**			
EPU*RQ					-0.08***		
EPU*RoL						-0.09***	
EPU*CoC							-0.08***
Constant	6.07**	4.32	1.47	1.13	3.30	9.00***	3.78
N	31786	31786	31786	31786	31786	31786	31786
Panel B Regression of EPU on REM							
	REM	REM	REM	REM	REM	REM	REM
EPU	-0.11*	-0.15**	-0.16**	-0.08	-0.24***	-0.14*	-0.10
Size	-0.12**	-0.14***	-0.13**	-0.13**	-0.18**	-0.13***	-0.13**
Lev	-0.05	-0.02	-0.03	-0.05	-0.05	-0.03	-0.04
MTB	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00
Sales growth	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***	-0.04***
Loss	0.01	0.02	0.02	0.01	0.02	0.01	0.01
CF	-0.68***	-0.68***	-0.68***	-0.68***	-0.67***	-0.68***	-0.68***
ROA	0.32***	0.32***	0.32***	0.31***	0.31***	0.32***	0.32***
Real GDP growth	-0.02***	-0.03***	-0.03***	-0.02**	-0.03***	-0.02***	-0.02***
Real GDP	0.88**	1.45***	1.67***	0.23	1.64***	0.96**	0.79*
FMD	-0.27	-0.29	-0.28	-0.30	-0.28	-0.28	-0.27
TO	-0.35	-0.18	-0.27	-0.22	-0.34	-0.24	-0.35
WGI	0.22						
EPU*WGI	0.07						
VnA		-0.19					
PS			-0.47				
GE				0.29			
RQ					-0.06		
RoL						-0.01	
CoC							0.06
EPU*VnA		0.01					

(continued)

Panel B Regression of EPU on REM							
	REM	REM	REM	REM	REM	REM	REM
EPU*PS			0.12				
EPU*GE				0.02			
EPU*RQ					0.11**		
EPU*RoL						0.05	
EPU*CoC							0.05
Constant	-13.17**	-21.21***	-24.61***	-3.52	-24.09***	-14.01**	-11.69**
N	19226	19226	19226	19226	19226	19226	19226

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

This table reports regression results of the effect of EPU on EM in Panel A and the regression results with the moderating effect of World Governance Index in Panel B. The regression model is two-way robust fixed-effect model. EPU is the news-based policy uncertainty index developed by Baker et al. (2016). Each country's index is standardized and normalized to a mean of 100. AEM is the measure on AEM using the model of Kothari et al. (2005). REM is the measure on REM using the model of Roychowdhury (2006). WGI is country governance score developed by Kaufmann et al. (2010). The variable WGI shows the average value of the six indicators included in the index. VnA, PS, GE, RQ, RoL, and CoC are the annotations of the six indicators, namely Voice and Accountability (VnA), Political stability and absence of violence/terrorism (PS), Government effectiveness (GE), Regulatory quality (RQ), Rule of law (RoL), and Control of Corruption (CoC). The asterisk sign “*” represents the interaction between two variables. Definitions and measurements are given in Table 1.

Robustness Checks and Extensions

To ensure model validity, formal diagnostic tests were performed. The Modified Wald Test indicates the presence of group-wise heteroscedasticity ($\chi^2(10631) \approx 5.6e + 35, p < 0.001$), while the Wooldridge Test detects autocorrelation in the residuals ($F(1, 3838) = 41.585, p < 0.001$). These results justify the use of firm-level clustered robust standard errors. In addition, the Mundlak approach confirms that a fixed-effects model is preferred over random-effects in this panel setting ($\chi^2(19) = 57,598.15, p < 0.001$), ensuring that unobserved heterogeneity is properly accounted for. Potential specification bias was mitigated through robustness checks incorporating lagged EPU and lagged EM (Tables 7 and 8). These diagnostic adjustments confirm that the reported relationships are not driven by model misspecification or statistical artifacts.

Substitutive or Complementary Relationship between AEM and REM

To assess whether AEM and REM act as substitutes or complements, we rerun the models including the alternate EM method as a control variable (Kim & An, 2021).

$$AEM_{it} = \beta_0 + \beta_1 EPU_{it} + \beta_2 REM_{it} + \sum \beta_j Control_{j,it} + v_i + \varsigma_t + u_{it} \quad (3)$$

$$REM_{it} = \beta_0 + \beta_1 EPU_{it} + \beta_2 AEM_{it} + \sum \beta_j Control_{j,it} + v_i + \varsigma_t + u_{it}. \quad (4)$$

In addition, to assess whether the relationship is moderated by WGI after controlling the other EM method respectively, we add WGI and the interaction EPU*WGI into equation (3) and equation (4).

Table 6 reports a positive and significant relationship between REM and AEM, and vice versa, indicating a complementary relationship (Li, 2019). Managers appear to use both techniques simultaneously to achieve reporting objectives.

Even after controlling for REM, EPU still significantly affects AEM, and the $EPU \times WGI$ interaction remains negative. Conversely, REM continues to be negatively influenced by EPU and is positively moderated by WGI only after adjusting for AEM, suggesting AEM plays a leading role in shaping the EM response to uncertainty.

Table 6

Regression Analysis after Controlling EM Methods Respectively, with and without WGI

	Without Moderating Variable, WGI		With Moderating Variable, WGI	
	Control REM	Control AEM	Control REM	Control AEM
	AEM	REM	AEM	REM
EPU	0.16**	-0.14*	0.30***	-0.22**
AEM		0.13***		0.13***
REM	0.07***		0.07***	
WGI			1.04***	-0.42
EPU*WGI			-0.11**	0.12*
N	10500	10500	10500	10500

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$ ** $p < 0.01$ *** $p < 0.001$.

This table reports regression results of the effect of EPU on AEM and REM after controlling the opposite method of EM, with and without the moderating effect of World Governance Index. The regression model is two-way robust fixed-effect model. The first two columns show the regression results without WGI, with the first column showing the effect of EPU on AEM after controlling REM, and the second column showing the effect of EPU on REM after controlling AEM. The last two columns show the regression results with the moderating effect of WGI, with the first column showing the effect of EPU, WGI and the interaction of EPU and WGI on AEM after controlling REM, and the second column showing the effect of EPU, WGI and the interaction of EPU and WGI on REM after controlling AEM.

Effect of Previous Year Uncertainty on the Relationship of EPU and EM

We include lagged EPU (EPU_{t-1}) as a control to isolate the influence of current EPU on EM. Table 7 confirms that current EPU continues to significantly affect both AEM and REM, even after accounting for past EPU. This suggests that managers respond to real-time uncertainty rather than relying solely on past policy environments.

Importantly, when controlling for past EPU, the $EPU \times WGI$ interaction becomes significant for both AEM (negative) and REM (positive), indicating that governance moderates both EM types under a refined model. This reinforces the need for real-time policy monitoring and adaptive governance structures.

Table 7

Regression Analysis after Controlling Past EPU

	Without Moderating Variable, WGI				With Moderating Variable, WGI			
	Without complementary effect		With complementary effect of another EM method		Without complementary effect		With complementary effect of another EM method	
	AEM	REM	AEM	REM	AEM	REM	AEM	REM
EPU	0.10***	-0.13**	0.14**	-0.12*	0.19***	-0.13*	0.28***	-0.22**
EPU t-1	0.11***	-0.04	0.06	-0.06	0.10***	0.05	0.04	-0.01
WGI					0.64***	0.18	1.00***	-0.41
EPU*WGI					-0.07***	0.08*	-0.10*	0.12*
REM			0.07***				0.07***	
AEM				0.13***				0.13***
N	31786	19226	10500	10500	31786	19226	10500	10500

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

This table reports regression results of the effect of EPU on AEM and REM after controlling past EPU and the opposite method of EM, with and without the moderating effect of World Governance Index. The regression model is two-way robust fixed-effect model. The first four columns show the regression results without WGI, with the first column showing the effect of EPU on AEM after controlling past EPU, the second column showing the effect of EPU on REM after controlling past EPU, the third column showing the effect of EPU on AEM after controlling past EPU and REM, and the fourth column showing the effect of EPU on REM after controlling past EPU and AEM. The last four columns show the regression results with the moderating effect of WGI, with the first column showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM after controlling past EPU; the second column showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM after controlling past EPU; the third column showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM after controlling past EPU and REM; and the fourth column showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM after controlling past EPU and AEM.

Effect of Previous year EM on the Relationship of EPU and EM

We further control for past EM behavior (AEM_{t-1} and REM_{t-1}) to isolate the influence of current EPU. Table 8 shows that current EPU remains a significant predictor of AEM and REM, even after adjusting for past EM. This confirms that current economic uncertainty plays a dominant role in shaping EM practices.

When institutional governance is introduced, the $EPU \times WGI$ interaction stays significant for AEM but not REM—consistent with earlier findings. However, the continued significance of EPU affirms its persistent influence on managerial decision-making, independent of past behavior.

Table 8

Regression Analysis after Controlling Past EM (Both AEM and REM)

	Without Complementary Effect				With Complementary Effect of Another EM Method			
Panel A Regression analysis after controlling past AEM and REM								
	AEM	REM	AEM	REM	AEM	REM	AEM	REM
EPU	0.12***	-0.13*	0.16**	-0.20***	0.16***	-0.14*	0.15*	-0.18**
AEM $t-1$	-0.01	0.01			0.03	0.02		
REM $t-1$			-0.01	0.04			-0.01	0.03
AEM						0.12***		0.13***
REM					0.05***		0.08***	
N	24506	10367	9299	14623	9371	9371	7805	7805
Panel B Regression analysis after controlling past AEM and REM with moderating effect of WGI								
	AEM	REM	AEM	REM	AEM	REM	AEM	REM
EPU	0.26***	-0.15*	0.34***	-0.18**	0.29***	-0.18*	0.33***	-0.28***
AEM $t-1$	-0.01	0.09			0.03	0.02		
REM $t-1$			-0.07	0.03			-0.01	0.03
WGI	0.91***	-0.04	1.25***	0.17	1.01***	-0.23	1.28***	-0.59
EPU*WGI	-0.14***	0.06	-0.12**	0.09*	-0.11***	0.08	-0.12**	0.15**
AEM						0.12***		0.13***
REM					0.05***		0.08***	
N	24506	10367	9299	14623	9371	9371	7805	7805

Notes. The parentheses report the t statistics where the asterisk representing * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

This table reports regression results of the effect of EPU on AEM and REM after controlling past EM and the opposite method of EM in Panel A, and the regression results with the moderating effect of World Governance Index in Panel B. The regression model is two-way robust fixed-effect model. The regression model is two-way robust fixed-effect model. The first four columns show the regression results without complementary effect of opposite method of EM and with WGI, with the first column showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM after controlling past AEM; the second column showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM after controlling past AEM; the third column showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM after controlling past REM; and the fourth column showing the effect of EPU, WGI and the interaction of EPU and WGI on REM after controlling past REM. The final four columns show the regression results with complementary effect of opposite method of EM and with WGI, with the first column showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM after controlling past AEM and current REM; the second column showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM after controlling past AEM and current AEM; the third column showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM after controlling past REM and current REM; and the fourth column showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM after controlling past REM and current AEM.

Market Classification Analysis: Emerging vs Developed

To examine whether the EPU–EM relationship differs across contexts, we categorized the 22 countries into emerging and developed markets using MSCI (2023) and S&P (2024) classifications. Table 9 presents the regression results.

In emerging markets, EPU is significantly positively associated with AEM and negatively with REM. In developed markets, only the positive AEM relationship remains significant. This suggests that firms in emerging markets may face greater pressure from uncertainty, pushing them to rely more heavily on EM strategies. Developed markets, with stronger reporting standards and institutional frameworks, may favor accrual adjustments over real activity distortions.

Institutional governance also moderates these relationships differently. In developed markets, stronger governance structures weaken the EPU–EM link, reflecting robust enforcement and oversight (La Porta et al., 1998). In emerging markets, governance improvements may not sufficiently reduce EM due to overriding pressures for growth or limited enforcement (Hong et al., 2023).

Our findings also confirm that firms in emerging markets rely more on REM, while those in developed markets favor AEM. This may be due to constraints in accrual manipulation capabilities in less developed capital markets, or a preference for subtler forms of manipulation in environments with greater scrutiny (Barton & Simko, 2002; Viana et al., 2023). The moderating role of governance remains consistent with earlier hypotheses.

Discussion of Results

Overall, the findings are consistent with Agency Theory and Positive Accounting Theory, which predict that managers exploit reporting discretion under uncertainty. The preference for AEM over REM during high EPU is in line with Cohen et al. (2008) and Barton and Simko (2002), who argue that accrual manipulation is less detectable and easier to reverse. The moderating role of WGI supports Institutional Theory by demonstrating that strong governance constrains managerial opportunism, consistent with Siddique et al. (2016). Hypothesis 1 is therefore supported, while Hypothesis 2 is partially supported, as governance weakens the EPU–AEM link but shows weaker influence on REM, suggesting that governance has limited influence on real activity manipulation. This may be because REM involves operational decisions rather than accounting entries, making it harder to detect and regulate through traditional governance mechanisms (Roychowdhury, 2006; Dechow et al., 2010).

Table 9

Regression Analysis after Segregating Emerging (EM) and Developed Markets (DM)

	EM	DM	EM	DM	EM	DM	EM	DM
	Without Complementary Effect				With Complementary Effect of Another EM Method			
Panel A Regression analysis after segregating emerging and developed markets								
	AEM	AEM	REM	REM	AEM	AEM	REM	REM
EPU	0.20*	0.16***	−0.24**	0.09	0.07	0.31***	−0.42**	0.04
REM					−0.01	0.08***		
AEM							−0.02	0.17***
N	11715	20071	9600	9626	4316	6184	4316	6184
Panel B Regression analysis with moderating effect of WGI after segregating emerging and developed markets								
	AEM	AEM	REM	REM	AEM	AEM	REM	REM
EPU	0.19*	0.28	−0.22*	0.18	0.11	0.54	−0.42**	0.06
REM					−0.01	0.08***		
AEM							−0.02	0.17***
WGI	0.06	0.40	1.00	0.70	−1.80	0.70	3.34*	−0.22
EPU*WGI	−0.03	−0.10	0.03	−0.07	0.38*	−0.18	−0.31	−0.02
N	11715	20071	9600	9626	4316	6184	4316	6184

Notes. The parentheses report the *t* statistics where the asterisk representing * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

This table reports regression results of the effect of EPU on AEM and REM with and without the complementary effect of alternative EM methods after segregating the countries into two broad categories, namely emerging markets and developed markets, without moderating effect of World Governance Index in Panel A and with the effect in Panel B. The first four columns show the regression results without controlling the alternative EM method, with the first two columns showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM and the next two columns showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM. The last four columns show the regression results with the control on the alternative EM method, with the first two columns showing the effect of EPU, WGI, and the interaction of EPU and WGI on AEM and the next two columns showing the effect of EPU, WGI, and the interaction of EPU and WGI on REM.

CONCLUSION

This study investigates how EPU influences AEM and REM, and how institutional governance moderates these relationships. We find that during times of high EPU, firms increase AEM and reduce REM, suggesting a strategic shift toward more controllable and less observable forms of EM. Stronger institutional governance reduces the impact of EPU on AEM, but has limited moderating effect on REM unless complementary effects and lagged factors are considered.

We also find that AEM and REM are complementary rather than substitutive, with managers using both techniques concurrently. Additional robustness tests confirm the persistent influence of current EPU on EM, even after controlling for past EPU and EM. Importantly, the moderating effect of governance becomes more significant in refined models.

Market segmentation reveals further insights: AEM dominates in developed markets, while REM plays a greater role in emerging ones. Institutional governance moderates EM more effectively in developed markets, suggesting differences in institutional capacity and enforcement.

The results carry several policy implications. First, regulatory bodies should strengthen monitoring mechanisms specifically targeting AEM, as it becomes the dominant manipulation strategy during uncertain periods. Second, given the difficulty of detecting REM, policymakers should consider expanding disclosure requirements around operational decisions (e.g., R&D cuts, sales incentives) and increasing auditor scrutiny of nonfinancial indicators that may signal real manipulation. Third, governance reforms should prioritize enhancing the independence and enforcement capacity of institutions, particularly in emerging markets where REM is more common and harder to curb. Finally, cross-country coordination may help reduce regulatory gaps that encourage earnings manipulation across different market settings.

This study bridges macroeconomic uncertainty and corporate behavior by highlighting how external shocks and governance quality shape financial reporting. It contributes to agency and institutional theories and provides actionable insights for regulators and policymakers. Future research should explore industry-specific dynamics, longitudinal effects, and regional variations. Employing alternative statistical methods and incorporating additional macroeconomic variables could further enhance understanding. Expanding the country sample and exploring country-level case studies may also yield more nuanced insights into EM under uncertainty.

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