



The Nexus between Corporate Life Cycle and Earnings Management at Companies Listed on the Bucharest Stock Exchange

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Abstract

This research investigates the nexus between the corporate life cycle (CLC) and accrual-based earnings management (AEM) and real earnings management (REM) practices. Companies listed on the main segment of the Bucharest Stock Exchange between 2007 and 2021 are analyzed through fixed effects and random effects models. The regression analysis uncovers that earnings management practices vary based on the developmental stage of the company. In the introduction stage, Romanian companies tend to prefer AEM techniques, while in the growth and maturity phases, REM practices are more prevalent. The conditions in which firms operate, the pressure from the capital market and the discretion over costs characteristic of each stage of development explain the preference for a certain method of earnings management. Overall, this investigation helps clarify CLC's role in adopting earnings management techniques (AEM/REM) and signals the need to pay particular attention to the quality of financial reporting of companies in the early stages of development. The findings hold significance for auditors, financial analysts, investors, lenders, and regulators alike.

Key words: real earnings management; life cycle; discretionary accruals; cash flows;

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Introduction

Corporate life cycle theory (CLC) posits that organizations, akin to living organisms, undergo distinct stages or phases of development, influenced by internal and external factors (Chen et al., 2010). The sequential evolution of the firm, from launch to decline, supported by the traditional view of CLC, is challenged by recent studies, which show that the transition of firms from one stage to another is not linear and predictable (Dickinson, 2011; Habib & Hasan, 2019). The literature also reveals that CLC phases influence earnings management practices (Almand et al., 2023; Comporek, 2023; Hamideh & Mehdi, 2017; Hussain et al., 2020; Jaggi et al., 2022; Xie et al., 2022). Each development phase offers companies various possibilities for smoothing profits, which leads managers to alternate AEM/REM techniques depending on the specifics of the life stage (Bansal, 2022). In light of this context, an important question emerges: *Do Romanian companies' preferences for specific earnings management techniques vary depending on their stage of development?*

Therefore, we investigate whether *accrual-based earnings management (AEM)* and *real earnings management (REM)* practices follow a pattern that corresponds to the corporate life cycle. The objective of the study is to examine whether Romanian listed companies are more inclined to use AEM/REM techniques in specific stages of the life cycle, respectively in those of growth and maturity there is a greater temptation to use REM, and in those of introduction and decline, managers are more inclined to turn to AEM. In the introduction stage, companies typically engage in research and development projects, with managers having limited discretion over costs and being unable to adjust operational schedules to meet specific profit targets. Given the higher volatility of activities in this stage, there is some flexibility in choosing accounting methods, making these companies predisposed to using AEM techniques (Hamideh & Mehdi, 2017). Different conditions faced by mature or growth firms, particularly increased market pressure and reduced informational asymmetry, make REM techniques preferred (Krishnan et al., 2021; Roma et al., 2021). The decline stage is associated with declining sales and profits, increased risk of bankruptcy, reduced analyst attention, and inadequate internal control systems (Hussain et al., 2020), which implies a higher expectation of AEM techniques (Hamideh & Mehdi, 2017).

To the best of our knowledge, this is the first study that investigates, in the case of listed firms in Romania, the nexus between corporate life cycle phases and both categories of earnings management practices (accrual-based earnings management - AEM, and real earnings management - REM). This study complements the extant literature in the field of organizational life cycle, offering new insights into firms' behaviour at various stages of CLC, supported by fresh evidence that allows for the examination of the presence of a relevant relationship between AEM/REM and CLC. This evidence is customized in the context of an emerging country in Central and Eastern Europe, which has received comparatively less attention (Durana et al., 2021), namely Romania. The originality of the paper is also related to the use of both categories of AEM and REM techniques, considering that the former (AEM techniques) are extensively studied in the literature (Srivastava, 2019). The majority of empirical studies treat CLC as an independent variable. A recent study (Comporek, 2023) emphasizes the necessity of investigating the impact of each life stage on firms' likelihood of engaging in earnings management, while researchers' exploration in this direction is relatively recent and limited (Roma et al., 2021), confined to a single category of earnings management practices (Hussain et al., 2020).

To address the research question posed earlier, two models employing fixed and random effects, respectively, are utilized. The analyzed panel data comprises companies listed on the main segment of the Bucharest Stock Exchange (BSE) during the period 2007-2021. Life cycle phases are identified based on the method developed by Dickinson (2011), which utilizes expected cash flow and is considered superior to alternative approaches (Kabir et al., 2020; Chireka, 2020). The findings unveil the influence of the business lifecycle on earnings management practices. As expected, in the introduction stage, managers exhibit a preference for AEM techniques to smooth profits, while in the growth and maturity stages, marked by reduced information asymmetry and heightened capital market pressure, managers tend to get more involved in REM techniques. No evidence is found to validate the preference of Romanian companies for AEM techniques in the final stage, decline.

The rest of the paper is developed as follows. Section 1 discusses the fundamental theories and representative papers in the field, laying the groundwork for the

formulation of research hypotheses. The second section is dedicated to research methodology. Section 3 presents and discusses the results obtained and the last section concludes the paper.

1. Conceptual delimitations and interactions between corporate life cycle theory and earnings management

The organizational life cycle theory considers the firm a social being that undergoes a series of changes and adaptations, representing stages in its development. Numerous authors have attempted to delimit the CLC into sequential or non-sequential stages, involving organizational changes that need to be managed. Among them, Dickinson (2011) delineates five stages of the life cycle (introduction, growth, maturity, shake-out and decline) based on the expected cash flow behaviour (cash flow model). According to this author, cash flows have the ability to capture, from one stage of the CLC to another, the differences in profitability and risk. The CLC is seen by Comporek (2023) as a factor shaping each enterprise's organizational culture, leadership styles, and decision-making processes.

Changes in internal and external business conditions leave their mark on the organizational life cycle and contribute to the individualization of its distinct stages, where aspects such as funding potential, investment capacity, cost structure, personnel policy, financial performance, etc., naturally exhibit certain inconsistencies or require specific restructuring. As a result, the variability in operating conditions that organizations experience throughout the life cycle, coupled with the anticipated performance improvements sought by managers, may predispose them to employ judgement and flexibility in accounting standards to develop earnings management practices, serving either their own interests or those of the organization.

Accrual-based earnings management versus real earnings management

Earnings management is explained through the lens of various well-known theories, which complement and interconnect with each other, including agency theory, contract theory, signaling theory, institutional theory, and

the threshold theory. Building upon these, the literature considers that earnings management derives from "the game of information disclosure that executives and outsiders must play" (Degeorge et al., 1999). The "game" takes into account the principle that earnings consist of both cash flows and accounting adjustments, which give rise to accruals. Consequently, earnings management can be achieved either by manipulating cash flows or accruals, adopting either an accrual-based or a real-based form (Benilles, 2015).

Fudenberg and Tirole (1995) and Roychowdhury (2006) establish that managerial intervention in the reporting process can occur through both accounting estimates and methods (discretionary accruals) as well as operational decisions (REM). Healy and Wahlen (1999) emphasize that earnings management can take place either by altering the accrual process or by deviating from the normal activities of the organization, or simultaneously through both methods; the first method is referred to as "accrual-based earnings management" (AEM), while the second is called "real earnings management" (REM).

In the literature, AEM is often employed to denote the opportunistic behavior of managers in strategically manipulating the selection and discreet implementation of accounting methods, acting on accruals (depreciation, inventories, receivables, and liabilities) which generally do not have direct cash flow consequences for the company. In this regard, Benilles (2015) lists: "alterations in inventory valuation methods (LIFO vs. FIFO); methods of depreciation (accelerated or straight-line); useful life of tangible assets; policy regarding capitalization or expensing of maintenance costs; recording or reversal of allowances/provisions; recognition or write-off of non-performing debts, credit losses, post-employment benefits, and residual values of fixed assets." AEM does not pertain to total accruals but to the abnormal or discretionary portion intentionally managed by management, potentially achievable only at the end of a fiscal year but before the issuance of financial reports, aimed at aligning the reports to meet the profit target (Zang, 2012). The normal or non-discretionary portion corresponds to the regular activities of the company and the sincere application, unaffected by managerial discretion, of the accrual accounting principles (Benilles, 2015).

Benilles (2015) documents that REM occurs when managers attempt to alter reported earnings through decisions concerning operating, financing, or investment activities, directly impacting cash flows. Such examples

include "reducing research and development expenditures, cutting general and administrative expenditures, synchronizing sales with excess production by offering promotions or more flexible credit terms, repaying loans, and divesting assets". Roychowdhury (2006) posits that REM manifests as "departures from normal operational practices, motivated by managers' desire to mislead at least some stakeholders into believing certain financial reporting goals have been met in the normal course of operations." These deviations do not necessarily contribute to the long-term value of the firm, even though they may enable managers to meet targets/earnings thresholds (zero earnings, earnings from the previous period, analysts' forecasts). Empirical studies reveal a significant negative effect of real earnings management on the future operational performance of organizations, as managers are willing to sacrifice future cash flows for higher current-period earnings (Achleitner et al., 2014; Enomoto et al., 2015).

Roychowdhury (2006) and subsequently Achleitner et al. (2014) find evidence suggesting that manipulating sales, reducing discretionary expenditures, and overproduction are specific activities of REM if managers undertake these actions to a greater extent than what is considered normal, aiming to achieve or surpass earnings targets.

Sales manipulation, as argued by Roychowdhury (2006), entails managerial efforts to achieve higher current-period earnings by either generating additional sales or accelerating sales from the following fiscal year into the current year, accomplished through temporary and unsustainable price reductions or more lenient credit terms. Nevertheless, the subsequent reversion to regular prices leads to diminished cash flow from sales without discounts as profit margins decrease. Additionally, the reduced margins resulting from price reductions lead to disproportionately high production costs relative to sales. Moreover, less stringent credit terms lead to reduced cash flow during sales if suppliers do not extend equivalent discounts on the firm's inputs. Consequently, sales manipulation results in lower operating cash flow during the current period (manifesting as abnormal or discretionary operating cash flow), a phenomenon that Achleitner et al. (2014) interpret as indicative of REM, which enhances reported earnings.

Firms can reduce reported expenses by decreasing discretionary expenditures (research and development, advertising, general and administrative), which do not result in immediate revenues, in order to achieve earnings

targets. When discretionary expenditures involve immediate cash outflows, reducing these expenses decreases cash outflows and has a positive impact on abnormal operating cash flow in the current period, potentially at the risk of lower future operating cash flow (Roychowdhury, 2006). Thus, the decrease in current-period discretionary expenditures captures the actions of REM oriented towards earnings enhancement.

As posited by the aforementioned scholars, engaging in overproduction as a strategy to reduce the cost of goods sold can serve as a mechanism to achieve or exceed profit targets. Managers in production firms might opt to elevate production levels to meet anticipated demand, resulting in reduced fixed costs per unit of product attributable to the spreading of total fixed costs over a larger quantity of units. If there are no corresponding rises in variable costs per unit of product, the per-unit cost of goods sold decreases, leading to enhanced operational margins reported by the firm in the present fiscal period. However, engaging in overproduction proves effective only if the cost reduction compensates for the costs of holding additional inventory that the firm must recognize in the current period.

Managers have the option to utilize AEM and REM practices interchangeably, considering them as specific alternatives to intentionally influence reported earnings. Almand et al. (2023) argue that firms in a particular life stage exhibit relative homogeneity, facing similar pressures, challenges, and opportunities. Therefore, it is reasonable to expect firms to alternate between AEM/REM techniques based on their life stage. Studies investigating the substitutability of these two forms of earnings management conclude that stakeholders have greater difficulty in detecting REM compared to AEM, as REM can be more easily "camouflaged" as normal activity (Kothari et al., 2012). According to Enomoto et al. (2015), regulatory authorities and auditors may struggle to prevent organizations from engaging in such practices, as control is weaker for REM than for AEM.

Earnings management practices and organizational life cycle

A significant body of literature in the field of financial reporting quality (Esnaashari & Naderi Nooreyni, 2017; Hussain et al., 2020; Khuong et al., 2022) provides empirical evidence that managers differentiate their earnings management strategy based on the organization's life cycle stage.

Esnaashari and Naderi Nooreyni (2017) along with Zang (2012) provide empirical evidence that AEM techniques are more commonly employed during the introduction phase of the organizational life cycle, whereas REM practices are characteristic of the growth and maturity phases. Drawing from a panel study of 3,250 listed Chinese firms, Hussain et al. (2020) infer that companies in the early stages of the life cycle are more inclined to adopt AEM compared to firms in the maturity and decline stages. Based on an empirical investigation using a representative sample of non-financial organizations listed on the Vietnamese capital market during the period 2010-2019, Khuong et al. (2022) find that discretionary accruals tend to be higher in the introduction and decline stages, but lower in the remaining stages. Moreover, they observe a negative inclination of managers towards REM during the introduction and decline phases, while finding a positive relationship between REM and the growth and maturity stages. Similarly, Jaggi et al. (2022) report that in the introduction stage, firms tend to engage in practices signaling favorable growth and profitability prospects, whereas in the final stage, managers resort to AEM techniques in an attempt to prolong the firm's life. Analyzing publicly listed firms in Tehran between 2008 and 2015, Hamideh and Mehdi (2017) conclude that AEM techniques are predominantly employed by firms in the introduction and decline stages, while mature and growing companies are more prone to utilize REM techniques. In contrast to the findings of previous studies, Comporek (2023) discovers that the intensification of AEM techniques occurs in the growth and maturity stages of the CLC. However, the small sample size, limited to the Polish business environment, makes it impossible to generalize the results. Xie et al. (2022) study the link between CLC phases and REM techniques and demonstrate that specific REM mechanisms differ from one stage to another, but it is observed that REM techniques prevail in the introduction and decline stages.

According to previous research, during the introduction stage, firms incur significant research and development and advertising expenditures to generate considerable revenues or gain adequate market shares in subsequent periods. Managers in this phase exhibit confidence in the growth prospects of the firms and make substantial investments, leading to negative cash flows from investments and operations. Therefore, in this stage, managers have limited opportunities to change the corporate cost structure or suspend projects to achieve earnings objectives. The investment activities result in

reported losses in the financial statements of firms; nevertheless, managers do not modify operational and investment policies with the anticipation of future earnings. The investment component of accruals is substantial for firms in the introduction stage, along with errors in forecasting future cash flows. Additionally, the lack of interest from analysts and investors in monitoring firms in the early stages of their life cycle creates an environment of heightened informational asymmetry, posing challenges in ensuring the quality of financial reporting. Thus, it is expected that managers would use the flexibility of accounting standards and discretion to engage in AEM and provide the appearance of a stable financial situation to creditors deliberately, in order to access financing at a reduced cost of capital (Hussain et al., 2020; Khuong et al., 2022).

Decline firms face significant business uncertainties, making cash flow estimation challenging (Almeida & Kale, 2023). This is the phase where the board members are much more interested in personal objectives than the firm's objectives, the internal control system is weak, and the firm's reporting becomes more ambiguous or even fraudulent. In this stage, where principal-agent problems are evident, managers strive to manipulate earnings "upward" to portray the company's economic conditions positively to investors. Therefore, there are legitimate justifications for the prevalent utilization of AEM techniques in the declining stage (Hussain et al., 2020).

Investors base their decisions on information received from analysts. According to signal theory, supporting investors' interests encourages managers to use REM techniques in the growth and maturity phases of the CLC. In this way, the company's reported earnings are aligned with market expectations, and investors receive signals that the company's performance will not deteriorate in the next period. In the growth stage, operating activities generate positive cash flows as a result of the introduction of new products and expansion of activities, interest in additional external financing remains high, and uncertainty about future opportunities is diminishing (Dickinson, 2011). Roma et al. (2021) argue that growth companies exhibit a higher capacity to report losses and are particularly concerned about maintaining their reputation. As stakeholders pay closer attention to the firm's accounting figures, there is heightened pressure to achieve profit targets, potentially motivating the adoption of REM practices.

Growth and mature firms are capable of implementing REM practices due to the existence of diverse investment options at their disposal. Managers in these stages enjoy the flexibility to modify the firm's cost structure by initiating new investments or suspending projects, which could potentially result in reduced profitability, leveraging the advantage of having acquired market share. Hussain et al. (2020) document that mature firms reduce or postpone discretionary expenditures to avoid disclosing losses.

In light of previous evidence, we formulate and subsequently aim to test the following research hypotheses:

H₁: The level of accrual-based earnings management practices at BSE listed companies is higher in the

introduction and decline stages than in the growth and maturity stages.

H₂: The level of real earnings management practices at companies listed on BSE is lower in the introduction and decline stages than in the growth and maturity stages.

2. Research methodology

2.1 Variables

Table no. 1 synthesizes the dependent and independent variables used in the developed models, along with references to other relevant works that have studied these variables.

Table no. 1. Dependent variables, variables of interest, and control variables		
Variables	Computation method	References
Dependent variable		
AEM	discretionary accruals, proxy for AEM, calculated as residuals of equations (1), (2) and (3), respectively AEM_HC, AEM_KW și AEM_RS	Hussain et al., 2020; Khuong et al., 2022; Nagar & Radhakrishnan, 2015; Srivastava, 2019
REM	calculated as residuals of equations (4), (5) și (6), respectively REM_CFO, REM_PROD și REM_SGA	
Main variables of interest		
Corporate Life Cycle (CLC) <ul style="list-style-type: none"> • Introduction (I) • Growth (G) • Maturity (M) • Shake-out (SO) • Decline (D) 	Life Cycle Stages defined by Cash Flows from operating activities (CFO), investing activities (CFI) and financing activities (CFF), as follows: Introduction: CFO <0, CFI <0, CFF >0 Growth: CFO >0, CFI <0, CFF >0 Maturity: CFO >0, CFI <0, CFF <0 Shake-out: CFO >0, CFI >0, CFF >0 or CFO >0, CFI >0, CFF <0 or CFO <0, CFI <0, CFF <0 Decline: CFO <0, CFI >0, CFF >0 or CFO <0, CFI >0, CFF <0	Dickinson, 2011; Tian, Han & Zhang, 2015; Hasan & Habib, 2017; Wasilewski & Żurakowska, 2020; Durana et al., 2021
Control variables		
Size	ln(total assets)	Tian et al., 2015; Hasan & Habib, 2017; Huang et al., 2020
Leverage	calculated as total debt on total assets	Hussain et al., 2020; Khuong et al., 2022; Jaggi et al., 2022; Roma et al., 2021
Itax	corporate income tax	Khuong et al., 2022
ROA	return on assets	Khuong et al., 2022; Nagar & Radhakrishnan, 2015; Srivastava, 2019; Almand et al., 2023
Aud	dummy variable for international auditor (PriceWaterhouse Coopers, Ernst&Young, Deloitte, KPMG, BDO, Mazars, JPA)	Alhadab et al., 2020; Jaggi et al., 2022

Source: Authors' processing

According to the reviewed literature (Durana et al., 2021; Huian et al., 2018; Hussain et al., 2020; Khuong et al., 2022; Lazzem and Jilani, 2018), discretionary accruals were used as a proxy for AEM and were calculated using three established models for ensuring the robustness of

the results: Hribar and Collins (2002), Kothari and Wasley (2005), and Raman and Shahrur (2008).

The Hribar and Collins model (2002) is shown in equation (1).

$$TA_{it}/A_{it-1} = \beta_0 \times (1/A_{it-1}) + \beta_1 \times (\Delta Rev_{it}/A_{it-1}) + \beta_2 \times (PPE_{it}/A_{it-1}) + \varepsilon_{it} \quad (1)$$

where:

TA_{it} = sum of accruals; it is measured by operating income of firm i at time t minus operating cash flow of firm i at time t

A_{it-1} = total assets of firm i at the time $t-1$

ΔRev_{it} = change in sales revenues minus change in account receivables of firm i at time t

PPE_{it} = the value of fixed assets of firm i at time t

ε_{it} = the residual term that captures the level of discretionary accruals used in the models that test the formulated hypotheses

The Kothari and Wasley model (2005) starts from Hribar and Collins (2002), and is adjusted with an indicator of economic profitability – ROA, according to equation (2).

$$TA_{it}/A_{it-1} = \beta_0 \times (1/A_{it-1}) + \beta_1 \times (\Delta Rev_{it}/A_{it-1}) + \beta_2 \times (PPE_{it}/A_{it-1}) + \beta_3 \times ROA_{it-1} + \varepsilon_{it} \quad (2)$$

where:

ROA_{it-1} = return on assets of firm i at time t

The third model, Raman and Shahrur (2008), changes equation (2) by adding a new term, as in equation (3).

$$TA_{it}/A_{it-1} = \beta_0 \times (1/A_{it-1}) + \beta_1 \times (\Delta Rev_{it}/A_{it-1}) + \beta_2 \times (PPE_{it}/A_{it-1}) + \beta_3 \times ROA_{it-1} + \beta_4 \times BM_{it} + \varepsilon_{it} \quad (3)$$

where:

BM_{it} = ratio of total assets of the firm i at time t to total assets – book value of firm equity + firms market value.

The REM models used are developed by Roychowdhury (2006) according to equations 4-6 and refer to:

- abnormal cash flow from operations (REM_CFO), computed according to equation (4).

$$CFO_{it}/A_{it-1} = \beta_0 \times (1/A_{it-1}) + \beta_1 \times (Sales_{it}/A_{it-1}) + \beta_2 \times (\Delta Sales_{it}/A_{it-1}) + \varepsilon_{it} \quad (4)$$

where:

CFO_{it} = operating cash flows (CFO) of firm i at time t

$Sales_{it}$ = sales of firm i in period t

$\Delta Sales_{it}$ = change in company's sales between t and $t-1$

ε_{it} = residuals of equation (4), showing abnormal operating cash flows of firm i at time t

- normal production costs (REM_PROD), rendered in the equation (5).

$$PROD_{it}/A_{it-1} = \beta_0 \times (1/A_{it-1}) + \beta_1 \times (Sales_{it}/A_{it-1}) + \beta_2 \times (\Delta Sales_{it}/A_{it-1}) + \beta_3 \times (\Delta Sales_{it-1}/A_{it-1}) + \varepsilon_{it} \quad (5)$$

where:

$PROD_{it}$ = sum of the cost of goods sold and the change in inventory of firm i at time t

- discretionary expenses (REM_SGA), calculated according to equation (6).

$$SGA_{it}/A_{it-1} = \beta_0 \times (1/A_{it-1}) + \beta_1 \times (Sales_{it}/A_{it-1}) + \varepsilon_{it} \quad (6)$$

where:

SGA_{it} = selling, general and administrative expenses of firm i at time t

The main variables of interest are CLC phases. The literature provides various methods for determining these phases based on firm age, size, profitability, dividends paid, the growth rate of assets, the share of profits in total assets or total equity (Chhillar & Lellapalli, 2022; Habib & Hasan, 2019). The present study adopts the method proposed by Dickinson (2011) and validated by previous research (Almand et al., 2023; Comporek, 2023; Hamideh & Mehdi, 2017; Hussain et al., 2020; Jaggi et al., 2022; Xie et al., 2022). This method, based on expected cash flow behaviour, is deemed superior to alternative methods

retained by the literature (Kabir et al., 2020; Chireka, 2020). Although many studies use the age of the firm as a proxy for CLC phases, the method is outdated, with the latest research showing that it corresponds to a linear CLC (Habib & Hasan, 2019). The preference for the method developed by Dickinson (2011) is reinforced by the fact that cash flows are not affected by AEM techniques and potential endogeneity problems are eliminated (Almand et al., 2023).

Following an extensive literature review, five control variables were chosen for this study. Firm size, measured by total assets, is commonly included in research papers examining the nexus between the CLC and earnings management (Jaggi et al., 2022; Roma et al., 2021; Xie et al., 2022), as larger firms have demonstrated a tendency for earnings management (Jaggi et al., 2022). Additionally, it has been observed that profitable firms are more engaged in such practices (Hussain et al., 2020; Jaggi et al., 2022). Thus, in line with previous studies (Almand et al., 2023; Hamideh & Mehdi, 2017; Roma et al., 2021), the models are enriched by incorporating return on assets. Other control variables that may influence AEM/REM include leverage (Hussain et al., 2020; Khuong et al., 2022; Jaggi et al., 2022), calculated as the total debts to total assets ratio, and corporate income tax (Khuong et al., 2022). Finally, the study also takes into consideration the type of

auditor, recognizing the superior quality of audit services provided by international auditors (who possess an extensive client portfolio and allocate substantial resources to audit missions), with their reputation at stake in the event of non-disclosure of deviations (Rusmin, 2010).

2.2. Sample and data source

The data is sourced from the Refinitiv Eikon database and covers companies listed on the main segment of the Bucharest Stock Exchange, spanning a period of 15 years from 2007 to 2021. All financial data is extracted from individual or consolidated financial statements prepared in accordance with IFRS. The initial sample consisted of 81 listed firms. However, as the three listed banks did not report cash flow statements, they were excluded from the sample. Subsequently, five more companies were removed due to missing data for multiple variables used in the AEM/REM models. The final sample comprised 996 annual observations from 73 firms, resulting in an unbalanced panel dataset.

2.3. Research methods and models

In order to validate the research hypotheses, an analysis of panel data with fixed or random effects was performed, by developing the model from equation (7), which contains the main variables (phases of the corporate life cycle - CLC) and the control variables.

$$y_{it} = \alpha_0 + \alpha_1 \times CLC_{it} + \alpha_2 \times Size_{it} + \alpha_3 \times Lev_{it} + \alpha_4 \times ITax_{it} + \alpha_5 \times ROA_{it} + \alpha_6 \times Aud_{it} + \mu_{it} \quad (7)$$

where, t = period (year); i = company at time t ; Y = dependent variable (earnings management– AEM or REM); CLC = life cycle phases (dummy variables described in Table no. 1); Size = firm size; Lev = leverage; ITax = corporate income tax; ROA = return on assets; μ = error term

For the AEM models and two of the four REM models (REM_CFO and REM_PROD), fixed effects and robust standard errors were used. For the remaining two REM models (REM_SGA and REM_all), random effects were applied based on the Hausman test. The use of dummy variables may lead to the dummy variable trap, as known in the literature (Gujarati, 2011), which can negatively impact the accuracy of regression coefficients. To avoid this, the shake-out phase (SO) was used as the reference

category, as its nature remains unclear in the literature (Hussain et al., 2020). To ensure the normality of the distribution, the control variables *Lev* and *ITax* were logarithmized.

3. Results and discussion

Table no. 2 depicts the descriptive statistics of the variables modeled as part of the univariate analysis conducted. It can be observed that approximately 45% of firms are in the maturity stage, confirming other studies conducted at BSE (Huian & Mironiuc, 2023). On the other hand, around 8% of firms are in the introduction stage, based on the characteristics of their cash flows.

Table no. 2. Descriptive statistics

Variable	Obs	Average	Standard deviation	Minimum	Maximum
AEM_HC	923	0.0089	0.1471	-1.0509	2.6949
AEM_KW	923	0.0089	0.1471	-1.0505	2.6989
AEM_RS	923	0.0045	0.1464	-0.9933	2.7073
REM_CFO	923	0.0153	0.1045	-0.5853	1.0017
REM_PROD	850	-0.0617	0.2184	-1.1796	1.2791
REM_SGA	923	0.0347	0.1453	-1.0885	1.5724
REM_all	850	-0.0086	0.1486	-0.9604	1.0517
I	996	0.0783	0.2688	0.0000	1.0000
G	996	0.2008	0.4008	0.0000	1.0000
M	996	0.4498	0.4977	0.0000	1.0000
SO	996	0.1637	0.3701	0.0000	1.0000
D	996	0.1074	0.3098	0.0000	1.0000
Size	996	19.4415	1.6939	15.3219	24.7754
Lev	996	0.4316	0.5494	0.0101	7.7014
Itax	996	19.3562	0.3085	11.5129	21.4165
ROA	996	0.0222	0.3384	-9.9400	2.3500
Aud	996	0.4819	0.4999	0.0000	1.0000

Source: Authors' processing, 2023

In terms of AEM, the average magnitudes of discretionary accruals are found, in all three computation methods, to be significantly different from zero, indicating the presence of AEM practices among the companies listed on BSE. These practices have a detrimental effect on the quality of financial reporting.

Table no. 3 presents detailed descriptive statistics by life cycle stages (mean values). According to Istrate et al. (2015), positive values of discretionary accruals indicate that AEM operations aim to increase reported earnings, leading to positive differences between the level of accruals and that of recorded cash flows. Similarly, negative values of discretionary accruals reflect profit reduction and simultaneously generate negative differences between the values of accruals and cash flows.

It can be observed that the mean values of discretionary accruals, quite similar across all three models, indicate a higher inclination of firms in the introduction stage (I) to resort to AEM techniques, followed by those in the decline and shake-out stages (D, SO). These results, depicting a U-shaped pattern of earnings manipulation attempts throughout the CLC, corroborate the expectations based on existing literature, where start-ups and decline firms manipulate earnings upward due to negative cash flows (Durana et al., 2021). Mature firms, but especially growth ones, resort less frequently to such practices. The

negative sign of discretionary accruals indicates that once firms reach maturity and have already achieved their maximum profitability potential, they attempt to reduce reported earnings for tax-avoidance purposes. According to Can (2020), income minimization (downward earnings management) is characteristic of profitable companies in the growth and maturity stages. The values of discretionary accruals close to zero for firms in the growth stage, as found by other scholars (Durana et al., 2021), indicate a minimization of accounting manipulation attempts. In all CLC stages (except SO), the Raman and Shahrur model (2008) generates the highest values of discretionary accruals.

Regarding REM practices, mature companies resort the most to operating cash flow manipulation, unlike those in the initial and final stages. Overall, they employ the least amount of REM techniques (REM_all). The negative values in REM_PROD indicate the absence of manipulation through overproduction, while the positive values in REM_SGA suggest the inability to reduce discretionary costs to achieve profit targets.

The correlation analysis presented in **Table no. 4** demonstrates the presence of weak to moderate relationships between variables, characterized by both positive and negative associations, thereby mitigating the risk of multicollinearity.

Table no. 3. Descriptive statistics by life cycle phase

CLC	AEM_HC	AEM_KW	AEM_RS	REM_CFO	REM_PROD	REM_SGA	REM_all	Size	Lev	Itax	ROA	Aud
I	0.0988	0.0988	0.0976	-0.1089	0.0248	0.0228	-0.0596	18.7390	0.5940	14.25778	-0.0014	0.3590
G	-0.0007	-0.0008	-0.0012	0.0207	-0.0228	0.0269	0.0262	19.4899	0.4626	16.11117	0.0329	0.4050
M	-0.0202	-0.0203	-0.0238	0.0590	-0.1075	0.0528	0.0056	19.8263	0.3704	17.36464	0.0239	0.4978
SO	0.0305	0.0304	0.0219	0.0003	-0.0573	0.0151	-0.0324	18.8368	0.4562	15.39146	0.0277	0.4356
D	0.0539	0.0539	0.0425	-0.0712	0.0012	0.0110	-0.0595	19.1728	0.4737	14.82477	0.0029	0.5140

Source: Authors' processing, 2023

Table no. 4. Correlation analysis

	Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	AEM_HC	1.00																
2	AEM_KW	1.00	1.00															
3	AEM_RS	0.99	0.99	1.00														
4	REM_CFO	-0.50	-0.50	-0.50	1													
5	REM_PROD	0.06	0.06	0.07	-0.37	1.00												
6	REM_SGA	-0.09	-0.09	-0.09	0.19	-0.73	1.00											
7	REM_all	-0.34	-0.34	-0.34	0.33	0.51	0.02	1.00										
8	D	0.10	0.10	0.09	-0.29	0.10	-0.06	-0.12	1.00									
9	G	-0.04	-0.04	-0.03	0.03	0.09	-0.03	0.11	-0.17	1.00								
10	I	0.17	0.17	0.19	-0.34	0.11	-0.03	-0.10	-0.10	-0.14	1.00							
11	M	-0.17	-0.17	-0.16	0.38	-0.20	0.12	0.09	-0.32	-0.45	-0.27	1.00						
12	SO	0.06	0.06	0.05	-0.05	0.01	-0.05	-0.07	-0.15	-0.22	-0.13	-0.41	1.00					
13	Size	-0.01	-0.01	-0.01	0.21	-0.02	-0.11	0.01	-0.05	-0.01	-0.11	0.22	-0.17	1.00				
14	lev	-0.09	-0.08	-0.01	-0.14	0.14	-0.07	0.05	-0.08	0.09	0.12	-0.07	-0.03	0.02	1.00			
15	ITax	-0.02	-0.02	-0.02	0.15	-0.09	0.00	-0.03	-0.03	-0.09	-0.03	0.13	-0.03	0.25	-0.04	1.00		
16	ROA	0.22	0.22	0.22	0.05	-0.05	0.02	-0.03	-0.03	0.01	-0.02	0.01	0.01	0.04	-0.04	0.03	1.00	
17	Aud	0.05	0.05	0.05	0.18	-0.16	-0.03	-0.14	0.03	-0.11	-0.08	0.13	-0.02	0.56	0.04	0.12	0.09	1.00

Source: Authors' processing, 2023

The results of the regression analysis are presented in Table no. 5.

Table no. 5. Regression analysis results

	AEM_HC FE	AEM_KW FE	AEM_RS FE	REM_CFO FE	REM_PROD FE	REM_SGA RE	REM_all RE
I	0.0685***	0.0685***	0.0703***	-0.0860***	0.0159	0.0163	-0.0474**
G	-0.0593***	-0.0593***	-0.0578***	0.0456***	0.0030	-0.0015	0.0481***
M	-0.0705***	-0.0703***	-0.0697***	0.0551***	-0.0201	0.0033	0.0357***
D	0.0317	0.0319	0.0309	-0.0809***	0.0034	0.0140	-0.0560***
Size	0.0015	0.0015	-0.0034	-0.0119	0.0412**	-0.0193***	0.0014
Lev	-0.0301*	-0.0300*	-0.0155	0.0002	0.0032	0.0002	0.0053
ITax	-0.0023	-0.0024	-0.0033	0.0063	0.0085	-0.0017	0.0069
ROA	0.0870	0.0874	0.0876	0.0112**	-0.0138	-0.0003	-0.0039
Aud	0.0320*	0.0319*	0.0304*	0.0118	-0.0018	-0.0055	-0.0212
Const	0.0050	0.0051	0.1339	0.1007	-1.0153	0.4384	-0.1698
R-squared	0.1212	0.1209	0.1039	0.1998	0.0340	0.0278	0.0537
F test/Wald	7.81***	7.82***	8.16***	14.4***	2.48**	19.7**	60.11***
No of obs.	923	923	923	923	850	923	850

Source: Authors' processing, 2023

The relationship between CLC stages and the level of AEM practices is positive and statistically significant in all three models (AEM_HC, AEM_KW, AEM_RS) for firms in the introduction stage (I) and negative in the growth and maturity stages (G and M), confirming the findings of Khuong et al. (2022). The positive association with AEM proxies in the initial stage indicates the propensity of managers to report higher earnings through opportunistic accounting choices to attract foreign capital at more favorable costs (Durana et al., 2021), given the high informational asymmetry. Recent research (Hamideh & Mehdi, 2017; Jaggi et al., 2022) report similar findings, indicating that the poor performance typically associated with the early stage of a firm's life cycle incentivizes managers to employ profit smoothing strategies to project positive signals to investors regarding the firm's future profit generation capabilities. These findings are corroborated by the descriptive statistics presented in **Table no. 3**, confirming a higher level of discretionary accruals during this stage, affording managers greater discretion over earnings (Hussain et al., 2020). This behaviour could be attributed to firms' expectations of generating substantial profits in subsequent financial periods, based on products currently under development, prompting them to "borrow" a portion of anticipated earnings from the future (Jaggi et al., 2022). Furthermore, it is worth noting that the lack of pressure to achieve specific profit targets, in conjunction with an underdeveloped internal control system characteristic of the early stage of firm development, explains their preference for AEM techniques (Hamideh & Mehdi, 2017; Xie et al., 2022).

The results in **Table no. 5** illustrate a negative association with the AEM in the growth and maturity stages, which confirms the evidence of Durana et al. (2021) and Khuong et al. (2022) and refutes that of Hussain et al. (2020). Therefore, there is a reduction in AEM techniques because, as the firm grows and matures, information asymmetry decreases, analyst attention increases, the ability to access credit at lower interest rates increases, and the quality of financial reporting gets higher (Can, 2020). Mature firms exhibit a higher capacity to generate internal financial resources and rely less on external financing (Huian & Mironiuc, 2023), thus maintaining a sustainable market position. As a consequence, AEM techniques are less appealing to managers in these firms, who have fewer future profit growth cycles to offset any potential negative consequences of earnings management in the market. While the behaviour of the three analyzed

stages aligns with expectations, the lack of statistical significance in the positive relationship between discretionary accruals and the decline stage (also observed in Comporek's study, 2023) is surprising, particularly given the significant levels of discretionary accruals reported in **Table no. 3**. Expectations were to find consistent attempts at AEM, given the high pressure exerted by stakeholders, more and more difficult to meet as the business erodes and the revenues decline (Hussain et al., 2020). However, the result becomes explainable upon examining the REM models.

The control variables Lev and Aud prove to be significant ($p < 0.1$) in the AEM models. An inverse relationship is observed between the leverage ratio (Lev) and AEM techniques, confirming that monitoring by capital providers disciplines managers of the analyzed firms, who are compelled to meet the requirements for financial reporting quality (Chhillar & Lellapalli, 2022). Contrary to expectations (Jaggi et al., 2022), the results show a direct link between the type of auditor and AEM techniques, suggesting that international auditors fail to counteract managers' tendency to smooth earnings in the case of listed firms in Romania. A plausible explanation stems from the pressures exerted on auditors by managers and other stakeholders, widely documented in the literature (Haislip et al., 2017; Hamid et al., 2012). In such situations, non-compliance may result in termination of the financial audit engagement with the client (Haislip et al., 2017; Lohwasser & Zhou, 2023). The link between the level of profit taxation and AEM practices is found to be negative but lacks statistical significance.

Table no. 5 reveals a statistically significant negative connection between CLC stages and the level of REM_CFO practices for companies in the introduction (I) and decline (D) stages, and a positive connection for those in the growth and maturity stages - G and M (Khuong et al., 2022; Nagar & Radhakrishnan, 2015). Introduction and decline firms are less likely to resort to REM (through operational cash flow manipulations) because their managers are not under significant pressure to meet specific profit targets and have limited discretion over period costs that could be reduced, given their operation with limited capital and high financing requirements (Srivastava, 2019).

Mature and growing companies face greater pressure from the capital market, which encourages their involvement in REM techniques (Krishnan et al., 2021; Roma et al., 2021). These companies have

established market reputations and access to diverse investment opportunities, affording them flexibility and fostering an environment conducive to REM techniques (Hamideh & Mehdi, 2017). The other two REM methods (reduction of production costs and reduction of SGA expenses) are not used by Romanian managers, regardless of the life cycle stage (Hussain et al., 2020). This is confirmed by the descriptive statistics showing negative average values for REM_PROD and positive values for REM_SGA, indicating the absence of earnings manipulation to meet benchmark earnings criteria. Nevertheless, this does not imply the exclusion of other earnings management techniques (those based on accruals) to smooth earnings.

Other control variables (Size and ROA) besides those in the AEM models exhibit significant relationships with the dependent variables depending on the REM methods used: more profitable firms are inclined to manipulate operating cash flows. Regarding firm size (Size), a statistically significant relationship, but with opposite effects (+/-), is observed in two REM models (REM_PROD and REM_SGA), confirming the propensity of larger firms for earnings management techniques (Jaggi et al., 2022).

Robustness check

In this regard, the variable *Lev* was replaced with *Sfr* as a proxy for the self-financing ratio in all models in Table no. 5, calculated as the ratio of operating cash flows to fixed assets (Hussain et al., 2020).

Table no. 6. Robustness analysis results

	AEM_HC FE	AEM_KW FE	AEM_RS FE	REM_CFO FE	REM_PROD FE	REM_SGA RE	REM_all RE
I	0.0660***	0.0660***	0.0689***	-0.0860***	0.0167	0.0163	-0.0462**
G	-0.0606***	-0.0607***	-0.0584***	0.0457***	0.0026	-0.0016	0.0480***
M	-0.0681***	-0.0680***	-0.0683***	0.0553***	-0.0212	0.0031	0.0345***
D	0.0291	0.0293	0.0292	-0.0814***	0.0062	0.0144	-0.0534
Size	-0.0006	-0.0006	-0.0045	-0.0119	0.0414***	-0.0193***	0.0015
Sfr	-0.0115	-0.0115	-0.0107	-0.0063	0.0292*	0.0042	0.0301
ITax	-0.0025	-0.0025	-0.0034	0.0063	0.0087	-0.0017	0.0071
ROA	0.0883	0.0886	0.0882	0.0112**	-0.0138	-0.0002	-0.0040
Aud	0.0249	0.0248	0.0268	0.0119	-0.0012	-0.0055	-0.0202
Const	0.1665	0.1663	0.2485	0.1416	-1.2166	0.4107	-0.3789
R-squared	0.1126	0.1125	0.1045	0.2004	0.005	0.0083	0.0536
F test/Wald	7.61***	7.62***	7.72***	13.80***	3.31***	19.89**	62.51***
No of observ	923	923	923	923	850	923	850

Source: Authors' processing, 2023

The results, presented in Table no. 6, largely show coefficients with unchanged signs and statistical significance compared to the baseline model.

Conclusions

The paper analyzes the patterns of AEM/ REM use by the managers of Romanian listed companies in different CLC stages. The results indicate the presence of significant informational asymmetry that allows managers to engage in discretionary-based manipulation practices, especially during the introduction stage, but also a reduction in the propensity to use AEM techniques in the growth and maturity stages. The findings also reveal different connections between the level of REM and CLC,

contingent on the specific REM method used. The method involving accelerated sales through early revenue recognition or lenient commercial credit terms is preferred by managers of growing and mature firms, while cost-cutting methods like overproduction and reduction of discretionary costs (e.g., selling, general, and administrative expenses) are not employed, as managers have limited discretion over these costs, which are fundamental for the firm's future evolution.

The findings may have significant implications for stakeholders such as creditors, investors, and financial analysts, as well as regulatory and supervisory authorities. They should carefully scrutinize the financial reporting quality of firms in their early life cycle stages and be aware of the potential use of these techniques to conceal poor

economic performance, particularly during certain stages of the organizational life cycle.

The limitations of the study pertain to the small sample size, which is a common characteristic in emerging capital markets, where the analysis predominantly

focuses on larger and well-established companies in the capital market. Replicating the models for small and medium-sized firms, for comparative analysis, is a future research direction that the authors hope to pursue.

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