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ORIGINAL ARTICLE

Transition between firm life cycle stages and earnings management strategies

João Paulo Machado Ribeiro[1]
https://orcid.org/0000-0003-1383-8729
Email: jpmr0505@gmail.com

Edilson Paulo[2]
https://orcid.org/0000-0003-4856-9039
Email: e.paulo@ufsc.br

Cristian Baú Dal Magro[3]
https://orcid.org/0000-0002-7609-5806
Email: crisbau@unochapeco.edu.br

[1] Universidade Federal de Santa Catarina, Centro Socioeconômico, Programa de Pós-Graduação em Contabilidade, Florianópolis, SC, Brazil
[2] Universidade Federal de Santa Catarina, Centro Socioeconômico, Departamento de Ciências Contábeis, Florianópolis, SC, Brazil
[3] Universidade Comunitária da Região de Chapecó, Escola de Gestão e Negócios, Departamento de Ciências Contábeis, Chapecó, SC, Brazil

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ABSTRACT

This study analyzed the effects of firm life cycle stages (LCS) and their changes on the level of adoption of earnings management strategies. Gaps were identified regarding the effects of the transition between various life cycle stages and the propensity for accrual-based earnings management (AEM) and real activities earnings management (REM), as well as the impacts on the trade-off or complementarity relationship between them. The findings reinforce the need for auditors, financial analysts, investors, and regulators to consider company context and specific characteristics, such as firm cycle stage, when analyzing earnings management. The results suggest a greater propensity for all earnings management strategies, in order to hide financial difficulties, at the beginning of the decline stage. A total of 185 companies listed on the Brazilian capital market were analyzed for the period from 2011 to 2022, with data collected from Refinitiv®. Park and Chen's (2006) model has been adopted to classify firm life cycle stages, and the models were estimated by the system generalized method of moments (system GMM). Growth stage firms use overproduction and avoid discretionary expense cuts as REM strategies. However, when transitioning from the growth stage to the mature stage, they are more likely to cut discretionary expenses as an REM strategy. The use of AEM is more prevalent in the decline stage, when compared to mature stage companies. The findings add evidence to the literature that the trade-off or complementarity relationship between AEM and REM is influenced by firm LCS and their transitions.

Keywords: earnings management, firm life cycle, discretionary accruals, earnings quality.

Correspondence address

João Paulo Machado Ribeiro
Universidade Federal de Santa Catarina, Centro Socioeconômico, Programa de Pós-Graduação em Contabilidade
Rua Roberto Sampaio Gonzaga – CEP: 88040-900
Trindade – Florianópolis – SC – Brazil

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Transição entre os estágios do ciclo de vida da firma e estratégias de gerenciamento de resultados

RESUMO

Este estudo analisou os efeitos dos estágios do ciclo de vida (ECV) da firma e suas mudanças no nível de adoção de estratégias de gerenciamento de resultados. Foram identificadas lacunas acerca dos efeitos da transição entre diferentes estágios do ciclo de vida e a propensão ao gerenciamento de resultados por accruals (GRA) e gerenciamento de resultados por decisões operacionais (GRDO), bem como dos reflexos na relação de trade-off ou complementaridade entre elas. Os achados reforçam a necessidade de auditores, analistas financeiros, investidores e reguladores considerarem o contexto e as características específicas das empresas, como o estágio do ciclo da firma, ao analisar o gerenciamento de resultados. Os resultados sugerem uma maior propensão a todas as estratégias de gerenciamento de resultados, a fim de ocultar as dificuldades financeiras, no início do estágio de declínio. Foram analisadas 185 empresas listadas no mercado de capitais brasileiro para o período de 2011 a 2022, com dados coletados na Refinitiv®. O modelo de Park e Chen (2006) foi adotado para classificar os estágios do ciclo de vida das firmas, sendo que os modelos foram estimados pelo system generalized method of moments (system GMM). As empresas na fase de crescimento se utilizam do uso de superprodução e evitam cortes nas despesas discricionárias como estratégias de GRDO. No entanto, ao fazer a transição do estágio de crescimento para a maturidade, elas apresentam uma maior propensão ao corte nas despesas discricionárias como estratégia de GRDO. Já o uso de GRA é mais predominante na fase de declínio, em comparação com empresas em maturidade. Os achados adicionam evidências à literatura de que a relação de trade-off ou complementaridade entre GRA e GRDO é influenciada pelos ECV da firma e suas transições.

Palavras-chave: *gerenciamento de resultados, ciclo de vida da firma, accruals discricionários, qualidade das informações contábeis.*

1. INTRODUCTION

Financial reporting quality is influenced by earnings management, with a large literature on its determinants and consequences (Campa et al., 2023; Dechow et al., 2010; Dichev, 2020; Habib et al., 2022). Although earnings management can be viewed from an informative perspective (Campa et al., 2023), it is often considered detrimental to earnings quality (Barth et al., 2008; Dichev, 2020).

A growing number of studies discuss the effects of firm life cycle on earnings quality (Habib & Hasan, 2019; Lima et al., 2015). In general, firm life cycle stages (LCS) are used as a proxy for company economic characteristics. Given that firms differ in terms of incentives and are positioned differently regarding profitability, sales growth, investment opportunities (Dickinson, 2011), risk profile (Dickinson, 2011; Oliveira & Monte-Mor, 2022), dividend policy (Bhattacharya et al., 2020), leverage (Dickinson, 2011), ESG disclosure (Moreira et al., 2023), and earnings quality (Dickinson et al., 2018; Habib & Hasan, 2019).

Prior literature has linked these characteristics, which mark LCS, to earnings management practices. In this sense, studies have explored the impact of LCS on discretionary accrual levels (Chen, 2016; Hussain et al., 2020; Jaggi et al., 2022; Khuong et al., 2022; Lima et al., 2015; Roma et al., 2021), earnings smoothing (Ribeiro et al., 2018), level of abnormal real activity (Chen, 2016; Hussain et al., 2020; Nagar & Radhakrishnan, 2017; Xie et al., 2022; Xu & Yan, 2022), and earnings management using classification shifting (Bansal, 2022).

Although the literature indicates that accrual characteristics and the preference for earnings management mechanisms may vary across various LCS, considering the costs and benefits of these strategies (Almand et al., 2023; Chatterjee et al., 2023; Xie et al., 2022), there are gaps to be explored. Given this, this study addresses some of these gaps.

First, by jointly addressing the relationship between engagement in accrual-based earnings management (AEM) and real activities earnings management (REM) strategies, controlling for the impacts on coronavirus disease 2019 (COVID-19), and the trade-off between these strategies, disregarded by previous literature (Chen, 2016; Hussain et al., 2020; Khuong et al., 2022). Joint analysis of these strategies is important, given that managers with opportunistic intentions use all the options available to them (Fields et al., 2001; Li, 2019; Zang, 2012).

Second, by exploring the effects of the transition between various LCS and propensity for AEM and REM strategies. Since studies suggest implications of these changes on corporate policies (Bhattacharya et al., 2020; Can, 2020). Third, although the literature points out the trade-off between AEM and REM strategies

(Paulo & Mota, 2019; Rocha et al., 2022; Soschinski et al., 2021; Zang, 2012), it is possible that a complementary relationship between them is observed (Li, 2019), with pattern variations depending on LCS.

Thus, this study analyzes the effects of LCS and their changes in the level of adoption of AEM and REM strategies. Seeking to understand how the propensity for these strategies may be associated with factors internal and external to the organization, which characterize the various LCS, as well as the reflections of the transition between these stages on earnings quality.

To test the proposed hypotheses, a sample of 185 non-financial companies listed on the Brazilian capital market was used. Park and Chen's (2006) model has been adopted as a proxy to classify companies into different LCS. The regression models were estimated using the system generalized method of moments (system GMM).

The main results suggest that growth companies are more likely to use overproduction and a restriction on the use of discretionary expense cuts, such as REM strategies. Moreover, the results indicate that the use of AEM predominates in declining companies. When transitioning from the growth stage to mature, companies are more likely to cut discretionary expenses. At the beginning of this phase, the results suggest a greater propensity to manage through all available possibilities to hide the financial difficulties characteristic of this stage.

This study makes major contributions to the literature by demonstrating that engagement in AEM and REM strategies, as well as the trade-off or complementarity between them, is influenced by LCS and their transitions. This reinforces the need for auditors, financial analysts, investors, and regulators to consider LCS when assessing earnings quality.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Earnings Management

Accounting information is influenced by accounting choices in the recognition, measurement, and disclosure processes, which enable opportunistic behaviors associated with earnings management practices (Fields et al., 2001; Paulo, 2007). Earnings management is characterized as a purposeful intervention in the preparation of financial statements to be disclosed to external users, in order to obtain some private benefit (Schipper, 1989). The literature on the subject is quite developed, given its relevance for regulators and investors (Dichev, 2020; Du & Shen, 2018; Graham et al., 2005).

Two earnings management strategies are commonly found in the literature: through accruals and operational decisions (Khuong & Anh, 2022; Paulo & Mota, 2019). AEM occurs through changes in accounting policies or estimates, biasing profit in a specific direction (Gao et al., 2017; Li, 2019; Martinez, 2013; Qi et al., 2018).

REM occurs with the purpose of changing the timing and/or structure of actual operating activities to modify reported accounting profit. The main difference in relation to AEM is that REM directly affects the firm cash flow (Gao et al., 2017; Li, 2019; Martinez, 2013; Qi et al., 2018). Through this strategy, there is a deviation from normal operating practices to influence the period's result, through abnormal production volume, manipulation of sales revenues, and abnormal cuts in discretionary expenses, in order to simulate that the company financial goals were achieved in the course of the ordinary operations.

Overproduction as a means of REM occurs by producing more inventory than needed in order to dilute fixed costs and have higher profits (Roychowdhury, 2006; Zang, 2012). The firm can also drastically reduce essential expenses, such as preventive maintenance, to report higher profits at the end of the period by managing discretionary expenses. It is also possible to manipulate sales revenues through abnormal discounts at atypical times, which produces abnormal cash flows from operations (Roychowdhury, 2006; Zang, 2012).

Given the implications of earnings management for assessment and contracting, it is key to understand its incentives (Du & Shen, 2018). The use of accounting information by investors, creditors, and analysts motivates earnings manipulation through various incentives associated with the capital market (Habib et al., 2022; Healy & Wahlen, 1999), which are major predictors of the likelihood of earnings management (Zang, 2012). When addressing this category of incentives, which may have their relevance varying given firm development stage, Habib et al. (2022) highlight capital raising through initial and secondary share issuance, the attempt to sustain capital overvaluation, meet or exceed earnings benchmarks, motivated by acquisition transactions, and debt contractual clauses linked to accounting numbers (Habib et al., 2022). In this context, both AEM and

REM strategies can be used to increase reported results opportunistically (Habib et al., 2022).

Other incentives highlighted by prior literature are internal control quality (Chen, 2016), corporate governance level, ownership structure (Gao et al., 2017), firm financial health (Chen, 2016; Zang, 2012), and firm life cycle, the focus of this study (Jaggi et al., 2022; Khuong et al., 2022; Khuong & Anh, 2022; Nagar & Radhakrishnan, 2017; Roma et al., 2021; Xie et al., 2022).

2.2 Firm Life Cycle and its Impact on Earnings Management Practices

LCS correspond to the various phases of a company, which result from changes in internal factors (strategies and financial resources) and external factors (market competition and macroeconomic factors) (Dickinson, 2011). Companies in different LCS have different incentives associated with funding decisions, investment, investor attraction, and earnings quality; in particular, managerial discretion (Dickinson, 2011; Krishnan et al., 2021; Lester et al., 2003; Lima et al., 2015; Oliveira & Monte-Mor, 2022; Ribeiro et al., 2018; Ribeiro et al., 2021; Roma et al., 2021).

To explore this perspective, the literature has various proxies for identifying LCS (Habib & Hasan, 2019). Dickinson (2011) suggests a life cycle classification methodology based on cash flows, consisting of 5 stages (introduction; growth; mature; shake-out; and decline). Despite the increasing use of the model proposed by Dickinson (2011), the proposed methodology has limitations, with criticisms in various aspects (Habib & Hasan, 2019). An alternative model for classifying LCS, based on a multivariate approach, is the methodology adopted by Park and Chen (2006). The authors consider variables of capital expenditure, sales growth, dividend payout, and firm age to classify firms into 3 stages (growth; mature; and decline) (Lima et al., 2015).

Due to the distinct economic characteristics at various life cycle stages, LCS are used by financial analysts and scholars to describe firm economic attributes (Chatterjee et al., 2023; Moreira et al., 2023; Park & Chen, 2006; Ribeiro et al., 2021). Having this in mind, the literature reports that they have impacts on earnings management (Jaggi et al., 2022; Khuong & Anh, 2022; Xie et al., 2022; Xu & Yan, 2022).

Companies in the early stages of their life cycle (introduction stage) focus on establishing themselves in the market and attracting as many clients as possible. At this stage, resources are scarce to invest in expansion projects. Therefore, the accounting information reported helps demonstrate company cash generation capability to attract investors and release loans and funding from credit institutions (Lima et al., 2015).

In the growth stage, there is an increased production, the company becomes more profitable and prioritizes investments in technological resources for differentiation and improvement in products and processes (Dickinson, 2011; Lima et al., 2015; Oliveira & Monte-Mor, 2022). This may restrict the propensity for REM, at least through cutting discretionary expenses, given that companies need to make large investments at this stage, as well as greater spending on research and development (R&D), advertising and publicity, in addition to preventive maintenance to be able to maintain the increased production (Nagar & Radhakrishnan, 2017; Xie et al., 2022). On the other hand, given these restrictions on REM, they may be encouraged to AEM, due to the high expectations of satisfactory results by the capital market (Jaggi et al., 2022). With the above in mind, the following hypotheses are proposed:

H1: In the growth stage, companies are more predisposed to AEM when compared to companies in the mature stage.

H2: In the growth stage, companies are less predisposed to REM when compared to companies in the mature stage.

In the mature stage, firms have greater access to resources and more stable sales, seeking to increase profitability by optimizing costs (Chen, 2016; Hussain et al., 2020; Lima et al., 2015; Ribeiro et al., 2018). At this stage, companies are more concerned with maintaining their production capacity and market share and do not prioritize new investments (Dickinson, 2011). Mature companies are in a more comfortable position when compared to other LCS, with lower risks and uncertainties regarding earnings and cash flows (Roma et al., 2021).

Evidence shows that at this stage, firms are less likely to be fined for serious misstatements in their reports (Krishnan et al., 2021). The focus on profitability at this stage is accompanied by market pressure to meet profit targets. Given the expectations of greater use of AEM in the early stages, and given the costs of AEM and REM strategies, prior literature suggests that firms have greater freedom at this stage to engage in REM, being able, for instance, to make greater cuts in discretionary expenses (Chen, 2016; Krishnan et al., 2021; Nagar & Radhakrishnan, 2017). Also, the effective proof of REM being more laborious can result in a relevant incentive (Nagar & Radhakrishnan, 2017).

Companies that reach the decline stage are at a critical stage for their survival. At this stage, companies tend to sell off their assets, report higher expenses and losses, and show an accumulation of negative results (Ribeiro et al., 2018). Increased uncertainty about future performance and cash flow generation may be an incentive to manipulate earnings in order to hide their financial difficulties (Hussain et al., 2020; Krishnan et al., 2021; Roma et al., 2021; Xie et al., 2022).

Regarding strategies for manipulating results, the literature suggests that at this stage there is a greater expectation of using positive accruals to increase reported results, since companies do not have much time to take actions to change poor economic performance (Jaggi et al., 2022). Another point is that issues related to company survival raise doubts about the cost-benefit of the REM strategy at this stage, given the costs and uncertainties regarding its effectiveness (Cupertino et al., 2016). This is also indicated as a stage that is not very favorable to the use of overproduction for REM (Xie et al., 2022). Given these discussions, the following hypotheses arise:

H3: Companies in the decline stage are more predisposed to AEM when compared to companies in the mature stage.

H4: Companies in the decline stage are less predisposed to REM when compared to companies in the mature stage.

The transition between LCS implies relevant changes in firm strategies and structures (Can, 2020), as well as major financial policies such as dividend payout (Bhattacharya et al., 2020). Thus, for instance, the change from a growth phase to a mature stage may modify firm strategic policies (Bhattacharya et al., 2020). Given the LCS characteristics introduced and considering the effects that the transition between LCS may have on engaging in AEM and REM strategies, the following hypotheses are proposed:

H5: The shift from the Growth stage to the Mature stage is associated with a reduction in AEM and an increase in REM.

H6: The shift from the mature stage to the decline stage is associated with an increase in AEM and a decrease in REM.

H7: The shift from the mature stage to the growth stage is associated with an increase in AEM and a decrease in REM.

H8: The shift from the decline stage to the mature stage is associated with a decrease in AEM and an increase in REM.

3. METHODOLOGY

3.1 Population, Sample, and Data Collection

The research universe is composed of non-financial companies listed on the Brasil, Bolsa, Balcão (B3). Companies in the financial industry were not included in the sample because they have specific accounting regulations and capital structure (Lima et al., 2015; Park & Chen, 2006). The information required for data analysis was collected from the Refinitiv® database. The analysis period was from 2011 to 2022, considering the post-adoption period of the International Financial Reporting Standards (IFRS) and the need for lagged data.

The final sample consists of 185 non-financial companies, with a total of 1,123 observations. In delimiting the sample, the availability of information in Refinitiv® was considered, as well as the exclusion of companies with negative equity, negative dividend payout, and industries with less than 8 observations in each year (oil, gas and biofuels, information technology and communications) for estimating the earnings management proxy models.

3.2 Research Variables and Econometric Analysis

Park and Chen's (2006) model was used to classify company LCS. This model resorts to capital expenditure (CEV), sales growth (SG), dividend payout (DP), and firm age (AGE), proposed by Anthony and Ramesh (1992), building a classification index. Through this model, companies are classified into growth, mature, or decline stages (Park & Chen, 2006). In this model, there is no company segregation between the birth and growth phases, so that companies with characteristics related to these phases are classified into a single stage, named growth (Lima et al., 2015; Park & Chen, 2006). Table 1 shows the metrics for calculating these variables.

Table 1
Variables for classifying firm life cycle stages according to Park and Chen (2006)

Variables	Code	Proxies
Capital Expenditures	CEV	$Capex_{it}$ / Book $value_{it}$ * 100
Sales Growth	SG	(Net $Sales_{it}$ – Net $Sales_{it-1}$) / Net $Sales_{it-1}$ * 100
Dividend Payout	DP	Dividends $Paid_{it}$ / Net $Profit_{it}$ * 100
Firm Age	AGE	Current Year – Year of Foundation

Source: *Adapted from Park and Chen (2006).*

To build the classification index proposed by Park and Chen (2006), the sample companies were segregated by industries and then the quintiles of each of the LCS classification proxies were identified. The aggregate score of this index, i.e. considering the 4 metrics, varies between 4 and 20 points (Park & Chen, 2006). Table 2 shows the classification methodology according to Park and Chen (2006).

Table 2
Classification methodology according to Park and Chen's (2006) model

Panel A – Scoring Criteria					
Quintiles		Variables			
		DP	SG	CEV	AGE
1º quintile	0% – 20%	5(1)	1	1	5
2º quintile	20% – 40%	4(2)	2	2	4
3º quintile	40% – 60%	3	3	3	3
4º quintile	60% – 80%	3	4	4	2
5º quintile	80% – 100%	3	5	5	1
Panel B – Classification of company life cycle stages					
Life Cycle Stage		**Index Score Range**			
Growth		16-20			
Mature		9-15			
Decline		4-8			

Notes: *When performing the classification process, it is worth noticing that a low dividend payout may signal significant growth opportunities or liquidity issues, which should be reflected in the score for this variable. Even though a low dividend payout for a company in the decline stage may be associated with liquidity issues, for a company in the higher quintiles in the sales growth or capital expenditure variables this is an unlikely relationship. Therefore, if the sum of scores for AGE, SG, and CEV is low (i.e. less than 7) and the score for SD is 5 (4), then instead of 5, 1 (2) is assigned to these cases in the DP variable, since it is likely that these are companies in the decline stage (Park & Chen, 2006).*
Source: *Prepared by the authors based on Park and Chen (2006).*

The model proposed by Pae (2005), in Equation 1, was used to estimate discretionary accrual level by year and industry, a proxy for AEM. The approach proposed by Pae (2005) was selected because it provides improvements in relation to Jones's (1991) model, by including variables to control cash flows from operations in the original model, as well as by incorporating the reversal of lagged total accruals (Paulo, 2007). To calculate total accruals, the cash flow approach was adopted, considered more accurate than the balance sheet approach (Hribar & Collins, 2002), according to Equation 2.

$$TA_{it}/A_{it-1} = \alpha_0 + \alpha_1 1/A_{it-1} + \alpha_2 \Delta R_{it}/A_{it-1} + \alpha_3 PPE_{it}/A_{it-1} + \alpha_4 CFO_{it}/A_{it-1} + \alpha_5 CFO_{it-1}/A_{it-2} + \alpha_6 TA_{it-1}/A_{it-2} + \varepsilon_{it} \quad (1)$$

$$TA_{it}/A_{it-1} = (EBXI_{it} - CFO_{it})/A_{it-1} \quad (2)$$

where TA_{it} corresponds to the total accruals of company *i* in period *t*; A_{it} corresponds to the total assets of company *i* in period *t*; ΔR_{it} corresponds to the variation in net revenue of company *i* in the period between *t* and *t-1*; PPE_{it} corresponds to the fixed assets of company *i* in period *t*; $EBXI_{it}$ corresponds to the result before extraordinary items and discontinued operations of company *i* in period *t*; CFO_{it} corresponds to the cash flows from operations of company *i* in period *t*; ε_{it} corresponds to residual values of the model used as a proxy for AEM.

Roychowdhury's (2006) model was used to build the proxy REM. To do this, abnormal levels of production costs (*APROD*) and discretionary expenses (*ADISX*) were estimated by year and industry. Abnormal level of cash flows from operations (*ACFO*), a proxy for manipulation in sales, was not used since REM can impact abnormal cash flows from operations in various directions, with the net effect being ambiguous (Roychowdhury, 2006; Zang, 2012). The methodology proposed by Zang (2012) builds the proxy aggregate REM with the set of residual values from equations 3 and 4, as shown in Equation 5.

$$PROD_{it}/A_{it-1} = \beta_0 + \beta_1 1/A_{it-1} + \beta_2 S_{it}/A_{it-1} + \beta_3 \Delta S_{it}/A_{it-1} + \beta_4 \Delta S_{it-1}/A_{it-1} + \varepsilon_{it} \quad (3)$$

$$DISX_{it}/A_{it-1} = \beta_0 + \beta_1 1/A_{it-1} + \beta_2 S_{it-1}/A_{it-1} + \varepsilon_{it} \quad (4)$$

$$REM_{it} = APROD_{it} + \left(ADISX_{it} * (-1)\right) \quad (5)$$

where $PROD_{it}$ corresponds to the cost of goods sold of company *i* in period *t* plus the variation in inventories between *t* and *t-1*; $DISX_{it}$ corresponds to the selling, general, and administrative expenses of company *i* in period *t*; A_{it} corresponds to the total assets of company *i* in period *t*; S_{it} corresponds to the net revenue of company *i* in period *t*; ΔS_{it} corresponds to the variation in the net revenue of company *i* in the period between *t* and *t-1*; $\Delta Sit\text{-}1$ corresponds to the variation in the net revenue of company i in the period between *t-1* and *t-2*; $APROD_{it}$ corresponds to the abnormal production costs of company *i* in period *t*, obtained from residual values of Equation 3; $ADISX_{it}$ corresponds to the abnormal discretionary expenses of company *i* in period *t*, obtained from residual values of Equation 4; REM_{it} corresponds to the aggregate proxy for earnings management through real activities manipulation, product of Equation 5.

To test the hypotheses, the econometric models shown in equations 6 and 7 were proposed; it is worth noticing that representative dummies of transitions between LCS were considered in the models, based on stage changes between periods *t-1* and *t* (as detailed in Table 3) and having a representation greater than 1% of the sample. These models were estimated by using the two-step method of system GMM, designed by Arellano and Bover (1995) and Blundell and Bond (1998), due to possible endogeneity issues between the variables. The estimator system GMM uses the lags of variables existing in the model as instrumental variables, which allows dealing with endogeneity and obtaining more consistent parameter estimates. To validate estimates, the significance of the first and second order autocorrelations was assessed, and the validity of the instruments was verified by using the Hansen test, whose null hypothesis is that the instruments used are valid and exogenous.

$$\begin{aligned} REM_{it} = {} & \beta_0 + \beta_1 Growth_{it} + \beta_2 Decline_{it} + \beta_3 Growth\text{-}Mature_{it} + \beta_4 Mature\text{-}Decline_{it} + \beta_5 Mature\text{-}Growth_{it} + \\ & \beta_6 Decline\text{-}Mature_{it} + \beta_7 Size_{it} + \beta_8 ROA_{it} + \beta_9 Lev_{it} + \beta_{10} SG_{it} + \beta_{11} CFO_{it} + \beta_{12} Vol(CFO)_{it} + \\ & \beta_{13} Big4_{it} + \beta_{14} Loss_{it} + \beta_{15} Covid_t + \delta Industry_i + \gamma Year_t + \varepsilon_{it} \end{aligned} \quad (6)$$

$$\begin{aligned} AEM_{it} = {} & \beta_0 + \beta_1 Growth_{it} + \beta_2 Decline_{it} + \beta_3 Growth\text{-}Mature_{it} + \beta_4 Mature\text{-}Decline_{it} + \beta_5 Mature\text{-}Growth_{it} + \\ & \beta_6 Decline\text{-}Mature_{it} + \beta_7 Size_{it} + \beta_8 ROA_{it} + \beta_9 Lev_{it} + \beta_{10} SG_{it} + \beta_{11} CFO_{it} + \beta_{12} Vol(CFO)_{it} + \beta_{13} Big4_{it} + \\ & \beta_{14} Loss_{it} + \beta_{15} Covid_t + \beta_{16} REM_{it} + \delta Industry_i + \gamma Year_t + \varepsilon_{it} \end{aligned} \quad (7)$$

Since dummy variables are used to indicate LCS, it was necessary to remove one of the classifications to serve as a comparison for analyzing the results and it was decided to use mature stage as the reference category (Krishnan et al., 2021; Ribeiro et al., 2018; Xie et al., 2022). Furthermore, Table 3 defines the variables introduced in equations 6 and 7.

Table 3
Definition of variables

Variables	Description	Metric	Theoretical basis
	Dependent variables		
REM	Earnings management proxy under analysis: REM, ADISX, or APROD	Residuals from Roychowdhury's (2006) model	Pae (2005), Paulo and Mota (2019), Roychowdhury (2006), and Zang (2012)
AEM	Proxy for earnings management via AEM	Residuals from Pae's (2005) model	Pae (2005) and Paulo and Mota (2019)
	Independent variables		
Growth	Growth stage at *t* and *t-1*	Park and Chen's (2006) model	Lima et al. (2015) and Park and Chen (2006)
Decline	Decline stage at *t* and *t-1*		
Growth-Mature	Transition from growth stage at *t-1* to mature at *t*		Bhattacharya et al. (2020), Can (2020), and Hansen et al. (2018)
Mature-Decline	Transition from mature stage at *t-1* to decline at *t*		
Mature-Growth	Transition from the decline stage at *t-1* to mature at *t*		
Decline-Mature	Transition from the decline stage at *t-1* to mature at *t*		
	Control variables		
Size	Company size	Natural logarithm of total assets at *t*	Azevedo et al. (2022), Du and Shen (2018), Khuong et al. (2022), and Qi et al. (2018)
ROA	Return on assets	Net income divided by total assets in *t*	Du and Shen (2018), and Paulo and Mota (2019)
Lev	Financial leverage	Ratio between onerous liabilities and total assets in *t*	L. Chen et al. (2018), Paulo and Mota (2019), Qi et al. (2018), and Roma et al. (2021)
SG	Sales growth	Percentage variation in sales	Azevedo et al. (2022), Li (2019), and Rocha et al. (2022)
CFO	Cash flows from operations	Cash flows from operations divided by total assets in *t*	Khuong et al. (2022), Li (2019), and Roma et al. (2021)
Vol(CFO)	Volatility of cash flow from operations	Standard deviation of CFO over a 5-year window	L. Chen et al. (2018) and Du and Shen (2018)
Big4	Audit firm	Dummy for a Big four audit firm	Azevedo et al. (2022), Xie et al. (2022), and L. Chen et al. (2018)
Loss	Loss	Dummy for income negative at *t*	Azevedo et al. (2022), Qi et al. (2018), and Roma et al. (2021)
Covid	COVID-19	Dummy for the COVID-19 period (2020 and 2021)	Azevedo et al. (2022)
REM	Earnings management through operational decisions	Equation 5	Li, (2019), Paulo and Mota (2019), Rocha et al. (2022), and Zang (2012)

Source: *Prepared by the authors.*

4. RESULTS

4.1 Descriptive Analysis

Table 4 shows some descriptive statistics regarding the earnings management proxies and control variables existing in the models proposed in equations 6 and 7. Panel A shows statistics for the full sample; on the other hand, panels B, C, and D show information by LCS, following the classification proposed by Park and Chen (2006).

The results of descriptive statistics show that discretionary accruals (AEM) had positive mean and median values for both the total sample and the mature and decline stages. At least 25% of the observations in these stages have positive values above 2.5% in relation to total assets. On the other hand, growing companies have an average tendency of greater negative discretionary accruals in relation to the other stages, with at least 25% of the negative values with a magnitude 2.2% higher in relation to total assets, suggesting a different behavior than what would be expected for this LCS, according to H1. As for the REM proxies, it is observed that growing

companies have, on average, a lower level of cuts in discretionary expenses. In relation to overproduction, there is a lower tendency of using this strategy to increase profits in companies in the mature stage. Considering the aggregation proposed by Zang (2012), the highest values in the proxy REM are observed in the decline stage.

Table 4
Descriptive statistics of variables

Variables	Mean	Standard deviation	Minimum	Perc 25	Median	Perc 75	Maximum
Panel A – Total Sample (1,223 observations)							
AEM	0.006	0.047	-0.513	-0.014	0.004	0.026	0.22
REM	-0.018	0.186	-1.239	-0.073	0.002	0.064	1.765
ADISX	-0.001	0.099	-0.545	-0.027	0.007	0.03	1.805
APROD	-0.017	0.109	-0.772	-0.065	-0.008	0.044	0.476
Size	22.439	1.587	17.101	21.354	22.395	23.469	26.936
ROA	0.06	0.075	-0.93	0.025	0.052	0.083	1.077
Lev	0.296	0.170	0.000	0.170	0.298	0.411	0.768
SG	0.474	10.897	-0.983	0.016	0.107	0.225	365.157
CFO	0.083	0.106	-1.153	0.042	0.087	0.135	0.508
Vol(CFO)	0.067	0.209	0.003	0.029	0.045	0.07	5.85
Panel B – Growth (169 observations)							
AEM	-0.001	0.046	-0.25	-0.022	0.000	0.022	0.193
REM	-0.031	0.199	-0.822	-0.076	0.019	0.08	0.372
ADISX	-0.014	0.096	-0.432	-0.042	0.013	0.03	0.228
APROD	-0.017	0.122	-0.39	-0.069	0.004	0.056	0.217
Size	22.700	1.532	18.505	21.627	22.779	23.895	25.637
ROA	0.047	0.057	-0.105	0.014	0.037	0.073	0.327
Lev	0.385	0.184	0.000	0.248	0.387	0.524	0.768
SG	0.363	0.533	-0.71	0.138	0.233	0.399	5.049
CFO	0.081	0.097	-0.287	0.028	0.085	0.142	0.385
Vol(CFO)	0.103	0.452	0.007	0.03	0.046	0.074	5.850
Panel C – Mature (848 observations)							
AEM	0.007	0.048	-0.513	-0.013	0.005	0.025	0.220
REM	-0.02	0.178	-1.239	-0.075	-0.002	0.059	0.583
ADISX	-0.001	0.082	-0.545	-0.024	0.008	0.030	0.29
APROD	-0.019	0.110	-0.772	-0.067	-0.010	0.037	0.476
Size	22.499	1.523	17.819	21.491	22.451	23.413	26.936
ROA	0.062	0.078	-0.930	0.028	0.053	0.083	1.077
Lev	0.289	0.162	0.000	0.170	0.294	0.399	0.768
SG	0.557	12.538	-0.983	0.016	0.103	0.204	365.157
CFO	0.085	0.110	-1.153	0.044	0.091	0.136	0.508
Vol(CFO)	0.058	0.048	0.003	0.028	0.044	0.069	0.517
Panel D – Decline (106 observations)							
AEM	0.015	0.046	-0.072	-0.01	0.007	0.035	0.204
REM	0.021	0.216	-0.48	-0.06	0.005	0.070	1.765
ADISX	0.020	0.185	-0.208	-0.03	0.003	0.027	1.805
APROD	0.002	0.084	-0.297	-0.037	0.000	0.048	0.262
Size	21.534	1.870	17.101	20.178	21.312	22.815	26.840
ROA	0.061	0.069	-0.189	0.022	0.053	0.085	0.376
Lev	0.208	0.150	0.000	0.069	0.200	0.321	0.629
SG	-0.016	0.184	-0.882	-0.087	-0.006	0.067	0.636
CFO	0.076	0.079	-0.216	0.034	0.075	0.111	0.356
Vol(CFO)	0.085	0.342	0.007	0.030	0.042	0.068	3.560

Notes: *Perc 25 and Perc 75 indicate, respectively, the first and third quartiles of distribution in the variables.*
Source: *Prepared by the authors.*

Growing companies are less likely to have abnormally low levels of discretionary expenses, given that at this stage they need to invest heavily in capital expenditures related to innovation and product differentiation (Lima et al., 2015). Furthermore, growing companies have a higher median overproduction proxy than mature companies, a result explained by prospects for sales growth and the search for market expansion, which make the benefits of overproduction practices outweigh their costs (Lima et al., 2015; Roychowdhury, 2006).

In the decline stage, companies would be expected to have fewer opportunities to engage in an REM strategy. Despite this, the literature indicates that, at this stage, companies resort to REM to report a better financial situation (Hussain et al., 2020). It is observed that a high value in the proxy REM is also driven by a greater tendency to cut discretionary expenses. However, according to Nagar and Radhakrishnan (2017), at this stage it is hard to establish a distinction between cutting discretionary expenses as an REM objective and the portion that is natural in the search for company survival.

Additionally, a mean difference analysis was performed, the results of which (not tabulated) indicate that there are statistically significant differences in the AEM and REM levels between the various LCS. These results differ from those evidenced by Lima et al. (2015), corroborating the idea that there are significant differences in the behavior of discretionary accruals between LCS (Roma et al., 2021). This demonstrates that engagement in earnings management strategies is influenced by LCS (T. Chen, 2016; Hussain et al., 2020; Krishnan et al., 2021; Nagar & Radhakrishnan, 2017; Roma et al., 2021).

4.2 Analysis of Regression Models

In order to verify how AEM and REM levels behave at various moments of firm life cycle and to test the proposed hypotheses, the econometric models proposed in equations 6 and 7 were estimated by the system GMM (Arellano & Bover, 1995; Blundell & Bond, 1998). The results of analyses are shown in Table 5.

Table 5
Relationship between firm life cycle stages and their changes with earnings management

Variables	(1)	(2)	(3)	(4)
	AEM	***REM***	***ADISX***	***APROD***
Growth	-0.009***	-0.026***	-0.055***	0.037***
Decl	0.065***	-0.054***	-0.049***	-0.003
Growth-Mature	0.000	0.026***	0.021***	0.001
Mature-Decline	0.027***	0.106***	0.010***	0.092***
Mature-Growth	-0.013***	0.003	-0.014***	0.011***
Decline-Mature	-0.009***	0.085***	0.021***	0.062***
Size	0.013***	-0.044***	-0.014***	-0.031***
ROA	0.276***	-0.506***	-0.165***	-0.355***
Lev	0.042***	-0.165***	0.034***	-0.185***
SG	0.003***	-0.008***	-0.001	-0.004***
CFO	0.005*	-0.179***	0.052***	-0.228***
Vol(CFO)	-0.014***	0.020***	0.013***	0.006***
Big4	-0.007**	0.015***	-0.062***	0.067***
Loss	0.001	0.020***	-0.029***	0.055***
Covid	-0.007***	0.037***	0.010***	0.031***
REM	0.111***			
Intercept	-0.327***	0.980***	0.335***	0.659***
Dummies for Industry and Year	Yes	Yes	Yes	Yes
Observations	1,223	1,223	1,223	1,223
Maximum VIF	3.10	3.10	3.10	3.10
Wald chi² (*p* value)	0.000	0.000	0.000	0.000
Arellano-Bond Test – AR1 (*p* value)	0.000	0.000	0.001	0.000
Arellano-Bond Test – AR2 (*p* value)	0.745	0.263	0.198	0.236
Hansen test (*p* value)	0.866	0.534	0.520	0.453

Table 5
Cont.

Notes: *This table shows the coefficient estimates of system GMM regressions, with the proxies AEM, REM, ADISX and APROD, respectively, as dependent variables. To standardize the interpretation of coefficients in the same direction, the variable ADISX was multiplied by -1. The analysis of the variance inflation factor (VIF) does not indicate multicollinearity issues. The Wald test indicates general significance of the model, the Arellano-Bond test points out the presence of first-order autocorrelation, but not second-order autocorrelation. The Hansen test does not reject the null hypothesis that the instruments are valid and exogenous. The main benchmark for the variables representing firm life cycle is permanence in mature.*
****, **, * denote the level of significance of 1%; 5%, and 10%, respectively.*
Source: *Prepared by the authors.*

The results presented in Table 5 show that, when compared to mature stage firms, growth stage firms are associated with lower levels of positive discretionary accruals. Regarding the REM models, a negative coefficient is also observed for growth stage firms. However, the results in columns 3 and 4 indicate that, although growth stage firms are negatively associated with the discretionary expense cutting strategy, they are positively and significantly associated with abnormal production levels when compared to mature firms.

Although Nagar and Radhakrishnan (2017) found evidence that firms in this stage are associated with the use of REM to achieve profit targets, cutting discretionary expenses does not seem to be an approach adopted by firms to increase reported earnings. As discussed, growth firms require greater investments in R&D, among other discretionary expenditures (Lima et al., 2015; Xie et al., 2022). Therefore, considering the perspective of using REM to increase profits, these results are in line with the idea that firms in the growth stage are less likely to adopt this strategy when compared to mature stage firms.

Regarding companies that remain in a decline stage, when compared to mature stage companies, the results indicate a greater predisposition to engage in AEM strategies. These findings suggest that uncertainties about performance and future cash flow generation and the greater likelihood of violating financial covenants, characteristics of this stage, encourage earnings manipulation through accruals in order to hide their financial difficulties (Krishnan et al., 2021; Oliveira & Monte-Mor, 2022; Roma et al., 2021). At the same time, they indicate a lower predisposition to REM strategies, given the negative coefficients in columns 2, 3, and 4. These results indicate a lower predisposition to REM, considering the cut in discretionary expenses, for companies in decline when compared to mature stage companies. It is worth noticing that this approach implies higher costs and a more direct impact on company profitability and value in the long run (Cupertino et al., 2016; Nagar & Radhakrishnan, 2017).

Regarding the effect of the transition between LCS (Bhattacharya et al., 2020), the findings do not suggest statistically significant differences in the levels of engagement in AEM strategies between companies moving from the growth stage (at *t-1*) to the mature stage (at *t*) when compared to companies that remain in mature (at *t*). However, this transition (growth to mature) is marked by increased REM levels, especially through the cutting of discretionary expenses. The predominance of this strategy is in line with the view that, upon reaching mature, companies have greater freedom to make cuts in R&D expenses (Xie et al., 2022), as well as in other discretionary expenses. This implies that the costs of this strategy should be lower than the expected benefits.

In turn, when companies return to the growth stage (in *t*) from a mature stage (in *t-1*), there is on average a reduction in AEM levels and a cut in discretionary expenses when compared to companies that remain in mature (in *t*). In other words, to return to the growth phase, companies need to invest in technological resources that promote the differentiation and improvement of their products and processes (Dickinson, 2011; Lima et al., 2015; Oliveira et al., 2022), implying a greater volume of spending on discretionary expenses.

For the overproduction proxy, the results suggest an increase in this type of strategy in this context, because, when companies return to growth after a mature stage, they have more financial flexibility to increase production in order to reduce the cost of goods sold (Xie et al., 2022). The aggregate measure of REM did not have a statistically significant coefficient. Therefore, at first glance, the result could suggest that there would be no effect of this transition on REM, but the characteristics of this transition marked by a new need for discretionary spending lead to the use of overproduction as a more viable REM form.

When firms transition from the mature stage (at *t-1*) to the decline phase (at *t*) compared to firms that remain in mature (at *t*), the results suggest an increase in all earnings management proxies. Also, when firms return to

the mature stage after a decline phase, a decrease in AEM and an increase in REM are observed. Thus, the findings suggest that, at the beginning of the decline phase, firms resort to REM to show improved financial performance to accounting information users. Therefore, the increased uncertainty regarding performance and future cash flow generation during periods when firms are close to a decline phase serves as an incentive for earnings manipulation in order to hide their financial difficulties (Hussain et al., 2020; Krishnan et al., 2021; Roma et al., 2021).

The findings suggest an increased use of REM as the firm moves into more advanced life cycle stages, especially considering the shift from the growth to mature stage and from mature to the decline phase. In line with the premise that market pressure to meet profit targets encourages firms to engage in REM (T. Chen, 2016; Krishnan et al., 2021; Nagar & Radhakrishnan, 2017).

As for the analysis of control variables, the results point out that company size, profitability, and sales growth are positively associated with higher AEM levels and lower engagement in REM strategies. These results are in line with some evidence from prior literature (Azevedo et al., 2022; Jaggi et al., 2022). Financial leverage showed a positive relationship with the use of AEM and cuts in discretionary expenses to manage results, in line with the findings of Qi et al. (2018). Greater volatility of operating cash flow is associated with the use of REM strategies to increase results and a reduction in the use of AEM (L. Chen et al., 2018). The fact that the company is audited by a Big4 was positively associated with the practice of overproduction. Finally, the context of the COVID-19 pandemic was associated with greater use of REM and lower engagement in AEM strategies.

When it comes to the analysis of the trade-off between AEM and REM strategies, in contrast to the evidence found in prior literature (Paulo & Mota, 2019; Rocha et al., 2022; Soschinski et al., 2021; Zang, 2012), the results actually suggest a complementarity in the use of these earnings management strategies among companies in the Brazilian capital market. The divergence of these findings motivated a more detailed analysis of these trade-offs between LCS. Since some insights from the literature suggest that, although prior studies invariably point out a trade-off relationship between AEM and REM, there may be a complementary relationship between the strategies (Li, 2019) and that this trade-off may not manifest itself in all contexts (Paulo & Mota, 2019). The results of this analysis are shown in Table 6.

Table 6
Reflections of firm life cycle stages on the trade-off between AEM and REM

Variables	**(1)**
	AEM
Growth	-0.006*
Decline	0.074***
Growth-Mature	0.001
Mature-Decline	0.021***
Mature-Growth	-0.012***
Decline-Mature	-0.024***
REM	0.157***
*Growth * REM*	-0.222***
*Decline * REM*	-0.371***
*Growth-Mature * REM*	0.049***
*Mature-Decline * REM*	0.158***
*Mature-Growth * REM*	0.027**
*Decline-Mature * REM*	-0.281***
Control variables	Yes
Dummies for Industry and Year	Yes
Observations	1,223
Maximum VIF	3.13

Table 6
Cont.

Variables	(1)
	AEM
Wald chi² (*p* value)	0.000
Arellano-Bond Test – AR1 (*p* value)	0.000
Arellano-Bond Test – AR2 (*p* value)	0.547
Hansen test (*p* value)	0.858

Notes: *This table shows the regression coefficient estimates by system GMM, with the AEM proxy as the dependent variable. The analysis of the variance inflation factor (VIF) does not indicate multicollinearity issues. The Wald test indicates general model significance, and the Arellano-Bond test points out the presence of first-order autocorrelation, but not second-order autocorrelation. The Hansen test does not reject the null hypothesis that the instruments are valid and exogenous. The main benchmark for the variables representing firm life cycle is the duration of mature.*
****, **, * denote the level of significance of 1%; 5%, and 10%, respectively.*
Source: *Prepared by the authors.*

Table 6 shows some interesting findings regarding the trade-off between the use of AEM and REM. First, for companies in the growth and decline phases, a trade-off is observed such that a higher REM level during the period implies a lower AEM volume, in line with expectations in prior literature (Paulo & Mota, 2019; Rocha et al., 2022; Soschinski et al., 2021; Zang, 2012). However, in the mature stage (represented by the coefficient without interaction), this trade-off is not the observed pattern, but a complementary relationship, as evidenced by Li (2019). Regarding the effect of transition on the trade-off in the use of AEM and REM, this is only observed in the change from the decline stage (in *t-1*) to the mature phase (in *t*) when compared to companies that remain in mature (in *t*). This suggests that there is a decrease in costs in both earnings management strategies during the mature stage.

Among the hypotheses proposed by the study, the results indicate that hypotheses H2, H3, and H4 were not rejected, which predicted a lower propensity for REM in the growth stage, greater use of AEM and lower engagement in REM practices during the decline phase. As for hypotheses H5, H6, H7, and H8, the results only partially corroborate the proposed dynamics. In general, the findings indicate that change from the growth or decline stage to the mature stage is related to an increased use of REM. Furthermore, they suggest an increased use of AEM in the transition from the mature stage to the decline stage, while the return to the growth phase leaving mature is associated with a lower propensity to cut discretionary expenses.

4.3 Additional Analysis and Robustness

To test the robustness and sensitivity of the results obtained, the models proposed in equations 6 and 7 were estimated again considering an alternative LCS classification. To do this, an adaptation of Dickinson's (2011) model was adopted according to Oliveira and Monte-Mor (2022). Following the reformulation proposed by the authors, companies are classified into initial stages (introduction and growth), mature, and final stages (shake-out and decline) of the life cycle. These results are presented in Table 7.

Table 7
Robustness analysis with an alternative model for classifying firm life cycle stages

Variables	(1)	(2)	(3)	(4)
	AEM	***REM***	***ADISX***	***APROD***
Initial stages	-0.002***	0.004***	-0.013***	0.020***
Final stages	0.014***	0.032***	-0.007***	0.030***
Initial stages-Mature	0.010***	0.003**	-0.005***	0.009***
Mature-Final stages	0.047***	0.090***	0.008***	0.075***
Mature-Initial stages	-0.006***	-0.011***	-0.023***	0.015***
Final stages-Mature	0.005***	-0.016***	-0.024***	0.007***
Control variables	Yes	Yes	Yes	Yes
Dummies for Industry and Year	Yes	Yes	Yes	Yes
Number of companies	185	185	185	185
Observations	1,223	1,223	1,223	1,223
Wald chi^2 (*p* value)	0.000	0.000	0.000	0.000
Arellano-Bond Test – AR1 (*p* value)	0.000	0.000	0.002	0.000
Arellano-Bond Test – AR2 (*p* value)	0.958	0.320	0.591	0.706
Hansen test (*p* value)	0.795	0.648	0.838	0.689

Notes: *This table shows the coefficient estimates of regressions by system GMM, with AEM, REM, ADISX, and APROD proxies, respectively, as dependent variables. To standardize the interpretation of coefficients in the same direction, the variable ADISX was multiplied by -1. The analysis of the variance inflation factor (VIF) does not indicate multicollinearity issues. The Wald test points out general model significance, the Arellano-Bond test indicates the presence of first-order autocorrelation, but not second-order. The Hansen test does not reject the null hypothesis that the instruments are valid and exogenous. The main benchmark for the variables representing firm life cycle is the duration of mature.*
****, **, * denote the level of significance of 1%; 5%, and 10%, respectively.*
Source: *Prepared by the authors.*

In general, the results discussed above are robust to the LCS classification adopted. The main divergences are related to the transition from the final stages (in *t-1*) to mature (in *t*), whose coefficients have opposite signs. Furthermore, when analyzing the net effect of the aggregate REM measure in the growth and decline stages, differences are observed, but when examining separately the strategies that compose it, the conclusions obtained from the results presented in Table 6 remain valid.

To control for the fact that there is significant variation between the sample of companies in mature and in other stages, which could influence the results, the proposed models were estimated by considering differential weights (weighted least squares [WLS] in GMM estimation). In order to smooth out this possible issue of imbalance of observations between the groups. The findings of this (non-tabulated) analysis suggest that the results obtained, in general, remain valid, especially the hypotheses related to variables of permanence in LCS.

The literature suggests a series of models for estimating the AEM proxy. With this issue in mind, the sensitivity of results was tested by using an alternative measure for estimating discretionary accruals. To do this, the Viana et al.'s (2023) model was adopted, which takes as a reference the models proposed by Collins et al. (2017) and Kothari et al. (2005). Again, the (non-tabulated) main findings are robust in face of the alternative AEM proxy, as the main differentiating feature, and the trade-off relationship began to be observed only in the growth stage and in transitions, except from decline to mature.

As an additional analysis, with a view to exploring in greater depth the impacts of COVID-19 on the relationship between LCS and AEM and REM, a model was estimated with the dummy for the Covid period as a mediating variable. The (non-tabulated) results are interesting, as they suggest that, depending on the moment of the life cycle experienced by companies, the COVID-19 period had an effect in increasing or attenuating the relationships previously found. One of the findings is that during this period there was an increased complementary relationship between AEM and REM strategies and a greater volume of cuts in discretionary expenses in almost all life cycle phases.

5. CONCLUDING REMARKS

This study analyzed the effects of firm LCS and its changes on the level of adoption of earnings management strategies. It was assumed that specific factors at various organization development stages, as well as changes in these stages, can influence the incentives or constraints for greater adoption of certain earnings management strategies.

The main findings point out that engagement in earnings management strategies is influenced by LCS. When analyzing these findings in more detail, it is suggested that growth-stage companies are less likely to engage in AEM and REM when compared to mature-stage companies, while declining-stage companies resort more to AEM strategies. Regarding REM strategies, when experiencing the growth and declining stages, companies are less likely to cut discretionary expenses when compared to mature companies. However, in the growth phase, companies seem to be more predisposed to using overproduction as an earnings management way.

Regarding the effects of the transition between LCS, it is worth noticing that the volume of discretionary accruals and cuts in discretionary expenses increases in an attempt to improve reported performance and hide financial difficulties at the beginning of the decline phase after mature. It is noted that the change to more advanced life cycle stages, especially from the mature to the decline phase, leads to an increased use of earnings management practices.

As for the trade-off between AEM and REM strategies, the findings of this study point out that the relationship is not stable at all times in firm life cycle. The trade-off is mainly observed in companies in growth and decline stages. However, for companies in the mature phase, the results suggest a complementary relationship between earnings management strategies.

In general, it is concluded that the beginning of the decline stage is characterized by the use of AEM and REM strategies. This suggests that managers resort to both strategies to exercise opportunistic behaviors under the accounting numbers, seeking to hide the unfavorable phase faced by companies. This result draws the attention of stakeholders to the concern and reliability in the results reported by companies that are transitioning to a decline phase.

The results obtained in this research contribute to the literature by providing insights into how LCS influence the adoption of earnings management strategies and the trade-off or complementarity between them. This evidence is relevant, since earnings management is a practice that affects accounting information quality and may even impact the future profitability of organizations. Also, the results have implications for other agents, such as independent auditors, who should take additional care when performing audit sampling in companies in a declining stage. Financial analysts can also benefit from these findings when using accounting information in their investment decisions, taking into account firm LCS.

The limitations of this study are related to the restriction of the sample to a specific portion of companies that trade shares on B3. This occurred due to the selection criteria needed to meet the information requirements to estimate AEM and REM proxies and LCS. Finally, given the relevant insights obtained regarding the life cycle impact on the trade-off between earnings management strategies, it is suggested that further studies explore this issue in greater depth in other economic and legal contexts.

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