International Journal of Applied Economics, Finance and Accounting
ISSN 2577-767X
Vol. 21, No. 1, pp. 28-41
2025
DOI: 10.33094/ijaefa.v21i1.2043

Sentiments, COVID-19, and the motivations for pro-forma earnings management in South Africa

Joseph Olorunfemi Akande

Department of Accounting Science, Walter Sisulu University, Mthatha, South Africa.
Email: jakande@wsu.ac.za

Keywords:
Corporate financing
COVID-19 pandemic
Earnings management
Investor sentiment.

JEL Classification:
M41; G10; M49.

Received: *29 May 2024*
Revised: *6 November 2024*
Accepted: *21 November 2024*
Published: *5 December 2024*

Abstract

Researchers have identified investor sentiment as influencing corporate decisions. Prior studies focus on its influence on stocks, investment, and corporate financing. This study restricts the sample to the financial-crisis-free periods (2012–2021) and explores how sentiments, pandemics, and other potential firm-level factors motivate earnings management in South Africa. The earnings management is measured based on the Jones model's (modified Jones) discretionary accruals for the main (robustness) analysis, and the difference in price-earnings ratio index of sentiment was applied. The evidence identifies new insights. It was shown that the expected value of the discretionary accruals is non-drifted. Also, earnings manipulation reduces due to changes in sentiments, but the expected value increases due to the COVID-19 occurrence. In addition, sentiments during the pandemic do not hold predictively and clearly would not incentivise the managers to engage in earnings management. Investors need to consider the impact of the pandemic and sentiments on earnings management when formulating their investment strategies. The findings can potentially guide investors to be cautious and perceptive about financial reports during crises in light of the documented increase in the expected value of discretionary accruals due to COVID-19. The study's original contribution is to establish how sentiments impact the estimates of the pro forma EM, which overstate earnings. It also demonstrates how pandemics affect these estimates, and how sentiments due to COVID-19 influence these estimates using data from South Africa.

Funding: This study received no specific financial support.
Institutional Review Board Statement: Not applicable.
Transparency: The author confirms that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.
Data Availability Statement: Joseph Olorunfemi Akande may provide study data upon reasonable request.
Competing Interests: The author declares that there are no conflicts of interests regarding the publication of this paper.

1. Introduction

Earnings management (EM) involves managers' tactical use of discretions, permissible or not by regulations, in misreporting the underlying company performance and other accounting or factual information related to assets, debts, and other elements on the financial statements. By misrepresenting the companies' true earnings, the misreporting aims to influence contractual agreements and manipulate the capital markets (Brennan, 2021). EM practices can be considered from informational or opportunistic perspectives. The information view asserts that the misreporting of earnings signals future cash flow expectations, whereas the opportunistic view maintains that the misreporting of earnings misleads unsuspecting investors. The opportunistic context, rather than the information context, serves as the foundation for most empirical studies, likely because of its connection to asset pricing models (Bertrand, De Brebisson, & Burietz, 2021). In connecting EM practice to the real world, because investors are controlled by psychological influence, investor sentiments (hereafter, sentiment(s)), amongst others, are considered an important factor that motivates firms to manipulate earnings (Park, 2018; Santana, Santos, Carvalho Júnior, & Martinez, 2019). Researchers have also noted that a negative environment motivates firms to manipulate reported earnings. Because these events elicit market

caprices (Pinto & Picoto, 2018) there is evidence that global events such as financial crisis (Choi, Kim, & Lee, 2011; Cimini, 2015; Estrada, Koutronas, & Lee, 2021) and pandemics (Ali, Amin, Mostafa, & Mohamed, 2022; Lizińska & Czapiewski, 2023) may influence corporate decisions. Therefore, this study investigates the influence of the interaction of pandemics and sentiments on EM to contribute to the literature.

Since Black (1986) behavioural finance literature links asset pricing to the role of sentiments. Investors use simple heuristics to classify news releases about earnings into bad and good news when the information conforms to or contradicts their views. According to prevailing sentiments, these decisions may influence stock prices and thus generate negative (positive) price shocks (Conrad, Cornell, & Landsman, 2002; De Long, Shleifer, Summers, & Waldmann, 1990; Wang, Su, & Duxbury, 2022). De Long et al. (1990) extended the importance of sentiments to other finance decisions like dividend payments, capital investments, and stock splits. Accounting literature supports that managers are inspired to manipulate their disclosures due to sentiments if doing so will incentivise public confidence. Baker and Wurgler (2007) find that sentiment-driven expectations of future earnings influence disclosure decisions amongst firms. Ali and Gurun (2009) show that firms' accrual disclosure or mispricing per unit of accruals is more common during high sentiment periods. Other studies consider how sentiments motivate decisions on accounting information, especially corporate misreporting and pro forma EM. Park (2018) discloses that sentiment adversely affects the tendency to beat earnings targets. Santana et al. (2019) report that managers in Brazil tend to lessen manipulations under low sentiment compared to high sentiment.

Moreover, the recent occurrence of the COVID-19 pandemic in 2020 has exerted diverse economic impacts. Cevik, Kirci Altinkeski, Cevik, and Dibooglu (2022) show how sentiments affect the stock markets and firms' performances at the peak of the COVID-19 pandemic. There has also been growing research on how the pandemics impact accounting quality, especially earnings management. Aljughaiman, Nguyen, Trinh, and Du (2023) and Fajriati, Wahyuni, and Rosdini (2023) find evidence of more corporate financial distress and earnings overstatement during the COVID-19 outbreak. Ali et al. (2022); Lassoued and Khanchel (2021) and Liu and Sun (2022) indicate that by being involved in more income-decreasing, firms manage earnings less by taking a big bath in reporting during the pandemic. Lizińska and Czapiewski (2023) and Aljughaiman et al. (2023) prove that EM is more prevalent in turbulent times. Chundakkadan and Nedumparambil (2022) examine the impact of sentiment on stocks, concluding that significant stock declines result not only from the lockdown that restricts economic activities but also from specific shifts in sentiment.

The study focuses on how sentiments and pandemics influence EM practices. It contributes to knowledge and draws further research attention to the subject matter. Current research on the impact of sentiments and pandemics on EM primarily focuses on developed nations, while Africa and emerging regions, where EM practices are evident, receive less scrutiny (Gbadebo, 2023; Muri, Daniel, Oluwatobi, & Olorunfemi, 2022; Pududu & De Villiers, 2016). The many differences between these economies, in capital markets and institutions, make it challenging to generalize outcomes based on one or the other. African economies exhibit greater information asymmetry due to weaker markets, concentrated ownership, and restricted regulatory enforcement (Agyei-Boapeah & Machokoto, 2018; Agyei-Boapeah, Machokoto, Amankwah-Amoah, Tunyi, & Fosu, 2020). There is a need to determine how these states and events motivate EM practices in Africa. However, Daske, Hail, Leuz, and Verdi (2013) criticize cross-country evidence for generalizing conclusions beyond homogeneous settings. Unless the test indicates otherwise, we should distinctly verify the differences in accounting quality across countries (Leuz & Wysocki, 2016). These studies support homogenous contexts for country-wise investigations involving accounting practices to unveil new insights.

Furthermore, extant literature exploring this research domain provides evidence of the relationship between financial crisis, including the impact of COVID-19 and EM (Cimini, 2015; Lassoued & Khanchel, 2021; Liu & Sun, 2022; Lizińska & Czapiewski, 2023). On the other hand, the impact of sentiments on EM has also been considered (Jiang, Liu, & Sun, 2020). The gap remains in the literature of studies considering the influence of COVID-19 on the relationship between sentiments and earnings management. This further incentivizes this investigation.

This study fills a research gap by providing essential evidence for South African firms. The paper explores whether sentiments and pandemics primarily influence the pro forma EM while accounting for firm-specific characteristics. The paper answers three questions: Does sentiment motivate managers to overstate earnings? (b) Does the COVID-19 pandemic influence managers to engage in more earnings management? (c) Does the pandemic increase sentiments to incentivize managers to manage earnings? We aim to address the three questions in order to achieve the study's goals and add to the existing literature. The first objective aims to establish the impact of sentiments on the pro forma EM's overstated earnings estimates. The second objective contributes by demonstrating how the pandemics affect the estimates of pro forma EM. The third objective contributes by indicating how sentiments due to COVID-19 influence the estimates of the pro forma EM.

The evidence identifies new insights. It was shown that the expected value of the discretionary accruals is non-drifted. Also, earnings manipulation reduces due to changes in sentiments, but the expected value increases due to the COVID-19 occurrence. In addition, sentiments during the pandemic do not hold predictively and clearly would not incentivise the managers to engage in earnings management. Two covariates – operating cash flow and firms' size – significantly increase the discretionary accruals, whilst leverage and asset returns are insignificant to incentivised earnings management. The outcomes offer first-hand information to the

stakeholders, such as the regulators for policymaking and reforms and investors interested in making informed decisions based on the financial reports. This outcome would ensure the necessary preservation of public confidence in the capital market.

The remainder of the research is considered as follows: Section 2 presents theoretical issues related to EM, sentiments, and hypotheses, whereas Section 3 discusses the models and methods. Sections 4 and 5 provide the study's results (conclusions).

2. Governing Literature

2.1. Theoretical Literature Review

Amidst the number of theories underpinning the relationships in this study, behavioral finance theory suggests that psychological factors and sentiments influence financial decisions, including corporate reporting behaviors. The COVID-19 pandemic has created a highly volatile and uncertain environment, influencing managerial sentiment and potentially altering financial reporting practices. Beck and Katz (1995) in "Panel-Corrected Standard Errors", discuss how macroeconomic and psychological uncertainties, like those induced by COVID-19, can influence earnings management through the lens of increased managerial discretion in uncertain times (Cevik et al., 2022). According to prospect theory, managers might engage in earnings management to avoid reporting losses, a behavior intensified under crisis conditions where the fear of realizing losses is magnified. Studies exploring the effects of the COVID-19 pandemic have shown that negative sentiments can lead to more conservative financial reporting, potentially as a defense against perceived risks (Chandra & Krishna, 2021). The theory of reasoned action posits that social pressure and the intent to comply with expected norms can drive behavior, including earnings manipulation. During COVID-19, stakeholders' expectations for stability or positive performance, despite economic downturns, could influence this behavior. Literature has demonstrated that during economic crises like COVID-19, companies might feel compelled to manage earnings to meet external expectations or internal targets (Qadri et al., 2023).

2.2. Literature Review and Hypotheses Development

Managers adjust earnings measures to portray a sustainable and better performance stance than actual earnings. The level of such pro forma managerial manipulation of earnings by the managers is presumed to be motivated by some considerable factors or events (Healy, 1985). For instance, the argument is that firms manipulate reported earnings, taking advantage of permitted and broader uses of professional discretion accommodated by regulations (Bertrand et al., 2021; Muri et al., 2022). Aside from this, behavioural finance models offer that sentiments affect equity prices, and by extension, to ensure stock prices that attract investors, managers are motivated to manipulate their earnings. Hence, overstating earnings is arguably due to the influence of sentiments (Dalika & Seetharam, 2014; Park, 2018; Santana et al., 2019; Simpson, 2013).

Simpson (2013) shows that the sentiments drive EM via discretionary accruals. Ali and Gurun (2015) reveal that mispricing of accruals is more significant for small stocks in periods with high market-wide sentiment than in periods with low sentiment. Park (2018) identifies that prevailing sentiment negatively affects firms' tendency to meet or beat three earnings targets in Korea. Santana et al. (2019) disclose that EM has positive sentiments in Brazil. Because of the precursory evidence in South Africa by Dalika and Seetharam (2014) reports that sentiment has an inverse influence on share returns of small stocks, the study attempts to test the first null:

H_1: Sentiments do not motivate firms' pro forma earnings management practices during the considered periods.

Furthermore, from an accounting perspective, prior studies have explored the significance of a negative crisis environment. Firms are motivated to manipulate earnings in response to crises, such as financial crises (Choi et al., 2011; Cimini, 2015) and pandemic crises (Lizińska & Czapiewski, 2023). Liu and Sun (2022) show a significant decline in discretionary accruals, suggesting that the pandemic affected EM and the value relevance of earnings in the USA. Lizińska and Czapiewski (2023) examine earnings informativeness's significance and establish that discretionary accruals declined during the COVID crisis in Poland. Ali et al. (2022) report that firms engage in less EM during the pandemic, suggesting that companies are less eager to inflate earnings via accruals. Lassoued and Khanchel (2021) indicate that the sample firms tend to manage earnings more during the pandemic period than during the preceding period. The COVID-19 pandemic undoubtedly affects the general global economic activities, financial environments, and the performance of listed firms. It may be sufficient to influence management disclosure decisions in South Africa during coverage periods. The study attempts to examine how the pandemics affect EM, given its focus on the operations, cash flows, investments, and financial activities of earnings manipulation firms. Hence, the second null examined is:

H_2: Pandemics do not motivate pro forma earnings management practices amongst firms.

In this context, the interactions between sentiments and pandemics may be identified between sentiments and EM during the pandemics. Chundakkadan and Nedumparambil (2022) report stock declines due to lockdown and market sentiment changes. Additionally, the paper aims to identify whether available evidence is sufficient to adduce that earnings are more managed during COVID, supposing the pandemic makes earnings reported of less value relevant. Consequently, the study examines the third null hypothesis:

H_3: Sentiments during pandemics do not incentivise firms to overstate earnings.

3. Methodology

3.1. Data

The financial information from the McGregor BFA database and consolidated financial reports of considered Johannesburg Stock Exchange (JSE) firms are employed to complete the estimations. The JSE firms, categorized based on the Industry Classification Benchmark (ICB) method, are subdivided into ten industries, 19 super sectors, 41 sectors, and 114 subsectors. According to prior studies, the sample comprises firms selected only from the non-financial sector. Because of the overbearing influence that the financial crisis likely impinges on earnings quality, the specified period is limited to a comprehensive sample from the post-financial crisis era, during 2012–2021 (Cimini, 2015; Pinto & Picoto, 2018). The paper considers only firms classified in the non-financial industries, excluding utility providers due to over-regulation (Dalika & Seetharam, 2014; Park, 2018). In addition, firms with incomplete information in the study periods are excluded. With this, only 174 firms, involving 1,740 firm-years, are considered for the estimations, tests, and hypothesis evaluations.

3.2. Main Variables

3.2.1. Earnings Management

Discretionary accruals measure the level of strategic reporting for overestimated or underestimated cash flows. These fragments of the total accruals do not constitute a component of the firm's operating activities but rather serve as an estimate that indicates the direction of EM based on managers' discretion. Therefore, accounting literature recommends using discretionary accruals as a measure when testing EM evidence (Dechow, Sloan, & Sweeney, 1995; Hayn, 1995; Healy, 1985; Jones, 1991; Kasznik, 1999; Kothari, Leone, & Wasley, 2005; Teoh, Welch, & Wong, 1998). The basic form, from Healy (1985), involves the computation of the total accrual ($TA_{i,t}$), for each firm i in year t, is the difference between operating profit ($PAT_{i,t}$) and cash flow from operations ($CFO_{i,t}$).

$$TA_{i,t} = PAT_{i,t} - CFO_{i,t} \qquad (1)$$

The information for each component of (1) is obtained from the financial statements (Gbadebo, Adekunle, & Akande, 2023). Hribar and Collins (2002) observe that (1) captures a larger portion of managers' manipulations with low computation error. Other measures, mostly variants of the Jones (1991) model, are considered.

The Jones model, as outlined in (2), assumes that managers do not have discretion over revenue and divides asset-scaled total accruals into discretionary (unexplained) and non-discretionary (explained) components. The model regresses total accruals on variables connected with the non-discretionary components, including change in revenues ($\Delta REV_{i,t}$) and gross value of property, plant, and equipment ($PPE_{i,t}$). The non-discretionary accrual is the expected value of the total accruals after the estimation of the coefficients of all the $\hat{\alpha}_{j,i}$ in (2).

$$\frac{TA_{i,t}}{A_{i,t-1}} = \alpha_0\left[\frac{1}{A_{i,t-1}}\right] + \alpha_1\left[\frac{\Delta REV_{i,t}}{A_{i,t-1}}\right] + \alpha_2\left[\frac{PPE_{i,t}}{A_{i,t-1}}\right] + e_{1i,t} \qquad (2)$$

$\Delta REV_{i,t}$ = revenue in year t minus revenue in year $t-1$, $A_{i,t-1}$ = Total assets in year $t-1$. The residual estimates ($\hat{e}_{1i,t}$) is the Jones discretionary accruals, which, for empirical purposes, is considered to represent the fragment of total accruals that managers exercise discretion upon. Greater discretionary accruals indicate higher earnings management in practice. The model is criticised as causing endogeneity bias because it excludes the fragments of earnings managed from the discretionary accrual, especially if managers exercise real discretion over revenue.

Dechow et al. (1995) propose the modified Jones model (3), which controls for the bias in Jones (2) by adjusting associated changes in net receivables from changes in revenues to accommodate wider earnings manipulation. The model regresses the normalised $TA_{i,t}$ on scaled ($\Delta REV_{i,t} - \Delta REC_{i,t}$) and $PPE_{i,t}$, for firm i in year t. The non-discretionary accruals are a component of the total accruals after the estimation of the coefficients, $\hat{\beta}_{j,i}$'s in (3).

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_0\left[\frac{1}{A_{i,t-1}}\right] + \beta_1\left[\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right] + \beta_2\left[\frac{PPE_{i,t}}{A_{i,t-1}}\right] + e_{2i,t} \qquad (3)$$

The estimates of the residuals ($\hat{e}_{2i,t}$) is the modified Jones' discretionary accruals. $\Delta REC_{i,t}$ = Net receivables in year t minus net receivables in year $t-1$ and other variables are predetermined. The model accounts for endogenous bias in the Jones model, but the modification induces overestimation bias (Coulton, Taylor, & Taylor, 2005). Other models to improve the limitations have been proposed, including Kasznik (1999) extended Jones cash flow model (Equation 4), Teoh et al. (1998) working capital accruals model (Equation 5), and Kothari et al. (2005) performance-matched discretionary accruals model (Equation 6).

$$\frac{TA_{i,t}}{A_{i,t-1}} = \theta_0\left[\frac{1}{A_{i,t-1}}\right] + \theta_1\left[\frac{\Delta REV_{i,t} - \Delta REC_{i,t}}{A_{i,t-1}}\right] + \theta_2\left[\frac{PPE_{i,t}}{A_{i,t-1}}\right] + \theta_3 \Delta CFO_{i,t} + e_{3i,t} \qquad (4)$$

$$\frac{WCA_{i,t}}{A_{i,t-1}} = \delta_{0,i}[1/A_{i,t-1}] + \delta_{1,i}[(\Delta REV_{i,t} - \Delta REC_{i,t})/A_{i,t-1} + \delta_{2,i}[PPE_{i,t}/A_{i,t-1}] + e_{4i,t} \qquad (5)$$

$$\frac{TA_{i,t}}{A_{i.t-1}} = \varphi_0 + \varphi_1\left(\frac{1}{A_{it-1}}\right) + \varphi_2\left(\frac{\Delta REV_{it}}{A_{i,t-1}}\right) + \varphi_3\left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \varphi_4 ROA_{i,t} + e_{5i,t} \qquad (6)$$

Equation 4 improves Jones model (1) by incorporating the change in cash flow from operation ($\Delta CFO_{i,t}$) to account for a possible negative correlation between cash flow and accruals. Equation 5 modifies the Jones model by splitting total accruals into working current accrual ($WCA_{i,t}$) and long-term accrual. Equation 6 adjusts the Jones model by adding firms' performance indicator, return on assets ($ROA_{i,t}$). The usual procedures are followed to obtain the non-discretionary component from the estimates of the total accruals after obtaining, $\hat{\theta}_{j,i}, \hat{\delta}_{j,i}$ and $\hat{\varphi}_{j,i}$, in Equation 4, 5, and 6. The residual estimates of (2) – (6) (i.e., $\hat{e}_{1i,t}, \hat{e}_{2i,t}, \hat{e}_{3i,t}, \hat{e}_{4i,t}, \hat{e}_{5i,t}$) are used as proxies for discretionary accruals' earnings management. The scaling by the lag of assets ($A_{i,t-1}$) of each term in (2) – (6) is ensured to measure against heteroscedasticity.

3.2.2. Investors Sentiments

Sentiments describe the extent of optimism or pessimism about financial securities unexplained by market fundamentals (Baker & Wurgler, 2007). Different views exist on how sentiments influence asset pricing and, consequently, other corporate disclosures. Classical finance models, such as the capital asset pricing theory, advanced that stock (asset) price reflects complete information due to market efficiency. As a result, rent-seeking investors set asset prices at the present value of the expected future cash flows (Fama, 1965). Unlike the counterpart based on the behavioural finance models, the model ignores the roles of sentiments in determining optimal stock pricing. The postulations from the behavioural finance theory suggest that stock pricing reflects an individual's perceptive or investor's cognitive states (Black, 1986). The model claims that sentiments largely motivate market decisions (Baker & Wurgler, 2006; De Long et al., 1990). Behavioural finance models recognise that investors are optimistic (pessimistic) in periods of high (low) investor sentiments. These asymmetric preferences drive share prices away from their fundamentals, causing returns and other earnings indicators to deviate from the expected level (Baker & Wurgler, 2007).

Extant literature uses different methods, such as the difference between price-earnings ratios (DIFFPE), KSENT and KBSENT, to measure investor sentiment. The DIFFPE method, from Conrad et al. (2002) estimates the overall equity markets to capture the extent of optimism or pessimism about security not explained by market fundamentals. The measure takes sentiment as the difference between the current period's price-to-earnings (P/E) ratio and the average market P/E ratio over the previous periods. The measure represents a simple but inclusive indicator of sentiment. A larger DIFFPE implies that the current period's sentiment is higher than the spanned period under consideration.

KSENT, from Baker and Wurgler (2006) uses a comprehensive index that combines isolated imperfect sentiment substitutions. The index is constructed using six financial information such as closed-end fund discount (CEFD), dividend premium (DIVP), equity share in new issues, amount of initial price offerings (IPOs), trading volume, and the first day returns on IPOs. KSENT is the first principal component extracted from the correlation matrix of financial variables. The principal components analysis (PCA) is completed to separate the sentiment components from the variables' idiosyncratic non-sentiment-related components. Baker and Wurgler (2007) show that the constructed index is associated with equity returns' cross-sections. Huang, Yang, Yang, and Sheng (2014) note that other variables can replace these imperfect sentiment indicators based on the reported financial indicators and their economic significance. Park (2018) constructs the sentiment index by merging the customer expectation index, deposit for stock investment, retail investor trading, and stock fund flows.

KBSENT Kim and Byun (2010) extends Baker and Wurgler (2006) and Baker and Wurgler (2007) approaches by creating a sentiment index that accounts for business cycle factors such as durables and non-durables sales, semi-durables sales, growth of industrial production, service production, and a coincident composite index. In arriving at the KBSENT, each imperfect proxy (CEFD, DIVP, equity shares, amount of IPO, trading volume, and first-day IPOs' returns) is regressed on six identified business-cycle-linked variables. The residuals from these estimated regressions are employed as the business cycle-controlled sentiment index (Park, 2018).

3.3. Models

This paper specifies and estimates the static regression model(s) (Equation 7a) (Ali et al., 2022; Dalika & Seetharam, 2014; Lassoued & Khanchel, 2021; Liu & Sun, 2022) to examine how sentiments and pandemics, alongside other correlated firm-specific variables, impact the pro forma discretionary accruals EM. The general forms of these models are presented:

$$DAC_{i,t} = \alpha_0 + \alpha_1 Trend_{i,t} + \sum_j^h \beta_j X_{j.i,t} + \sum_k^m \theta_k Y_{j.i,t} + \varepsilon_{i,t} \quad (7a)$$

$$DAC_{i,t} = \alpha_0 + \alpha_1 Trend_{i,t} + \sum_j^h \beta_j X_{j.i,t} + \sum_k^m \theta_k Y_{j.i,t} + \sum_i^n c_i T_i + \eta_i + \varepsilon_{i,t} \quad (7b)$$

Equation 7b is the compact form of the EM model. Managers' pro-forma EM is proxied by the discretionary accruals ($DAC_{i,t}$). The compact model identifies that EM is motivated by the considered test variables ($X_{j.it}$), including sentiments, pandemics and both interaction as well as other correlated controls ($Y_{j.it}$) and the model's residuals ($\varepsilon_{i,t}$). The coefficients, α_0, is the estimate for the models' intercept, β_j ($j = 1\ to\ h$) are the estimates for sentiments, pandemics and the interaction terms, whilst θ_k ($for\ k = 1\ to\ m$) are estimates for m included

covariates controls, $X_{j.it}$. The subscript $i = 1\ to\ n\ (= 174)$ is the number of cross-sections (firms), and $t = 1\ to\ T(= 10)$ is the number of periods (years). Equation 7b extends 7a by adding dummies that capture unobserved firm-invariant effects ($\sum_i^n c_i T_i + \eta_i$), not explicitly included in the regression. T_i is a dummy that identifies possible unobserved firm-invariant (time) effects, whilst, η_i hold the firm-specific (fixed) effects constant over time but vary across firms. The variable ($\text{trend}_{i,t}$) holds the trend movement of the discretionary accruals and access likely movement (improvement or otherwise) in earnings quality and earnings management over time.

3.3.1. Empirical Models for the Main Analysis

Equation 8 is the discretionary accruals' EM model for considering the objectives in the main analysis. Equation 8 is holistic for evaluating H1, H2, and H3.

$$DACJ_{i,t} = \alpha_0 + \alpha_1 Trend_{i,t} + \beta_1 ISENT_{i,t} + \beta_2 COVID_{i,t} + \beta_3 (ISENT * COVID)_{i,t} + \theta_1 LEV_{i,t} + \theta_2 CFO_{i,t} + \theta_3 ROA_{i,t} + \theta_4 SIZE_{i,t} + \sum_i^n c_i T_i + \eta_i + \varepsilon_{1i,t} \quad (8)$$

Equation 8 considers the impacts of the variables of interest - sentiments ($ISENT_{i,t}$), pandemics ($COVID_{i,t}$) and their interaction $(ISENT * COVID)_{i,t}$ as well as four (4) correlated covariates, leverage ($LEV_{i,t}$), cash flow from operations ($CFO_{i,t}$), return on assets ($ROA_{i,t}$), and the size of the firms ($SIZE_{i,t}$) – on the variations in discretionary accruals ($DACJ_{i,t}$). The estimation is completed with and without adding the dummies that capture the unobserved firm-invariant effects ($\sum_i^n c_i T_i + \eta_i$). The model establishes whether the control variables are significant based on predictive theories.

The main analysis computes the discretionary accruals using the (simple) Jones model from Equation 2 for the main analysis. Estimating the coefficients of the firms-specific regressions was performed separately in computing the discretionary accruals. Since $DACJ_{i,t}$ is the estimated residual from OLS regression of (2), they ($\hat{e}_{1i,t} = DACJ_{i,t}$) are stacked after the cross-section computation. Because the estimate for $DACJ_{i,t}$ involves a noisy computation process with the likelihood of significant outliers; they are winsorised at 5% rather than at 1% level to accommodate more precisions and still leave inference unchanged (Dechow et al., 1995).

For an appropriate measure of sentiment, because information for some of the imperfect variables needed to compute the sentiment index ($ISENT_{it}$) based on KSENT and KBSENT approaches is not reported for the listed firms in South Africa (Dalika & Seetharam, 2015) the study measures sentiment as the price-to-earnings (P/E) ratio in the current year (t) minus the average annual market P/E ratio, or simply the DIFFPE approach, over the coverage periods. The analysis focuses on how overall sentiment is influenced by the considered variables, according to Dalika and Seetharam (2014) rather than driven by the different states of sentiments (Ali & Gurun, 2009; Jiang et al., 2020).

In ensuring parsimonious outcomes that are the most suitable for policy, the study estimates different variants of the static regression of Equation 8. The paper includes a dummy variable ($COVID$) to capture the influence of the pandemic event. The dummy is coded 1 for pandemic periods and 0 otherwise. The coefficients of the interactive dummy between $COVID$ and $ISENT$ measure how pandemic event influences the relationship between the test variable EM ($\text{DAC}_{i,t}$) and the critical control ($ISENT_{i,t}$). The estimate of the interactive dummy, i.e., β_3, provides how much the mean of the discretionary accruals has changed due to the impact of sentiments due to the pandemic. Thus suggesting how the earnings overstatement is incentivised.

Related theories presuppose a priori expectations based on the relationship between the criteria and each control. Managers argue that firms' financial portfolios, especially investment and stock prices, may sooner or later drift from the expected level to reflect the shocks, as they perceive investors swing moods to react to news shocks (Baker & Wurgler, 2007; Brown, Christensen, Elliott, & Mergenthaler, 2012). Hence, they are more prepared to manipulate earnings upward even when sentiments appear uncertain. As a result, one would expect overall sentiments to motivate increased earnings manipulation (Baker & Wurgler, 2007). Thus, $ISENT_{it}$ is expected to positively impact the EM (Huang et al., 2014; Park, 2018). The coefficient β_1 is the estimate for $ISENT_{i,t}$, and would be used to assess the hypothesis relative to the 'apriori' signs. A negative (positive) coefficient indicates sentiments have decreased (increased) in earnings management, (Park, 2018). $\text{LEV}_{i,t}$ indicates financial leverage and is computed as total liabilities divided by total assets. $\text{LEV}_{i,t}$ is predicted to impinge positively. By intuitive implication, the study expects $\text{ROA}_{i,t}$ to offer a negative effect (Ugrin, Mason, & Emley, 2017).

According to Malofeeva (2018) operation's cash flow volatility, $\text{CFO}_{i,t}$, is measured as the standard deviation of cash flow from operations divided by total assets. The variable is expected to have a positive impact on discretionary accruals. $\text{SIZE}_{i,t}$ (Firm size) is measured by the natural logarithm of the near-end market value of equity. The expectation is that there is a negative relationship between earnings management and firm size. Large firms possess efficient internal control and consistent information systems, which renders earnings management unjustifiable in comparison to smaller firms. Even if they do, the political costs hypothesis posits that they will likely smooth earnings downward to mitigate political costs.

3.3.2. Empirical Models for the Sensitivity Analysis

The paper completes only one robustness test. According to the modified Jones model specified in (3), the test considers an alternative measure of discretionary accruals. Equation 9 represents the empirical discretionary accruals based on the modified Jones-defined EM model.

$$DACMJ_{i,t} = \alpha_0 + \alpha_1 Trend_{i,t} + \beta_1 ISENT_{i,t} + \beta_2 COVID_{i,t} + \beta_3 (ISENT * COVID)_{i,t} + \theta_1 LEV_{i,t} + \theta_2 CFO_{i,t} + \theta_3 ROA_{i,t} + \theta_4 SIZE_{i,t} + \sum_i^n c_i T_i + \eta_i + \varepsilon_{2i,t} \quad (9)$$

The variables are as already defined. Equation 9 captures the impacts of sentiments, pandemics, and the covariates, including leverage, operations' cash flow, return on asset, and firm size, on the discretionary accruals. The discretionary accruals are computed based on the modified Jones model from Equation 3. The residuals from OLS regression of (2) are stacked to obtain $DACMJ_{i,t}$ $(\hat{e}_{2i,t} = DACMJ_{i,t})$.

3.3.3. Estimation Procedures

The study follows the standard estimation procedures. After reporting the deterministic statistical properties of considered test variables and covariates, the paper first completes some stochastic pre-estimation evaluations to ensure robustness for estimating the multivariate specifications. The study uses the Breusch and Pagan (1980) Lagrange Multiplier (LM) to implement the existence of panel structure for the stacked series according to the cross-section effects, time unobserved random effects, and both effects test procedure. Afterwards, the procedure completes the Hausman test based on Chi-Square (χ^2) Statistics, which assess the null on the likely existence of random effects to demonstrate whether the fixed or random effects are most appropriate for estimating Equation 8. Because random and fixed effects don't take into account the cross-sectional correlation that comes with a panel structure, this paper does a cross-section dependence test to see if the individual unit dependence is present. The Panel Corrected Standard Errors (PCSE) (Beck & Katz, 1995) resolves the biases from evident cross-section heteroskedasticity. The PCSE corrects the usual Ordinary Least Square (OLS) estimates (of variance) for cross-section correlation using a sandwich estimator and is applicable because $n > T$. Implementing PCSE enhances the credibility and reliability of the estimation derived from the study panel data analyses, making it robust to common violations of OLS assumptions such as serial correlation, cross-sectional dependence, and heteroscedasticity that are consistent with the nature of this study.

The estimation of (8) is completed with the comprehensive sample spanning (2012–2021), while the adjusted sample is implemented for the range 2018–2021, similar to other studies that capture the influence of pandemics (Ali et al., 2022; Lassoued & Khanchel, 2021; Lizińska & Czapiewski, 2023). The resampling was necessary to avoid the overbearing influence of extended pre-pandemic periods on the estimates. The estimation is completed with and without adding the dummies that capture the unobserved firm-invariant effects $(\sum_i^n c_i T_i + \eta_i)$.

4. Results

4.1. Pre-Estimations

4.1.1. Deterministic Pre-Estimations for the Considered Variables

4.1.1.1. Sentiments and Price-Earnings Ratio

From the time series, the market P/E ratio, which is based on the difference between the P/E ratio in the current year (t) and the average annual market P/E ratio over the coverage periods, is constructed and denoted as the variable, $ISENT_{it}$. Figure 1 shows the relationship between the price-to-earnings ratio (the P_ER line) and the sentiment index (the $ISENT$ line). The plot of the means of the pooled sentiment index appears to be negative from 2012 to 2016 and 2018 but positive for the rest of the periods. Since larger $ISENT$ shows sentiment in the current period is higher relative to the spanned periods, the plot depicts that the sentiment is higher, above a zero threshold from 2017 through 2020, except for 2018, which was slightly below the mean. The sentiment was lower, below zero, from 2012 through 2016 and 2018.

There was a steady increase in the trend of the price-earnings ratio over the entire reporting period. Although there was a decline from 2013 to 2015 and another from 2019 to 2020, these declines did not significantly alter the overall trend of the reported P/E ratio from 2012 to 2021. The declines are considered temporary, and sharp rebounds are recorded almost in the proceeding period in 2015 and 2020. Overall, the annual average P/E ratio was positive, albeit slightly lower than the grand mean of 18.607 from 2012 to 2018, but still higher than the mean for the other periods under consideration. The strong links between them stem from the fact that the sentiment index relies on the difference between the market P/E ratio and the market average from previous periods.

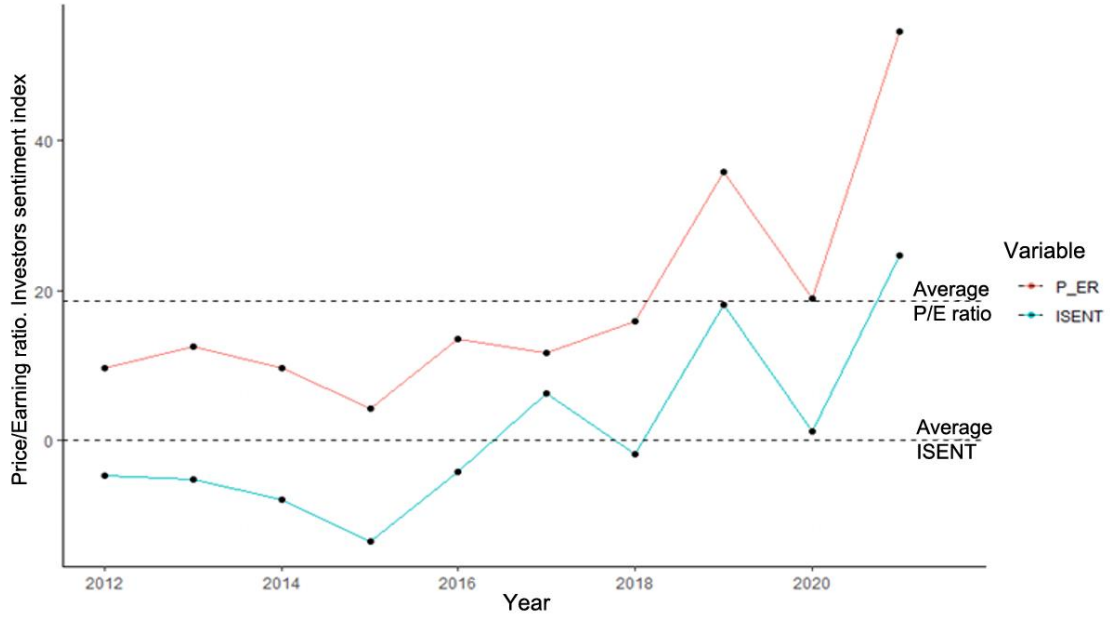

Figure 1. Plots of the price-earnings ratio (P_ER) and sentiment index (ISENT).

Note: Sentiments seem negative (Low) from 2012 to 2016 and 2018 but positive (High) for the other periods. The sentiments are higher, above the neutral level from 2017 to 2020, except for 2018.

4.1.1.2. Statistics and Correlation Matrix of Variables

Table 1 (Panel A) reports the statistics for the sentiment index and other covariates. The discretionary accrual, which indicates a winzorised mean and median value of 0.0092 and 0.028, reflects a standard deviation (spread value) of 0.423. $ISENT_{it}$ has a positive mean (1.196), indicating that overall sentiments in the considered periods are higher than neutral (i.e., zero) sentiments. The sentiment index for the firms, however, seems highly dispersed. The statistics' information for other covariates is also indicated in Table 1 (Panel A). The sample offers that the firms' information reflects an average (and spread) value of 1.858 (6.331) for the leverage or debt ratio, 9.095 (5.328) for the return on assets, 8.272 (2.34) for the firm size, and 0.085 (0.291) for the operating cash flow.

Table 1. Deterministic pre-estimations (Statistics and correlations) for the model's variables.

Variable	DACJ	ISENT	LEV	ROA	SIZE	CFO
Statistics (Panel A)						
Mean	0.009	1.196	1.858	12.03	8.272	0.085
Median	0.028	-1.541	0.780	8.180	8.164	0.077
Std. Dv.	0.423	15.88	6.331	5.328	2.340	0.291
Skew	-11.41	12.11	3.819	16.44	0.338	-25.30
Kurt	263.9	198.7	101.8	427.8	3.095	893.7
Correlations (Panel B)						
DACJ	1					
ISENT	-0.014	1				
LEV	0.023	-0.026	1			
ROA	-0.011	0.003	0.001	1		
SIZE	0.131	-0.026	0.057	-0.023	1	
CFO	0.020	0.015	0.026	0.012	-0.006	1

Note: NB: DACJ is discretionary accruals, ISENT sentiments, LEV leverage, CFO cash flow from operations, ROA return on assets, SIZE firm size.

Table 1 (Panel B) presents the correlation coefficients among the variables. Although the magnitude appears to be low (-0.014), the sentiments ($ISENT_{it}$) is revealed to be negative and significantly correlated with the EM or discretionary accrual (DAC_{it}). Other control covariates identify some degree of relation with EM. While the economic degrees seem less substantial, there are perceived correlations amid the test (DAC_{it}) and considered control variables. For instance, asset returns (ROA_{it}) exhibit a negative association with discretionary accruals, whilst other control indicators, including leverage (LEV_{it}), firm size ($SIZE_{it}$) and the operating cash flow volatility (CFO_{it}) unveil positive connection with discretionary accruals(DAC_{it}), and are not all significant at 5%. In conclusion, the evidence suggests that the tendency to manage earnings is likely to decrease as overall market sentiments and asset returns increase. This result suggests that sentiments have a significant impact on the quality of earnings. However, firms' discretionary earnings reporting tends to increase; the larger the firm size, the more financial leverage and the more volatile operating cash flow.

4.1.2. Stochastic Pre-Estimations for Considered Model

Table 2 shows the outputs of the stochastic pre-estimations tests for the considered multivariate model. The evidence identifies that the Breush-Pagan LM test rejects the test null of no effects and supposes the firm-stacked data is panel framed. The Hausman test, with a Prob > $(\chi^2) = 0.0000$, is significant and enforces the nulls' rejection, supposing the relation is appropriately connected with fixed effects. The cross-section reliance test shows strong evidence of the dependency among the cross-section of residuals in the system. This occurrence supposes the PSCE estimation would be empirical parsimony for informed decisions and policy.

Table 2. Stochastic pre-estimations for the multivariate regression.

LM tests for random effects[a]:	Tests	Cross	Time	Both
	Breusch-Pagan LM*	15.99*	1.831	8.860*
		(0.000)	(0.318)	(0.002)
Hausman test:	Cross-section random (χ^2)	52.67*		(0.000)
Residual dependence test:	Breusch-Pagan LM	356.1*		(0.000)
	Pesaran scaled LM	4.282*		(0.021)

Note: Values in the parathesis "()" are probability values.
* supposes the probability, reported for a 2-tailed test, p ≤ 1%.
[a] The analysis was done for three cases: Under - no time effect, cross-section effect and cross-section and time effects.
The null for the Hausman test is 'no random effect'. The null for the cross-section reliance test is 'no cross-section reliance'.

4.2. Main Estimations and Evaluations

Equation 8 is estimated for the study's main analysis and it evaluates the three nulls. The results in Table 3 and 4 answered the three main questions and respective nulls. Table 3 evaluates the first null (H1), hypothesising that sentiment does not motivate the pro forma earnings overstatements.

4.2.1. Does Market Sentiment Motivate Managers to Engage in More Earnings Management?

The study estimates different variants of Equation 8, applying the most parsimonious to respond to the posed question and evaluating the first null. The report saves space and presents only the PCSE estimations (with and without including the fixed effects) in Table 3. Panel [2] and [3] are more parsimonious, with higher significant coefficients and explanatory powers. The study reserves panel [3], which includes both fixed effects for evaluating the posed study question. The sentiment coefficient, β_1 evaluates whether the sentiments motivate EM practices. The outcome, which identifies negative estimates, appears surprisingly inconsistent with expectations. The outcome shows that earnings management is reduced with sentiments. The evidence from the most parsimonious model [3] supposes a strong and significant decrease in the discretionary accruals by 0.0626 for a change in sentiment, assuming other variables remain static. This supposes that the first null [H1] does not hold, and therefore that, except resampling proves otherwise, sentiment motivates less earnings management. The evidence also shows the trend coefficient, α_1, defends that the discretionary accruals are not time-driven, which is inconsistent with Muri et al. (2022) finding for Nigeria. Other studies support post regulations trending discretionary accruals (Cadot, Rezaee, & Benaïs Chemama, 2021; Mensah, 2021).

Table 3. PCSE estimations of $DACJ_{i,t}$.

$$DACJ_{i,t} = \alpha_0 + \alpha_1 Time_{i,t} + \beta_1 ISENT_{i,t} + \theta_1 LEV_{i,t} + \theta_2 CFO_{i,t} + \theta_3 ROE_{i,t} + \theta_4 SIZE_{i,t} + \sum_i^n c_i T_i + \eta_i + \varepsilon_{1i,t}$$

				[1]	[2]	[3][a]
		Parameter	Apriori	Estimates		
Variables:	$Const.$	α_0	+	0.0092 (0.1416)	0.0098 (0.1853)	0.0112 (0.1321)
	$Trend_{i,t}$	α_1	+	0.0325 (0.2560)	0.0128 (0.1315)	0.0091 (0.1105)
	$ISENT_{i,t}$	$\beta_1[H1]$	+	-0.0858 (0.0615)	-0.0695 (0.0216)	-0.0626** (0.0185)
	$LEV_{i,t}$	θ_1	±	0.0414 (0.0000)	0.0381 (0.0000)	0.0282*** (0.0000)
	$CFO_{i,t}$	θ_2	−	0.1476 (0.1814)	0.1518 (0.1621)	0.1558** (0.1271)
	$ROA_{i,t}$	θ_3	+	-5.3174 (0.0727)	-4.5281 (0.0895)	-5.0281* (0.0623)
	$SIZE_{i,t}$	θ_4	±	0.0085 (0.2633)	-0.0066 (0.1582)	-0.0031 (0.1282)
Effects:	$Sector\ (\eta_i)$			No	No	Yes
	$Time\ (T_i)$			No	Yes	Yes
	$\bar{R}^2$			0.1762	0.1840	0.1892[b]
	$p(F\text{-}stat)$			(0.0000) *	(0.0000) *	(0.0000) *

Note: Value in parentheses "()" is the p-value of t-statistic, using $prob|t| = 0$, ***p ≤ 1%; **p ≤ 5%; *p ≤10% (2-tailed test). $\beta_1$evaluates the first null **[H1]**. Effects: Means the fixed effects, and "Yes (No)" shows the inclusion (Exclusion) of the fixed effects. p(F) is the p-values of F-statistic and $\bar{R}^2$ is adjusted R-square. [a] [b] Indicative of the most robust model based on the highest significance of the variables ($\bar{R}^2$).

4.2.2. Does COVID-19 Influence Managers to Engage in More Earnings Management?

Using the adjusted sample, the study identifies whether the evidence is sufficient to conclude that EM is more prevalent during the pandemic. Because the trend variable, $\text{Time}_{i,t}$, was insignificant in prior models, whereas the inclusion of the fixed effects improved the model. Subsequent estimations exclude the trend but include the fixed effects. Table 4 [4] discloses the results and the evidence to evaluate the second null (H2).

Table 4. PCSE estimations of $DACJ_{i,t}$.

$DACJ_{i,t} = \alpha_0 + \alpha_1 Time_{i,t} + \beta_1 ISENT_{i,t} + \beta_2 COVID_{i,t} + \beta_3 (ISENT * COVID)_{i,t} + \theta_1 LEV_{i,t} + \theta_2 CFO_{i,t} + \theta_3 ROE_{i,t} + \theta_4 SIZE_{i,t} + \sum_i^n c_i T_i + \eta_i + \varepsilon_{1i,t}$.

				[4]		[5]	
		Parameter	**Apriori**	**Estimates**			
Variable:	$Const.$	α_0	+	0.0118	(0.4611)	0.0129	(0.3821)
	$ISENT_{i,t}$	β_1	+	-0.0146***	(0.0002)	-0.0271***	(0.0002)
	$COVID_{i,t}$	β_2[**H2**]	+	0.0085*	(0.0931)	0.0114**	(0.0861)
	$ISENT * COVID_{i,t}$	β_3[**H3**]	−	---	---	0.0153	(0.1927)
	$LEV_{i,t}$	θ_1	−	-0.1632	(0.1125)	-0.1342	(0.1295)
	$CFO_{i,t}$	θ_2	+	0.1561**	(0.0258)	0.1092**	(0.0258)
	$ROA_{i,t}$	θ_3	+	-15.042	(0.1026)	-12.188	(0.3510)
	$SIZE_{i,t}$	θ_4	±	-0.0658***	(0.0000)	-0.0716***	(0.0000)
Effects:	*Sector* (η_i)			Yes		Yes	
	Time (T_i)			Yes		Yes	
	$\bar{R}^2$				0.0997		0.1325
	p(*F-stat*)				(0.0000)*		(0.0000)*

Note: Value in parentheses "()" is the p-value of t-statistic, using $prob|t| = 0$, ***p ≤ 1%; **p ≤ 5%; *p ≤10% (2-tailed test). β_2 (β_3) evaluates the null **H2** (***H3***). Effects: Mean the fixed effects, and "Yes (No)" shows the inclusion (exclusion) of the fixed effects. p(F) is the p-values of F-statistic and $\bar{R}^2$ is the adjusted R-square.

The COVID-19 coefficient (β_2) is positive and significant. The global pandemic led to a significant increase in the mean discretionary accruals by 0.0085. This outcome suggests that the pandemic incentivizes managers to inflate their earnings, as they appear to be inclined towards strategic upward manipulations. The pandemic drives strategic pro forma EM, thereby diminishing the value, relevance, and significance of South African firms' earnings informativeness. The outcome aligns with the expectations and previous research (e.g., Lassoued and Khanchel (2021)) which demonstrated that the sample firms managed their earnings more during the pandemic than in the previous period. However, the evidence remains inconsistent with other evidence suggesting firms are less eager to manage earnings by accruals (Ali et al., 2022; Liu & Sun, 2022; Lizińska & Czapiewski, 2023). Liu and Sun (2022) show a significant decline in discretionary accruals in the USA. Lizińska and Czapiewski (2023) find that discretionary accruals declined during the COVID-19 crisis in Poland. Ali et al. (2022) report that firms engaged in less EM during the pandemic. This evidence suggests that the second null [H2] does not hold and that, except resampling proves otherwise, the COVID-19 event motivates more pro forma EM amongst considered firms.

4.2.3. Does Sentiment During the Pandemic Incentivise Managers to Manage Earnings?

In attempting to answer the question, the paper interacts with the sentiment and the dummy of the COVID-19 occurrence and finds the influence of such interaction on the pro forma EM. The estimation also reflects the adjusted sample with the fixed effects inclusion for robust and parsimonious representation. The result, reported in Table 4 [5], attempts the posed question. The evidence shows that the interactive dummy (β_3) is positive. The expected value of the discretionary accruals is increased by an average of 0.0153 due to the influence of the sentiment state with the pandemic event. However, since this is insignificant, the evidence suggests that the sentiments stance during the pandemic does not incentivise managers to overstate earnings. Hence, the third null [H3] holds, and except resampling proves otherwise, the evidence suggests that the pandemic does not influence managers' sentiments to engage in pro forma EM.

4.2.4. Summary and other Findings

According to the evidence, the study summarises that earnings manipulation is reduced due to sentiments but increases due to pandemic events. Also, the sentiments during the pandemic do not incentivise the managers to overstate earnings. The pandemic similarly affects managers' motivations to manage earnings relative to the financial crisis (Cimini, 2015; Pinto & Picoto, 2018). In addition, other covariates offer significant policy information. According to the model [5], the intercept, which is well-signed but insignificant, identifies that the expected value of the discretionary accruals is non-drifted. The only factors that increase discretionary accruals and hold them according to predictive sign expectations are the magnitude of cash flow from operations and the firm's size. However, two cofounding covariates – leverage and asset returns – are insignificant to incentivised accruals-based earnings management.

4.3. Robustness Analysis

The robustness test examines the sensitivity of the model's coefficients to an alternative EM measure. The analysis determines whether the coefficients of sentiments, pandemics, and other factors, as well as the model performance, improve when evaluated using the modified Jones model.

The results in Table 5 show that sentiments and pandemics retain significant negative and positive impacts on the pro-forma discretionary accruals. Other covariates, with the exception of operating cash flow, which now appears insignificant, continue to exert a significant influence on earnings management. Unsurprisingly, the similarity could be attributed to the fact that the modified Jones is merely a pseudo-augmentation of the standard Jones (Adedeji, Joseph, Harada, Suwanno, & Ahmed, 2023; Jeter & Shivakumar, 1999).

Table 5. PCSE estimations of $DACJ_{i,t}$.

$$DACJ_{i,t} = \alpha_0 + \alpha_1 Time_{i,t} + \beta_1 ISENT_{i,t} + \beta_2 COVID_{i,t} + \beta_3 (ISENT * COVID)_{i,t} + \theta_1 LEV_{i,t} + \theta_2 CFO_{i,t} + \theta_3 ROE_{i,t} + \theta_4 SIZE_{i,t} + \sum_i^n c_i T_i + \eta_i + \varepsilon_{1i,t}$$

		Parameter	Apriori		
Variable	*Const.*	α_0	+	0.0126	(0.4516)
	$ISENT_{i,t}$	β_1	+	-0.0412***	(0.0000)
	$COVID_{i,t}$	β_2	+	0.0256**	(0.0391)
	$ISENT * COVID_{i,t}$	β_3	−	0.0591	(0.1806)
	$LEV_{i,t}$	θ_1	−	-0.2617	(0.3112)
	$CFO_{i,t}$	θ_2	+	0.08339	(0.1792)
	$ROA_{i,t}$	θ_3	+	-9.542	(0.2930)
	$SIZE_{i,t}$	θ_4	±	-0.1328***	(0.0018)
Effects:	*Sector* (η_i)			Yes	
	Time (T_i)			Yes	
	$\bar{R}^2$				0.1795
	p*(F-stat)*				(0.0000)*

Note: Value in parathesis "()" is the p-value of t-statistic, using $prob|t| = 0$, ***p ≤ 1%; **p ≤ 5%; *p ≤10% (2-tailed test). Effects: Implies fixed effects, and "Yes" suggests including the corresponding fixed effects. p(F) is the p-values of F-statistic and $\bar{R}^2$ is adjusted R-square.

4.4. Discussion of Findings

The study considers markets and event factors that heighten managerial incentives to overstate earnings and identifies concerns for more attention. The evidence supports that earnings manipulation reduces due to changes in sentiments, but the expected value increases due to COVID-19. The sentiment states reflect a less need for earnings management practices. The market may be more involved in managers making strategic investment decisions rather than influencing their earnings and paying more attention to accrual components of earnings (Mian & Sankaraguruswamy, 2012). The period of uncertainty led many firms to engage in discretionary reporting to safeguard their stock prices (Lassoued & Khanchel, 2021). As the post-pandemic gradually fades off, many firms may be strategic in ensuring their stock's recovery, which may further motivate the need to be conservative in disclosure.

Given the findings, it is defensible to consider that the outcomes imply that the claim that sentiment motivates earnings misreporting will remain incessant for some reasons. Firstly, the evidence indicates that sentiment, contrary to expectations, decreases motivation for strategic discretionary accruals' earnings management. This suggests the need for further empirical reviews and a potential critical reexamination of the theoretical postulations surrounding this relationship. However, the outcome may be significantly influenced by the small sample size used. Further evidence, particularly from small capital markets in Africa and other emerging economies, is necessary to substantiate this finding for future research.

Second, the outcome may be linked to the neglect of the possibility of the asymmetric dimensions of sentiments impacts on firms' stocks and, by extension, other manipulation of earnings to influence stock prices and investors according to the behavioural finance models. These models suppose that firms could boost earnings and distort reported performance to attract prospective investors if sentiment is low. However, high sentiments prevent managers from boosting relevant earnings, as high funders' interest and morale would lead to less manipulation of earnings (Huang et al., 2014). Since the issue is neglected, the generalisation accorded to sentiment states may likely be skewed towards the negative or low sentiments.

Third, it's possible that the results are related to the definition and measure of the sentiments used. The sensitivity test shows that the evidence should be strong when using different discretionary accruals measures, like a pseudo-augmentation of the standard Jones or the modified Jones (Adedeji et al., 2023; Jeter & Shivakumar, 1999). However, the sensitivity for different measures of sentiments was not looked at because there wasn't enough data. Arguably, the sentiment index employed for the study does not distinguish the positive (or negative) and, by implication, the optimistic (or pessimistic) states. While the average sentiments appear more negative for the majority of the studied years (2012 to 2016 and 2018), the positive years' magnitude seems to

outweigh their negative counterparts. This could potentially explain why managers may not have been inclined to increase relevant earnings, thereby reducing manipulation. Aside from that, the DIFFPE index is but a sentiment proxy based on the differential between current price-to-earnings (P/E) ratios and the average market P/E ratio over coverage span, but thus precludes the real and isolated sentiment proxies, such as closed-end fund discount, dividend premium, equity share in new issues, amount of IPO, trading volume, and the first-day returns on IPOs, as with alternative measures (Baker & Wurgler, 2007; Conrad et al., 2002).

The outcomes suppose vital information for stakeholders of the capital markets, including researchers, regulators, investors, and others who are interested in seeking an opportunity to make informed decisions based on market states and the financial reports information released to the users. The evidence has implications for the quality of accounting information, its relevance in value, and the capital market. The market should be more sensitive to the likely earnings misreporting tendencies of the managers and seek an appropriate evaluation of reported financial statements and financial advice before making investment decisions. Regulators must ensure they understand how the market sentiments are associated with the risk of earnings overstatement, which would aid the formulation of suitable policies.

5. Conclusions

Accounting literature identifies that sentiment may influence corporate decisions. Prior empirical evidence suggests that it influences stock prices, dividend payments, capital investments, investment activities, and corporate financing in South Africa. Since the Xerox scandal in 2001, research on earnings management has remained a frontline of incessant investigations. As a result, some studies explored the connection between sentiments and firms' disclosure decisions, especially earnings management. This paper extends extant literature by investigating how sentiments influence earnings management metrics given a pandemic. The study is restricted to the comprehensive sample exclusive of financial crisis periods (2012–2021). However, it conjectures that other events, notably the COVID-19 pandemic, which undoubtedly affect the general global economic activities and financial environments, may have sufficiently stimulated managers' interest to apply discretion in disclosing their financial reports during the coverage period.

The study explores how sentiments, pandemics, and other potential firm-level factors motivate earnings management amongst the firms. The paper aims to establish how sentiments motivate strategic pro forma earnings management practices. Furthermore, it investigates whether the recent pandemic reflects earnings management or likely opportunistic motives to manipulate financial reporting. Finally, the paper demonstrated how the pandemic interacts with sentiments, potentially influencing discretionary accruals' earnings management.

The study finds that earnings management is not drift and time-driven, but managers' sentiment-driven expectations and COVID-19 play a prominent role in disclosure behaviour. The paper finds evidence suggesting that managers' strategic earnings manipulation reduces based on the sentiments state. The managers are more likely to manage earnings more prominently upon understating the sentiment formed according to the earnings press release. The research also finds that earnings manipulation increases due to the pandemic events. As the post-pandemics gradually wane, many firms may be strategic in ensuring their stock's recovery, which may further motivate the need to be conservative in disclosure.

The results appear robust to various controls, such as financial leverage, asset returns, cash flow from operations, and the statistical specifications of models, including the firm's fixed effects and alternative measures for earnings management. The level of operating cash flows and firm size play significant roles in firms' earnings management decisions. However, given the lack of convincing theory in accounting to explain some of the relations and obtained evidence and the likely behavioral biases of earnings reported in the capital market, the research completes a mild interpretation, leaving room for more investigations.

One limitation of the study is the extent to which the findings could be generalized. Notably, findings from studies relating to the COVID-19 pandemic may not apply to other crises or normal times, given the unique nature of the crisis. Future research could benefit from longitudinal studies that track the effects of sentiments and earnings management over longer periods, across different stages of the pandemic and recovery phases. This would help understand the lasting impacts of such a global event on corporate behavior.

References

Adedeji, G., Joseph, A., Harada, Y., Suwanno, O., & Ahmed, A. (2023). Benchmark beating and earnings manipulation in Nigerian firms. *Asian Economic and Financial Review*, *13*(1), 49-73. https://doi.org/10.55493/5002.v13i1.4694

Agyei-Boapeah, H., & Machokoto, M. (2018). Allocation of internally generated corporate cash flow in Africa. *Journal of Accounting in Emerging Economies*, *8*(4), 495-513. https://doi.org/10.1108/jaee-10-2017-0099

Agyei-Boapeah, H., Machokoto, M., Amankwah-Amoah, J., Tunyi, A., & Fosu, S. (2020). IFRS adoption and firm value: African evidence. *Accounting Forum*, *44*(3), 238-261. https://doi.org/10.1080/01559982.2020.1766755

Ali, A., & Gurun, U. G. (2009). Investor sentiment, accruals anomaly, and accruals management. *Journal of Accounting, Auditing & Finance*, *24*(3), 415-431. https://doi.org/10.1177/0148558x0902400305

Ali, A., & Gurun, U. G. (2015). Investor sentiment, accruals anomaly, and accruals management. *Journal of Accounting, Auditing & Finance*, *24*(3), 415-431. https://doi.org/10.1177/0148558X0902400305

Ali, H., Amin, H. M. G., Mostafa, D., & Mohamed, E. K. A. (2022). Earnings management and investor protection during the COVID-19 pandemic: Evidence from G-12 countries. *Managerial Auditing Journal*, *37*(7), 775-797. https://doi.org/10.1108/maj-07-2021-3232

Aljughaiman, A. A., Nguyen, T. H., Trinh, V. Q., & Du, A. (2023). The Covid-19 outbreak, corporate financial distress and earnings management. *International Review of Financial Analysis*, *88*, 102675. https://doi.org/10.1016/j.irfa.2023.102675

Baker, M., & Wurgler, J. (2006). Investor sentiment and the cross-section of stock returns. *The Journal of Finance*, *61*(4), 1645-1680.

Baker, M., & Wurgler, J. (2007). Investor sentiment in the stock market. *Journal of Economic Perspectives*, *21*(2), 129-151. https://doi.org/10.3386/w13189

Beck, N., & Katz, J. N. (1995). What to do (and not to do) with time-series cross-section data. *American Political Science Review*, *89*(3), 634-647. https://doi.org/10.2307/2082979

Bertrand, J., De Brebisson, H., & Burietz, A. (2021). Why choosing IFRS? Benefits of voluntary adoption by European private companies. *International Review of Law and Economics*, *65*, 105968. https://doi.org/10.1016/j.irle.2020.105968

Black, F. (1986). Noise. *The Journal of Finance*, *41*(3), 528-543.

Brennan, N. M. (2021). Connecting earnings management to the real world: What happens in the black box of the boardroom? *The British Accounting Review*, *53*(6), 101036. https://doi.org/10.1016/j.bar.2021.101036

Breusch, T. S., & Pagan, A. R. (1980). The lagrange multiplier test and its applications to model specification in econometrics. *The Review of Economic Studies*, *47*(1), 239-253.

Brown, N. C., Christensen, T. E., Elliott, W. B., & Mergenthaler, R. D. (2012). Investor sentiment and pro forma earnings disclosures. *Journal of Accounting Research*, *50*(1), 1-40. https://doi.org/10.1111/j.1475-679x.2011.00427.x

Cadot, J., Rezaee, A., & Benaïs Chemama, R. (2021). Earnings management and derivatives reporting: Evidence from the adoption of IFRS standards in Europe. *Applied Economics*, *53*(14), 1628-1637. https://doi.org/10.1080/00036846.2020.1841085

Cevik, E., Kirci Altinkeski, B., Cevik, E. I., & Dibooglu, S. (2022). Investor sentiments and stock markets during the COVID-19 pandemic. *Financial Innovation*, *8*(1), 69. https://doi.org/10.1186/s40854-022-00375-0

Chandra, R., & Krishna, A. (2021). COVID-19 sentiment analysis via deep learning during the rise of novel cases. *PloS One*, *16*(8), e0255615. https://doi.org/10.1371/journal.pone.0255615

Choi, J.-H., Kim, J.-B., & Lee, J. J. (2011). Value relevance of discretionary accruals in the Asian financial crisis of 1997–1998. *Journal of Accounting and public policy*, *30*(2), 166-187. https://doi.org/10.1016/j.jaccpubpol.2010.09.002

Chundakkadan, R., & Nedumparambil, E. (2022). In search of COVID-19 and stock market behavior. *Global Finance Journal*, *54*, 100639. https://doi.org/10.1016/j.gfj.2021.100639

Cimini, R. (2015). How has the financial crisis affected earnings management? A European study. *Applied Economics*, *47*(3), 302-317. https://doi.org/10.1080/00036846.2014.969828

Conrad, J., Cornell, B., & Landsman, W. R. (2002). When is bad news really bad news? *The Journal of Finance*, *57*(6), 2507-2532. https://doi.org/10.1111/1540-6261.00504

Coulton, J., Taylor, S., & Taylor, S. (2005). Is 'benchmark beating'by Australian firms evidence of earnings management? *Accounting & Finance*, *45*(4), 553-576. https://doi.org/10.1111/j.1467-629x.2005.00145.x

Dalika, N., & Seetharam, Y. (2015). Sentiment and returns: an analysis of investor sentiment in the South African market. *Investment Management and Financial Innovations*, *12*(1-2), 267-276.

Dalika, N. K., & Seetharam, Y. (2014). Sentiment and returns: Analysis of investor sentiment in the South African market. Doctoral Dissertation, University of the Witwatersrand, Faculty of Commerce, Law and Management, School of Economic and Business Sciences.

Daske, H., Hail, L., Leuz, C., & Verdi, R. (2013). Adopting a label: Heterogeneity in the economic consequences around IAS/IFRS adoptions. *Journal of Accounting Research*, *51*(3), 495-547. https://doi.org/10.1111/1475-679x.12005

De Long, J. B., Shleifer, A., Summers, L. H., & Waldmann, R. J. (1990). Noise trader risk in financial markets. *Journal of Political Economy*, *98*(4), 703-738.

Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, *70*(2), 193-225.

Estrada, M. A. R., Koutronas, E., & Lee, M. (2021). Stagpression: The economic and financial impact of the COVID-19 pandemic. *Contemporary Economics*, *15*(1), 1-15.

Fajriati, N., Wahyuni, E. T., & Rosdini, D. (2023). Financial distress and earnings management before and during the Covid-19 pandemic. *Jurnal Akuntansi dan Auditing Indonesia*, 82-92. https://doi.org/10.20885/jaai.vol27.iss1.art8

Fama, E. F. (1965). The behavior of stock-market prices. *The Journal of Business*, *38*(1), 34-105. https://doi.org/10.1086/294743

Gbadebo, A. D. (2023). Does IFRS impact earnings management of the JSE firms. *Jurnal Dinamika Akuntansi*, *15*(1), 99-115. https://doi.org/10.15294/jda.v15i2.44096

Gbadebo, A. D., Adekunle, A. O., & Akande, J. O. (2023). The estimation and power of alternative discretionary accruals models. *Journal of Governance Risk Management Compliance and Sustainability*, *3*(1), 74-90. https://doi.org/10.31098/jgrcs.v3i1.1197

Hayn, C. (1995). The information content of losses. *Journal of Accounting and Economics*, *20*(2), 125-153. https://doi.org/10.1016/0165-4101(95)00397-2

Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, *7*(1-3), 85-107. https://doi.org/10.1016/0165-4101(85)90029-1

Hribar, P., & Collins, D. W. (2002). Errors in estimating accruals: Implications for empirical research. *Journal of Accounting Research*, *40*(1), 105-134. https://doi.org/10.1111/1475-679x.00041

Huang, C., Yang, X., Yang, X., & Sheng, H. (2014). An empirical study of the effect of investor sentiment on returns of different industries. *Mathematical Problems in Engineering*, *2014*(1), 545723. https://doi.org/10.1155/2014/545723

Jeter, D. C., & Shivakumar, L. (1999). Cross-sectional estimation of abnormal accruals using quarterly and annual data: Effectiveness in detecting event-specific earnings management. *Accounting and Business Research*, *29*(4), 299-319. https://doi.org/10.1080/00014788.1999.9729590

Jiang, J., Liu, Q., & Sun, B. (2020). Investor sentiment and the (Discretionary) accrual-return relation. *FRB International Finance Discussion Paper*(1300), 1-27. https://doi.org/https://doi.org/10.17016/IFDP.2020.1300

Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of accounting research*, *29*(2), 193-228.

Kasznik, R. (1999). On the association between voluntary disclosure and earnings management. *Journal of Accounting Research*, *37*(1), 57-81. https://doi.org/10.2307/2491396

Kim, K., & Byun, J. (2010). Effect of investor sentiment on market response to stock split announcement. *Asia-Pacific Journal of Financial Studies*, *39*(6), 687-719. https://doi.org/10.1111/j.2041-6156.2010.01029.x

Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, *39*(1), 163-197. https://doi.org/10.1016/j.jacceco.2004.11.002

Lassoued, N., & Khanchel, I. (2021). Impact of COVID-19 pandemic on earnings management: An evidence from financial reporting in European firms. *Global Business Review*, 09721509211053491. https://doi.org/10.1177/09721509211053491

Leuz, C., & Wysocki, P. D. (2016). The economics of disclosure and financial reporting regulation: Evidence and suggestions for future research. *Journal of Accounting Research*, *54*(2), 525-622. https://doi.org/10.1111/1475-679x.12115

Liu, G., & Sun, J. (2022). The impact of COVID-19 pandemic on earnings management and the value relevance of earnings: US evidence. *Managerial Auditing Journal*, *37*(7), 850-868. https://doi.org/10.1108/maj-05-2021-3149

Lizińska, J., & Czapiewski, L. (2023). Earnings management amid the COVID-19 financial crisis: The experience of Poland. *Gospodarka Narodowa. The Polish Journal of Economics*, *313*(1), 93-112. https://doi.org/10.33119/gn/159032

Malofeeva, T. (2018). The impact of IFRS adoption on earnings management in Russia. *European Research Studies Journal*, *21*(2), 147-164. https://doi.org/10.35808/ersj/991

Mensah, E. (2021). The effect of IFRS adoption on financial reporting quality: Evidence from listed manufacturing firms in Ghana. *Economic Research-Ekonomska Istraživanja*, *34*(1), 2890-2905. https://doi.org/10.1080/1331677x.2020.1860109

Mian, G. M., & Sankaraguruswamy, S. (2012). Investor sentiment and stock market response to earnings news. *The Accounting Review*, *87*(4), 1357-1384. https://doi.org/10.2308/accr-50158

Muri, W., Daniel, A., Oluwatobi, A., & Olorunfemi, J. (2022). IFRS adoption and accrual-based managed earnings in Nigeria. *Asian Economic and Financial Review*, *12*(12), 1041-1073. https://doi.org/10.55493/5002.v12i12.4669

Park, S. (2018). The effect of investor sentiment on the means of earnings management. *Investment Management and Financial Innovations*, *15*(1), 10-17. https://doi.org/10.21511/imfi.15(1).2018.02

Pinto, I., & Picoto, W. N. (2018). Earnings and capital management in European banks–Combining a multivariate regression with a qualitative comparative analysis. *Journal of Business Research*, *89*, 258-264. https://doi.org/10.1016/j.jbusres.2017.12.034

Pududu, M. L., & De Villiers, C. (2016). Earnings management through loss avoidance: Does South Africa have a good story to tell? *South African Journal of Economic and Management Sciences*, *19*(1), 18-34. https://doi.org/10.4102/sajems.v19i1.1124

Qadri, S. U., Ma, Z., Raza, M., Li, M., Qadri, S., Ye, C., & Xie, H. (2023). COVID-19 and financial performance: Pre and post effect of COVID-19 on organization performance; A study based on South Asian economy. *Frontiers in Public Health*, *10*, 1055406. https://doi.org/10.3389/fpubh.2022.1055406

Santana, C. V. S., Santos, L. P. G. D., Carvalho Júnior, C. V. d. O., & Martinez, A. L. (2019). Investor sentiment and earnings management in Brazil. *Revista Contabilidade & Finanças*, *31*, 283-301. https://doi.org/10.1590/1808-057x201909130

Simpson, A. (2013). Does investor sentiment affect earnings management? *Journal of Business Finance & Accounting*, *40*(7-8), 869-900. https://doi.org/10.1111/jbfa.12038

Teoh, S. H., Welch, I., & Wong, T. J. (1998). Earnings management and the underperformance of seasoned equity offerings. *Journal of Financial Economics*, *50*(1), 63-99.

Ugrin, J. C., Mason, T. W., & Emley, A. (2017). Culture's consequence: The relationship between income-increasing earnings management and IAS/IFRS adoption across cultures. *Advances in Accounting*, *37*, 140-151. https://doi.org/10.1016/j.adiac.2017.04.004

Wang, W., Su, C., & Duxbury, D. (2022). The conditional impact of investor sentiment in global stock markets: A two-channel examination. *Journal of Banking & Finance*, *138*, 106458. https://doi.org/10.1016/j.jbankfin.2022.106458