



Earnings Quality During COVID-19 Pandemic: Evidence from South African Listed Companies

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Abstract

Purpose: During unstable economic conditions, investors are risk averse and rely on fundamental information such as accounting information to make investment decisions. It is reported that during the COVID-19 pandemic, businesses have used accounting discretion in order to cope with difficult economic conditions. The use of discretion in the accounting process may instigate earnings manipulations which reduce earnings quality. This raises the following research question: has earnings quality decreased during the COVID-19 pandemic? This paper aimed at examining earnings quality (EQ) of South African listed firms during the COVID-19 pandemic. Specifically, the study examined the EQ of these firms before and during the COVID-19 pandemic.

Methodology: Weighted least square regression was used to analyze a sample of 132 non-financial firms listed on the Johannesburg Stock Exchange (JSE) over the period of 2018 to 2021. The sampled firms were extracted from the IRESS research domain. Conservatism and accrual quality were used to measure earnings quality because these two measures required the exercise of discretion.

Findings: The results attained were mixed and suggested that, although the sampled firms did not apply accounting conservatism in reported earnings during the COVID-19 pandemic period as compared to the period before the pandemic, there is no evidence of the use of accrual quality to manipulate earnings during the pandemic period as compared to the period before the pandemic.

Originality/Value: The paper will shed light on whether accounting information remains reliable during unstable economic conditions. In addition, it will inform regulators on whether the accounting standards were consistently applied during the COVID-19 pandemic.

Introduction

COVID-19 was declared a global pandemic by the World Health Organization in the first quarter of 2020 (Cucinotta & Vanelli, 2020). On the African continent, South Africa (SA) is one of the countries which have been severely affected by COVID-19. In order to cope with the pandemic, SA like other countries worldwide had to put in place measures to reduce the spread of the virus. One of these measures was the closure or restriction of business activities. This led to businesses experiencing a significant drop in sales and a decrease in profit; some businesses even closed their doors and others did all they could in order to remain in operation. Lassoued and Khanchel (2021) declared that the COVID-19 pandemic had threatened the sustainability of businesses. Authors have documented that, during economic turmoil companies tend to manipulate their financial reports in order to cope with the bad economic situation (Laux & Leuz, 2010; Arnold, 2009). Ozili (2021), and Lassoued and Khanchel (2021) reported that, during COVID-19 restrictions, companies were tempted to use aggressive accounting practices to cope with the pandemic. However, such assertions have not yet been empirically verified. Earnings management and or aggressive accounting policy reduce the quality of a firm's reported earnings. Therefore, an empirical examination of earnings quality (EQ) during the COVID-19 pandemic is necessary. In fact, due to the significant impact of accounting information for the good functioning of the capital market, the International Organization of Securities Commissions has urged companies to enhance disclosure practices in order to promote high earnings quality (Lassoued, & Khanchel 2021). High Earnings quality is described as an earnings number that is free from earnings manipulation, it is an earnings number that truly represents the company's performance and it is useful to the users in their economic decision-making (Fonou-Dombeu et.al., 2022; Sodan, 2015; Dechow et al., 2010).

The quality of financial reports depends on the accounting standards or principles applied in the preparation of financial statements. Managers are allowed to use

discretion in the application of accounting principles when they prepare financial statements. If such discretion is applied erroneously and or opportunistically, this will lead to lower earnings quality.

This paper examines whether EQ in SA-listed firms has decreased during the COVID-19 pandemic, in order to answer the research question: has earnings quality decreased during the COVID-19 pandemic as compared to the period before the pandemic?

Specifically, we compare EQ before and during the COVID-19 period. Earnings quality is measured using conservatism and accrual quality, as these two measures of EQ require the exercise of discretion by managers during their application of accounting standards, thus they are susceptible to manipulation. Conservatism is an accounting principle that indicates how anticipated loss and gain should be treated in the financial statements. Under this principle, a manager has the option to recognize a loss or gain in the financial statements depending on the occurrence of a future event. Conservatism provides information about an unpleasant situation that may cause the firm to incur loss and not about a situation that may lead to gain (Xia et al., 2019; Ewert & Wagenhofer, 2012). As such, the application of conservatism may lead to the non-disclosure of relevant information in financial reports. Nevertheless, several studies (Lara et al., 2020; Xia et al., 2019; Kim & Zhang, 2016) reported that conservatism is a characteristic of high earnings quality. For instance, Xia et al. (2019) argued that conservatism reduces opportunistic management behavior. Likewise, Dai and Ngo (2020), and Ahmed and Duellman (2011) argued that conservatism enhances corporate governance since it reduces agency problems in an investment decision. However, since the application of the conservatism principles requires the exercise of judgement, conservatism is often seen as a tool for earnings manipulation (Abedini & Salehi, 2012; Ruch & Taylor, 2015). This is supported by Ewert and Wagenhofer (2012) who stated that conservatism limits “the information content of financial report” as it can be used to conceal value-relevant information.

Like conservatism, accrual quality is another measure of EQ. Accrual quality is based on the accrual basis of accounting which set out the timing and matching of the recognition of the business's operating activities in financial statements. In fact, the accrual basis requires that revenue is recognized when it is earned and expenses are recognized when they are incurred.

Moreover, accrual has a high ability to predict earnings since it adjusts the time of revenue and expenses recognition in financial statements (Fonou-Dombeu et al., 2022; Dechow et al., 2010). As such, accrual is considered a best indicator and predictor of a firm's reported earnings; hence accrual-based earnings are seen as an overall measure of firm's performance (McInnis et al., 2022).

Despite these benefits of accrual in enhancing accounting quality, accrual is viewed as a tool of earnings management since it is subjective in nature and requires the exercise of judgment and estimates of managers. If these judgements and estimates are wrong, the reported earnings will not reflect the true operating activity of a firm (Dechow et al., 2022; Lewellen & Resutek, 2019; Chan et al., 2006). Consequently, accrual is subject to earnings manipulation which lowers earnings quality.

Using conservatism and accrual quality to assess EQ before and during the COVID-19 period will shed light on whether the financial reports of SA companies remained reliable during economic downturn. This is important for investors, standards setters, regulators and other users, because accounting information plays a vital role in the functioning of the capital market and the economy. In fact, during uncertain economic situation, investors are risk-averse and act rationally (Cui et al., 2021). Hence, they rely on fundamental information such as accounting information to make investment decisions.

In addition, this study provides empirical evidence on whether SA firms have used discretion to manipulate financial statements, and or have applied accounting standards optimistically during the COVID-19 pandemic. This is useful to accounting standards setters as they are interested in ensuring that the accounting standards used in the preparation of financial statements are properly applied. In fact, it is

argued that standard setters use earnings quality research to formulate /review accounting policies that will lead to transparent accounting information (Defond, 2010).

Furthermore, unlike recent studies (Ozili, . 2021; Usheva & Vagner, 2021; Maheen, 2021; Cui et al., 2021) which focused on the association between EQ and aspect of the capital market during the COVID-19 pandemic, this paper followed a different trajectory and examined EQ during the COVID-19 pandemic period in SA. The results of the study would inform investors, regulators and other users of accounting information on whether earnings quality in SA has deteriorated, improved or remained constant during the COVID-19 pandemic relative to the period before the pandemic.

Literature Review and Research Hypotheses

The economic environment may affect the quality of a firm's earnings. Recent studies reported the negative impact of the COVID-19 pandemic on business activities and firms' actions to mitigate this impact. Particularly, Ozili (2021), and Lassoued and Khanchel (2021) claimed that during the COVID-19 pandemic, the tendency for firms to use aggressive accounting practices to manipulate earnings was high. Similarly, Pavlatos and Kostakis (2015) reported that during difficult economic conditions, firms might use accounting discretion opportunistically to avoid a significant drop in performance. Consequently, it can be conjectured that a firm's earnings quality decreased during the COVID-19 pandemic as compared to the period before the pandemic. The main hypothesis (H1) of this study can then be formulated as follows.

H1: Earnings quality decrease during the COVID-19 pandemic as compared to the pre-pandemic period.

In order to test the main hypothesis (H1), sub-hypotheses are formulated in accordance with the two measures of earnings quality used in this study, including conservatism and accrual quality.

Conservatism during the COVID-19 pandemic

Conservatism is an accounting principle that requires managers to quickly record any anticipated loss and defer the recognition of revenue (Zadeh et al., 2022; LaFond & Watts, 2008). Conservatism is therefore seen as a qualitative characteristic of high-quality financial reporting. Several studies have reported the benefit of conservatism in improving earnings quality (Xia et al., 2019; Asri, 2017; Ewert & Wagenhofer, 2012; LaFond & Watts, 2008). Particularly, Caskey and Laux (2017) argued that conservatism assists the firm's directors to make better investment decisions. In the same line of thought, Ewert and Wagenhofer (2012) reported that conservatism is efficient in debts contract as it protects the interest of both the lender and borrower. In fact, conservatism reduces information asymmetry in a contract setting (Zadeh et al., 2022; Penalva & Wagenhofer, 2019; Neag & Masca, 2015) and forces managers to report bad news timely, thereby, reducing their opportunistic behaviors (Kim & Zhang, 2016; Lara et al., 2020).

However, many studies (Kim & Zhang, 2016; Ruch & Taylor, 2015; Francis et al., 2013; Xu & Lu, 2008) reported that conservatism is often used by managers to conceal loss with the intention of overstating earnings. As such, conservatism induces bias in financial reporting, which may lead to inefficient allocation of resources in the economy.

To the extent that the view of the proponents of conservatism is correct, it is expected that firms that report more conservatively display a low probability of earnings being overstated. Given the uncertainty faced by businesses during the COVID-19 pandemic, one would expect firms to report more conservatively during the COVID-19 period, through a proper/ethical application of conservatism practice, as the anticipation of loss was evident due to the restriction of business activities. Consequently, firms with less conservatism practices would display a low earnings quality during the COVID-19. In fact, Ozili (2021) and Lassoued and Khanchel (2021) pointed out that during the COVID-19 pandemic, firms were tempted to use

accounting discretion to manipulate earnings in order to conceal the true economic performance of their businesses. Based on the above, the following sub-hypothesis can be formulated:

H1a - During the COVID-19 pandemic, firms report less conservatively as compared to the period before the pandemic.

Accrual quality during the COVID-19 pandemic

Accrual quality is an important attribute of earnings quality since it incorporates all firm activities, as such, it provides an overall measure of a company's accounting policies used to generate earnings (Peterson et al., 2013; Dechow et al., 2010). Accrual quality is also a good measure of earnings as it provides information about the past, current and future earnings (Leal et al., 2017). However, Dechow et al. (2010) stated that firms with extreme accrual display a less persistent earnings, which is a characteristic of low earnings quality. Leal et al. (2017) also reported that earnings is of poor quality if its increase is associated with high accrual level. Doron (2022) is also of the opinion that high accrual quality lead to low earnings quality. The author explained that, firms with high accrual quality have an increase in earnings (overstatement of earnings); but this overstatement of earnings will decrease future earnings, especially if the increase in earnings was due to accrual manipulation. Furthermore, the author-argued that the use of accrual to overstate the current earnings will lead to the understatement of earnings in future periods since accrual cannot be used to manipulate earnings for consecutive reporting periods.

Based on the above, it is evident that accrual quality captures managers' exercise of discretion in the preparation of financial reports. Such discretion can be applied optimistically or opportunistically. During unstable economic environment such as the COVID-19 period, in order for firms to display a high earnings quality, they must have a low level of accrual quality. In fact, Dechow et al. (2010) reported that "high accrual firms" have a weak internal control mechanism and low persistent earnings, which are the characteristics of low earnings quality. Therefore, it can be conjectured that, in an attempt to cope with the COVID-19 pandemic, firms may

display a high accrual quality during the pandemic as compared to the period before the pandemic. Hence, the following hypothesis can be formulated:

H1b - During the COVID-19 pandemic, firms display a high accrual quality as compared to the period before the pandemic.

Research Methodology

Sample and Data Collection

The sample of the study consists of non-financial firms listed on the Johannesburg Stock Exchange (JSE) for the period 2018 to 2021. The financial statements of these firms were obtained from the IRSS research domain. Relevant data were retrieved from these statements to compute the variables of the study.

The sample composition per industry sector is provided in Table 1.

Table 1: Sample construction per industry sector

Industry sectors	Initial number of companies	Number of companies excluded	Final sample
Basic materials	36	8	28
Consumer discretionary	35	7	28
Consumer staples	19	6	13
Energy	10	6	4
HealthCare	7	0	7
Industrials	42	8	34
Technology	16	3	13
Telecommunication	6	1	5
Utility	0	0	0
Total	171 (100%)	39 (23%)	132 (77%)

Source: The authors.

As shown in Table 1, the initial sample consists of 171 companies from the main board across eight industry sectors. Companies with missing or incomplete information needed to compute the variables of the study over the sample period were excluded. This resulted in a final sample of 132 companies, which represents 77% of the initial sample. Out of the total of 132 companies included in the final sample, 28 companies were from the basic materials sector, 28 from the Consumer discretionary sector, 13 from the Consumer staples sector, 4 from the Energy sector, 7 from the Healthcare sector, 34 from the Industrial sector, 13 from the Technology sector and 5 from the Telecommunication sector.

Models for Hypotheses Testing

The models used to test hypotheses H1a and H1b are discussed below.

Model for Testing Hypothesis H1a

H1a - During the COVID-19 pandemic, firms report less conservatively as compared to the period before the pandemic.

The conservatism models that were used to test hypothesis H1a include the Basu (1997), and Ball and Shivakumar (2005) models. These two models were chosen because they are widely used in the literature; in particular, the Basu (1997) model is the most employed proxy for conservatism (Eliwa, et al., 2016; Xu & Lu, 2008). In addition, Givoly et al. (2007) advised that at least two models be used to gauge conservatism's reporting as the use of a single model may not assess the overall conservatism practice of a firm. The Basu (1997) model is provided in Equation 1.

$$\frac{EPS_{i,t}}{P_{i,t-1}} = \beta_0 + \beta_1 D + \beta_2 RET_{i,t} + \beta_3 DRET_{i,t} + \mu_{i,t} \quad (1)$$

where, EPS is the earnings per share, D an indicator variable which is equal to 1 if RET is positive and zero, otherwise, RET is the stock return, i and t are firm and year, respectively, β is the regression coefficient and μ is the error term.

From Equation (1), the coefficient β_3 is the main measure of conservatism (Conway, 2020; Francis & Martin, 2010; Basu, 1997). If the value of β_3 is greater

than zero ($\beta_3 > 0$), and it is statistically significant, loss is recognized timely in reported earnings as compared to gain (Hsu et al., 2011; Persakis & Iatridis, 2015; Basu, 1997). Hence, the higher the value of β_3 , the higher the accounting conservatism is applied in reported earnings. The sum of β_2 and β_3 is also used to represent the overall timeliness of loss recognition in reported earnings (Francis & Martin, 2010).

Following Cui et al. (2021) and Kim and Zhang (2016), the Ball and Shivakumar (2005) model is used as an alternative measure of accounting conservatism. Ball and Shivakumar (2005) model is given in Equation (2).

$$AC = \beta_0 + \beta_1 \left(\frac{DCFO_{i,t}}{A_{i,t-1}} \right) + \beta_2 (CFO_{i,t} / A_{i,t-1}) + \beta_3 D(CFO_{i,t} / A_{i,t-1}) \times (CFO_{i,t} / A_{i,t-1}) + \mu_t \quad (2)$$

where AC is the accrual computed as profit before interest and tax minus cash flow from operations. CFO is the cash flow from operations; DCFO is a dummy variable which takes the value of one if CFO is negative and zero, otherwise; $A_{i,t-1}$ is total asset at the beginning of the year; μ is the error term i, t are the firm and year, respectively; β is obtained from the regression model.

According to Ball and Shivakumar (2005), in Equation (2), if β_3 is greater than zero, reported earnings is conservative; in other words, loss is recognized timely in reported earnings. A greater value of β_3 indicates that there is a greater conservatism practice applied in reported earnings. Equations (1) and (2) are estimated yearly over the sample period.

Model for Testing Hypothesis H1b

H1b - During the COVID-19 pandemic, firms display a high accrual quality as compared to the period before the pandemic.

To test hypothesis H1b, accrual quality was measured using the Kothari et al. (2005) model as in (Xiao & Xi, 2021; Rajgopal & Venkatachalam, 2011; Cohen & Zarowin, 2010). This model was chosen as a proxy for accrual quality because of its widespread use in the literature (Jackson, 2017). The Kothari et al. (2005) model is

based on the idea that accrual has two components: normal and abnormal accruals. Normal accrual is related to the firm's fundamental performance, whereas, abnormal accrual is not.

The model assumes that the component of accrual (abnormal accrual) which is not related to the firm's fundamental performance is the result of earnings manipulation which could be intentional or unintentional (Dechow et al., 2010). The Kothari et al. (2005) model is illustrated in Equation (3).

$$\frac{AC_{i,t}}{A_{i,t-1}} = \alpha + \left(\frac{1}{A_{i,t-1}}\right) + \beta_2 \left(\frac{CREV_{i,t}}{A_{i,t-1}}\right) + \beta_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \beta_4 ROA_{i,t} + \mu_{i,t} \quad (3)$$

where, AC represents the total accrual, calculated as profit before interest and tax minus cash flow from operations, CREV is the variation in revenue (revenue in current year less revenue of preceding year), PPE is property, plant and equipment, ROA is return on assets, the rest of the symbols are the same as in Equation (2). The estimated coefficients obtained from Equation (3) are used to estimate the normal component of accrual for each firm as in Equation (4).

$$NA_{i,t} = \hat{\beta}_1 \left(\frac{1}{A_{t-1}}\right) + \hat{\beta}_2 \left(\frac{CREV}{A_{t-1}}\right) + \hat{\beta}_3 \left(\frac{PPE}{A_{t-1}}\right) \quad (4)$$

Equation (3) and (4) are then used to calculate a firm's level of abnormal accrual quality, hereafter referred to as AAC in Equation (5).

$$AAC = \left(\frac{AC_{i,t}}{A_{i,t-1}}\right) - NA_{i,t} \quad (5)$$

A high value of AAC indicates poor earnings quality, whereas, a low value indicates a high earning quality. Equations (3) and (4) are estimated cross sectionally each year across the sample period. The AAC is therefore calculated for each year over the sample period.

Data Analysis Technique

The SPSS statistical package version 27 was used to run the regression equations.

A set of assumptions were tested on the dataset before running the linear regression, including linearity, normality, autocorrelation, multicollinearity and

heteroscedasticity. Specifically, normality and linearity were tested using the histogram and P-P plots as in (Fonou-Dombeu et al., 2022). The Durbin Watson test was used to test for autocorrelation. Multicollinearity and heteroscedasticity were tested using the variance inflation factor and Glejser test, respectively.

All the assumptions were satisfied/tenable for each year of the sample, except for heteroscedasticity. To address the heteroscedasticity problem, all variables were winsorized to the first and ninety-ninth percentile. In addition, weighted least square (WLS) regression was employed instead of ordinary least square (OLS), to conduct the analysis, as advised by Brooks (2008) and Field (2013). When the assumption of heteroscedasticity is violated, the OLS regression provides biased results (Astivia, 2019; Brooks, 2008), this is what motivated the use of WLS in this study.

The variables of the study are defined in Table 2.

Table 2: Description of the variables used in regression analysis

Variable symbol	Description
AC	Accrual, computed as earnings before interest and tax minus cash flow from operation, scaled by total assets at the beginning of the year
CREV	Change in revenue, computed as revenue of the current year minus revenue of the previous year; Scaled by total asset at the beginning of the year
PPE	Property, plant and Equipment, scaled by total asset at the beginning of the year
ROA	Return on assets
EPS	Earnings per share, scaled by price per share at the beginning of the year
RET	Stock return
CFO	Cash flow from operations, scaled by total asset at the beginning of the year
A	Total assets
D	Indicator variable which takes the value of 1 if return is negative and zero, otherwise
P	Price per share

Source: The authors

Results and Discussion

Descriptive Statistics

Table 3: Descriptive statistics results for 132 JSE-listed firms per year from 2018 to 2021

Variables	2018				2019				2020				2021			
	Min	Max	Mean	Std.Dev.	Min	Max	Mean	Std.Dev.	Min	Max	Mean	Std.Dev.	Min	Max	Mean	St.dev.
AC	-0.279	0.261	0.019	0.115	-0.291	0.296	0.09	0.118	-0.344	0.293	-0.030	0.116	-0.125	0.360	0.022	0.106
CREV	-0.206	0.472	0.137	0.137	-0.334	0.473	0.058	0.169	-0.506	0.265	-0.036	0.179	-0.680	0.531	0.024	0.256
PPE	0.005	0.982	0.276	0.244	0.002	1.085	0.284	0.266	0.000	0.900	0.301	0.241	0.000	0.909	0.296	0.237
ROA	-0.215	0.365	0.073	0.118	-0.333	0.258	0.046	0.128	-0.292	0.235	0.025	0.118	-0.078	0.483	0.101	0.120
EPS	-0.491	0.291	0.029	0.165	-0.534	0.295	0.011	0.168	-0.646	0.332	-0.032	0.215	-0.287	1.152	0.157	0.294
RET	-0.667	0.663	-0.052	0.288	-0.648	0.882	0.094	0.370	-0.847	0.732	-0.197	0.366	-0.367	2.151	0.398	0.591
CFO	-0.101	0.243	0.0593	0.061	-0.663	0.266	0.053	0.064	-0.084	0.292	0.073	0.081	-0.059	0.315	0.091	0.084
N	132				132				132				132			

Note: N denotes the number of firms. Table 3 reports the descriptive statistics of the main variables of the study. The description of the variables is provided in Table 2.

Source: The authors.

Table 3 displays the descriptive statistics of the main variables used in yearly regression. As illustrated in Table 3, the mean of total accrual (AC) for the year 2018, 2019, 2020 and 2021 are 0.019, 0.09, -0.030 and 0.022, respectively. The year 2020 displays a negative mean of AC. This could be due to a negative profit in the year 2020. Similarly, the mean of change in revenue (CREV) for the year 2020 is negative and positive for the other years in the sample period. This indicates a significant decrease in revenue for the year 2020. The mean of property, plant of equipment (PPE) appears to be constant for all the years in the sample. The mean of return on

assets (ROA) for the years 2018, 2019, 2020 and 2021 are 0.073, 0.046, 0.025 and 0.10, respectively. The year 2020 have the lowest mean of ROA as compared to the other years in the sample, suggesting a decrease in profit before tax in 2020. The mean of earnings per share (EPS) are 0.029, 0.011, -0.032 and 0.157 for 2018, 2019, 2020 and 2021, respectively. Again, the year 2020 has the lowest EPS. This suggest that for the firms sampled, loss was incurred in the year 2020. With respect to return (RET) the mean ranges from -0.196 to 0.398. Lastly, the means of cash flow from operations (CFO) seem to be constant and are 0.059, 0.053, 0.073 and 0.091 for 2018, 2019, 2020 and 2021, respectively. This indicates that the operating cash flow for each year over the sample period represents on average 5 to 9% of firms total assets for the previous years.

Regression Results

Result for Testing H1a

Table 4 reports the results of testing H1a, which conjectures that during the COVID-19 pandemic, firms reported less conservatively as compared to the period before the pandemic.

Panel A of Table 4 displays β_2 and β_3 obtained from the yearly regression of conservatism, measured by the Basu (1997) model in Equation 1. In Equation 1, β_3 is the main measure of conservatism and if β_3 is greater than 0 and statistically significant, reported earnings is conservative (Shen & Ruan, 2022; Persakis & Iatridis, 2015; Hsu et al., 2011; Basu, 1997). The sum of β_2 and β_3 ($\beta_2 + \beta_3$) is also used as the overall measure of conservatism in reported earnings (Francis & Martin, 2010).

Table 4: Regression results for conservatism measured by the Basu (1997), and Ball and Shivakumar (2005) models.

Panel A: Conservatism measured by β_3 and $(\beta_2 + \beta_3)$ obtained from the following Basu (1997) equation estimated each year from 2018 to 2021.

$$\frac{EPS_{i,t}}{P_{i,t-1}} = \beta_0 + \beta_1 D + \beta_2 Ret_{i,t} + \beta_3 DRet_{i,t} + \mu_{i,t}$$

year	N	β_2	β_3	$(\beta_2 + \beta_3)$	R ²	Adjusted R ²
2018	132	0.064	0.312*	0.376	0.055	0.033
2019	132	-0.069	0.375***	0.306	0.098	0.076
2020	132	0.164*	0.066	0.23	0.098	0.077
2021	132	0.232**	-0.210	0.022	0.098	0.077

Note: *, ** and *** denote significance at 10%, 5% and 1%, respectively. N is the number of firms. Panel A of Table 4 reports β_2 and β_3 obtained from the yearly regression of conservatism measured by the Basu (1997) model.

Source: The authors.

Panel B: Conservatism measured by β_3 obtained from the following Ball and Shivakumar (2005) equation estimated each year from 2018 to 2021.

$$AC = \beta_0 + \beta_1 DCFO_{i,t}/A_{i,t-1} + \beta_2 CFO_{i,t}/A_{i,t-1} + \beta_3 D(CFO_{i,t}/A_{i,t-1}) \times (CFO_{i,t}/A_{i,t-1}) + \mu_t$$

Years	N	B ₃	R ²	Adjusted R ²
2018	132	0.761*	0.056	0.030
2019	132	0.847*	0.063	0.041
2020	132	-0.008	0.007	-0.016
2021	132	-1.030	0.039	0.017

Note: *, ** and *** denote significance at 10%, 5% and 1%, respectively. N is the number of firms. Panel A of Table 4 reports β_3 obtained from the yearly regression of conservatism measured by the Ball and Shivakumar (2005) model.

Source: The authors.

As shown in Panel A of Table 4, in the year 2018, 2019, 2020 and 2021, the coefficient β_3 , are 0.312, 0.375, 0.066 and -0.022, respectively. For the year 2018 and 2019, the firms sampled reported conservatively as $\beta_3 > 0$ and statistically significant for these years. For the year 2020, β_3 is close to zero ($\beta_3 = 0.066$) and statistically non-significant. Although greater than zero, it indicates that the firms studied did not practice accounting conservatism as compared to the previous two years. In the year 2021, earnings were not conservative (β_3 is less than zero and insignificant). The years in which the firms studied reported more conservatively are 2018 and 2019. Using the sum of β_2 and β_3 , as overall measure of conservatism, yield the same results as β_3 . These results are consistent with H1a and shows that during the pandemic period, the level of conservatism in reported earnings was lower compared to the pre-pandemic period.

As in previous studies (Shen & Ruan, 2022; Cui et al., 2021; Kim & Zhang, 2016), an alternative measure was used to estimated conservatism, the Ball and Shivakumar (2005) model given in Equation (2) in Section 3. Panel B of Table 4 displays the results of β_3 (which is a proxy for conservatism) estimated using the Ball and Shivakumar (2005) model. As illustrated in Panel B of Table 4, for the year 2018 and 2019, β_3 are greater than zero with value of 0.761 and 0.847, respectively. For the year 2020 and 2021, β_3 are less than zero. This means that reported earnings was conservative in the years 2018 and 2019. There is no evidence of conservative earnings in years 2020 and 2021. These results are consistent with the results obtained in Panel A of Table 4, where conservatism was measured using the Basu (1997) model. The results indicate that SA firms sampled did not apply accounting conservatism in reported earnings during the pandemic period as compared to the pre-pandemic period. Therefore, the findings support H1a.

The results of this paper are similar to the results obtained by Abedini and Salehi (2012). Abedini and Salehi (2012) compared conservatism practice for the sample period 2004 to 2010, and found that in some years the firms sampled reported conservatively, while in other years, there was no conservatism practice in reported

earnings. However, the results are inconsistent with the findings of Persakis and Iatridis (2015) who reported that during the 2008 financial crisis, firms displayed a high degree of conservatism practice in reported earnings compared to the years before the crisis.

Taking into consideration the views of authors Zadeh et al. (2022), Kim and Zhang (2016), Lara et al. (2020), and Lafond and Watt (2008) who argued that accounting conservatism improves earnings quality, the results of this study suggest that earnings quality (measured by conservatism) was of lower quality in SA listed firms sampled during the COVID-19 pandemic period as compared to the period before the pandemic. Therefore, the results of this study are inconsistent with the view that accounting conservatism plays a significant role in encouraging managers to anticipate the recognition or disclosure of bad news in financial reports.

Results for Testing H2b

To test whether firms display a high accrual quality during the pandemic period as compared to the period before the pandemic, we estimated accrual quality (AAC) for each firm in the sample using Equations 3 & 4 (Section 3) and compared the mean AAC for each year in the sample period. Furthermore, we employed one-way ANOVA to compare the mean difference of AAC across the years of the sample period. The results are reported in Table 5, panel A, B and C.

Table 5: Yearly Mean of Accrual quality measured by $AAC = \left(\frac{AC_{i,t}}{A_{i,t-1}}\right) - NA_{i,t}$

Obtained from the following Kothari et al. (2005) model:

$$\frac{AC_{i,t}}{A_{i,t-1}} = \alpha + \left(\frac{1}{A_{i,t-1}}\right) + \beta_2 \left(\frac{CREV_{i,t}}{A_{i,t-1}}\right) + \beta_3 \left(\frac{PPE_{i,t}}{A_{i,t-1}}\right) + \beta_4 ROA_{i,t} + \mu_{i,t}$$

Panel A-Yearly mean of AAC

Years	N	Mean	R ²	Adjusted R ²
2018	132	0.0316	0.720	0.711
2019	132	0.0146	0.684	0.674
2020	132	-0.0289	0.498	0.482
2021	132	0.0259	0.677	0.667

Note: N is the number of firms. Panel A of Table 5 represents the yearly mean of AAC. R² and Adjusted R² are obtained from the yearly regression of Kothari et al. (2005) model. The description of the variables is provided on Table 2.

Source: The authors.

Panel B: One-way ANOVA: Mean comparison of AAC per year from 2018 to 2021

F test (df: 3- 524)	Mean AAC_2018 (1)	Mean AAC_2019 (2)	Mean AAC_2020 (3)	Mean AAC_2021 (4)	Mean difference		
					(1)-(3)	(2)-(3)	(4)-(3)
7.388***	0.0316 (1)	0.0146 (2)	-0.0289 (3)	0.0259 (4)	0.0604***	0.0434**	0.0545***

Note: ***and ** denote the mean difference is significant at 1% and 5% level. N is the number of firms. Panel B of Table 5 represents the results of one-way ANOVA for difference in mean comparison of AAC from 2018 to 2021. The description of the variables is provided on Table 2.

Source: The authors.

Panel C: One-way ANOVA: Mean of yearly AAC in Homogeneous subset

		Subset for alpha = 0.05	
	Mean AAC_for each year	N	
			1 2
Tukey HSD ^a	AAC_2020	132	-.0289
	AAC_2019	132	.0146
	AAC_2021	132	.0259
	AAC_2018	132	.0316
	Sig.		1.000 .634

a. Uses Harmonic Mean Sample Size = 132

Source: The authors.

As illustrated in Panel A of Table 5, the means AAC are 0.0316, 0.0146, -0.0289 and 0.0259 for the years 2018, 2019, 2020 and 2021, respectively. The mean decreased from 2018 to 2020 and then, increased in 2021. The mean is also graphically represented in Figure 1, and again it decreases from 2018 to 2020 and then increases in 2021.

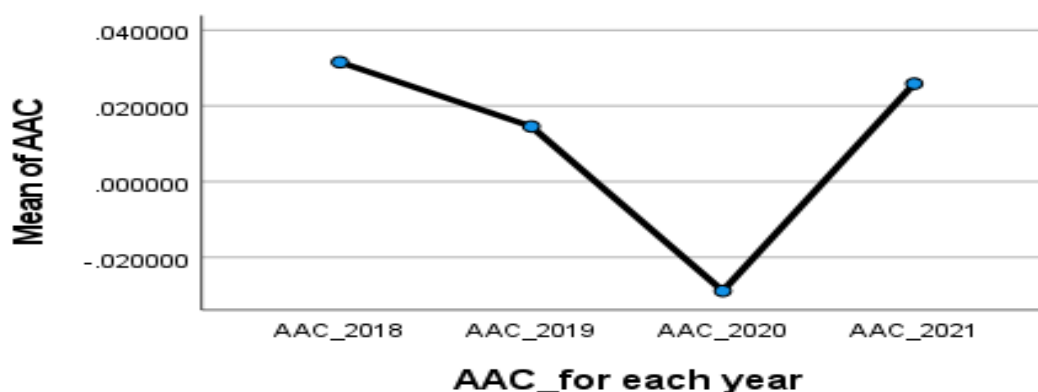


Figure 1: Mean value of AAC for each year from 2018 to 2021

The means AAC are relatively low for the sample period. The year 2020 displayed the lowest mean AAC in the sample period. Lower accrual quality is interpreted as high earnings quality and high accrual quality indicates poor earnings quality (Kothari et al., 2016). Therefore, these results illustrate that there is no indication of poor earnings quality in the year 2020, in other words, SA-listed firms did not use accrual quality to manipulate earnings during the year 2020. For further analysis, we also ran the one-way ANOVA to compare the mean difference of AAC across the sample period and the results are reported in Panel B of table 5.

Preliminary test such as the Levene test must be conducted before interpreting the results of one-way ANOVA (Field, 2013). The Levene's test (not reported) illustrated that the variances are homogeneous.

Panel B of Table 5 reveals that there is a significant difference amongst the mean comparison of AAC across the sample period. This is illustrated by a F statistic value of 7.338, with a degree of freedom ranging from 3 to 524 ($F(3, 524) = 7.338$), and with a significance value of less than 0.001 ($p < 0.001$).

The post hoc testing, was also conducted as advised by Field (2013), specifically the Tukey test was conducted as the sample size is equal to 132 firms for each year of the sample.

As displayed in Panel B of Table 5, the Tukey test result shows that the pair difference in mean AAC for the year 2018 and 2020, 2019 and 2020, 2020 and 2021 are statistically significant ($p < 0.001$). It is interesting to note that the pair difference in mean AAC for the years 2018, 2019 and 2021 are all insignificant ($P > 0.05$). This indicates that the mean AAC for the years 2018, 2019 and 2021 are almost the same but different from the year 2020. This is also illustrated in the homogeneous subsets output (panel C of Table 5), where, it is shown that the year 2018, 2019 and 2021 belong to the same subset (subset 2) and the year 2020 to one subset on his own (subset 1).

Overall, pairwise comparison of mean difference of AAC between the years 2018 to 2021, that is, before, and during the pandemic period, suggests that the mean difference of AAC during the year 2020 is lower as compared to other years in the sample. This result implies that earnings quality (measured by AAC) was of higher quality in 2020 as compared to other years in the sample period. Therefore, the SA firms sampled did not employ accounting discretion opportunistically to manipulate earnings during the pandemic period.

These results are inconsistent with the hypothesis H1b, which conjecture that AAC is higher during the pandemic period as compared to the period before the pandemic. The results instead indicate a low AAC 's value during the pandemic period, which is an indication of high earnings quality. Therefore, it can be inferred that, in SA, accounting information remains reliable during unusual economic situation such as the COVID-19 pandemic.

The results are in agreement with the study by Usheva and Vagner (2021) who found that firms in Slovenia did not manipulate earnings during the pandemic period. In order to cope with the pandemic, these firms, instead used their reserves.

However, our results are contrary to the results obtained by Lassoued and Khanchel (2021). Lassoued and Khanchel (2021) found that Europeans firms had the tendency of managing earnings during the pandemic period. Earnings management led to a decrease in earnings quality. Our results are also dissimilar to the study by Xiao and Xie (2021) which revealed that Chinese firms with weak corporate governance manipulated earnings during the pandemic period as compared to the period before the pandemic. Persakis and Iatridis (2015), reported that during the 2008 financial crisis, managers used accounting principles opportunistically and this led to a decrease in earnings quality.

Based on the results of this study and the study by Persakis and Iatridis (2015), it can be inferred that, although the COVID-19 pandemic and the 2008 financial crisis

brought economic turmoil, they differently influenced firms' tendency to manipulate reported earnings.

In light of the results of both hypotheses H1a and H1b, it can be inferred that although SA firms did not apply accounting conservatism in reported earnings during the pandemic period compared to the period before the pandemic the results showed no evidence of the use of accounting accrual to manipulate earnings during the pandemic period. These findings are interesting as one would have expected SA firms to report more conservatively during the pandemic period. In fact, conservatism accounting required the anticipation of loss, which was evident during the COVID-19 pandemic period, as business activities were restricted. These findings seem to support the view of the opponents of conservatism, since earnings quality (as measured by AAC) in SA during the COVID-19 pandemic period was of higher quality although conservatism was not applied in reported earnings.

Overall, the findings indicate no specific trend in earnings quality over the sample period, since earnings quality decrease in some years and increase in others. This suggests that there was no consistency in the application of accounting principles in the SA sampled firms during the COVID-19 pandemic years compared to the period before the pandemic.

Conclusion

This paper examined whether earnings quality of JSE-listed firms decreased during the COVID-19 pandemic relative to the period before the pandemic, in order to shed light on whether accounting information remained reliable during difficult/unusual economic conditions. Accrual quality and conservatism were used to measure earnings quality as these two measures required the exercise of discretion, therefore susceptible to manipulation. We found mixed results with the two measures of earnings quality. Specifically, the results indicated that SA-listed firms sampled did not apply conservatism in reported earnings during the COVID-19 pandemic period compared to the period before the pandemic. There was no evidence of the use of

accrual quality to manipulate earnings during the COVID-19 pandemic period compared to the period before the pandemic. Our results could suggest that earnings quality (measured by accrual quality) did not decrease in SA during the COVID-19 pandemic period relative to the period before the pandemic. These findings open the door for future research which could examine whether firms with less conservatism practice and less accrual quality display a better performance relative to firms with high degree of conservatism and high accrual quality during the COVID-19 pandemic. This paper could also be expanded by using other measures of earnings quality to assess whether accounting information have remained reliable during the pandemic period in other capital market or countries worldwide.

Our results have implications for standards setters, investors and other users of accounting information. In particular, the findings of this study provided insights to regulators and standards setters in understanding if unusual economic situations influence accounting quality. In addition, the study informed on whether firms were consistent in applying accounting principles during the COVID-19 pandemic period, relative to the pre-pandemic period.

Like any research, this paper has some limitations. One limitation of our study is that the models used to measure earnings quality have been criticized for not being one hundred percent accurate. However, the literature has not advanced to develop models which are completely accurate in measuring earnings. Nevertheless, the models employed in this study are the mostly used in the literature. Another limitation is that we did not perform industry analysis due a small number of firms in some industry sectors. This was inevitable since the JSE is a small capital market with some industry sectors having less than 10 firms as compared to developed capital markets. Despite these limitations, the paper followed a rigorous methodology and the reported findings were consistent with previous studies.

References

- Abedini, B., & Salehi, M. (2012). A comparative study on conservatism using Basu's and Ball and Shivakumar's methods, *Serbian Journal of Management*, 7(2), 231-244.
- Ahmed, A.S., & Duellman, S. (2011). Evidence on the role of accounting conservatism in monitoring managers' investment decisions, *Accounting and Finance*, 51, 609-633.
- Arnold, P. J. (2009). Global financial crisis: The challenge to accounting research. *Accounting, organizations and Society*, 34(6-7), 803-809.
- Astivia, O.L.O., & Zumbo, B.D. (2019). Heteroskedasticity in multiple regression analysis: what it is, how to detect it and how to solve it with application R and SPSS. *Practical Assessment, Research and Evaluation*, 24(1), 1-19.
- Asri, M. (2017). The Effect of Accounting Conservatism on Earning Quality. Available at SSRN 2992129. Available at: <https://ssrn.com/abstract=2992129>, Accessed: 25 February 2023.
- Ball, R., & Shivakumar, L. (2005). Earnings quality in UK. Private firms: comparative loss recognition timeliness, *Journal of Accounting and Economics*, 39(1), 83-128.
- Basu, S. (1997). The conservatism principle and the asymmetric timeliness of earnings, *Journal of Accounting and Economics*, 24(1), 3-37.
- Brooks, C. (2008). *Introductory econometric for finance*, 2nd ed. Cambridge University Press: UK.
- Caskey, J., & Laux, Y. (2017). Corporate governance, accounting conservatism and manipulation, *Management Science*, 63, 427-437.
- Chan, C. K., Jegadeesh, N., & Lakonishok, J. (2006). Earnings quality and stock returns. *Journal of Business*, 79(3), 1041-1082.
- Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings, *Journal of Accounting and Economics*, 50(1), 2-19.

- Cucinotta, D., & Vanelli, M. (2020). Who declares COVID-19 a pandemic, Available at: <https://pubmed.ncbi.nlm.nih.gov/32191675/>; DOI: [10.23750/abm.v9i1i1.9397](https://doi.org/10.23750/abm.v9i1i1.9397); Accessed: 05 December 2022.
- Cui, L., Kent, P., Kim, S., & Shan, L. (2021). Accounting conservatism and firm performance during the COVID-19 pandemic, *Accounting and Finance*, 62(4), 5543-5579. <https://doi.org/10.1111/acfi.12767>.
- Dai, L., & Ngo, P. (2020). Political uncertainty and accounting conservatism, *European Accounting Review*, 30 (2), 277-307. <https://doi.org/10.1080/09638180.2020.1760117>.
- Dechow, P., Larson, C.R., & Resutek, R.J. (2022). The effect of accrual heterogeneity on accrual quality inference, *The Accounting Review*, 97(5), 245-273.
- Dechow, P., & Dichev, I. (2002). The quality of accruals and earnings: The role of accrual in estimating errors. *The Accounting Review*, 77, 35-59.
- Dechow, P., Ge, W., & Schrand, C. (2010). Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50(2), 344-401.
- Defond, M.L. (2010). Earnings quality research: advances, challenges and future research, *Journal of Accounting and Economics*, 50, 402-409.
- Doron, N. (2022). Earnings quality, available at: <http://www.columbia.edu/~dn75/Earnings%20Quality.pdf>, Accessed: 11 November 2022.
- Eliwa, Y., Aboud, A., & Saleh, A. (2016). The association between earnings quality and the cost of equity capital: evidence from UK, *International Review of Financial Analysis*, 48, 125-139.
- Ewert, R., & Wagenhofer, A. (2012). Earnings Quality Metrics and What They Measure Available at <http://dx.doi.org/10.2139/ssrn.1697042>., Accessed: 08 November 2022.
- Field, A. (2013). *Discovering statistics using IBM SPSS statistic*, 4ed. Sage: Los Angeles.
- Fonou-Dombeu, N.C., Mbonigaba, J., Olarewaju, M.O., & Nomlala, B.C. (2022). Effect of earnings quality properties on the performance of companies: empirical

evidence from South Africa, *Finance, Accounting and Business Analysis*, 4(1), 1-17.

Francis, B., Hasan, I., & Wu, Q. (2013). The benefits of conservative accounting to shareholders: Evidence from the financial crisis. <http://dx.doi.org/10.2139/ssrn.2291352>.

Francis, J.R., & Martin, X. (2010). Acquisition profitability and timely loss recognition, *Journal of Accounting and Economics*, 49, 161-178.

Givoly, D., Hayn, C.K., & Natarajan, A. (2007). Measuring reporting conservatism. *Accounting Review* 82(1), 65–106.

Hsu, A., O'hanlon, J., & Peasnell K. (2011). The Basu measure as indicator of conditional conservatism: Evidence from UK earnings components, *European Accounting Review*, 21(1), 87-113.

Jackson, A.B. (2017). Discretionary Accruals: Earnings Management or not? *ABACUS*, 54, (2), 136-153.

Kim, J.B., & Zhang, L. (2016). Accounting conservatism and stock price crash risk: firm level evidence, *Contemporary Accounting Research*, 33(1), 412-441.

Kothari, S., Leone, A., & Wasley, C. (2005). Performance matched discretionary accrual measures, *Journal of Accounting and Economics*, 39(1), 163-197.

LaFond, R., & Watts, R. (2008). The information role of conservatism, *The Accounting Review*, 83 (2), 447-478.

Lara, J.M.G., Osma, B.G. & Penalva, F. (2020). Conditional conservatism and the limits of earnings management, *Journal of Accounting and Public Policy*, 39,1-26.

Lassoued, N., & Khanchel, I. (2021). Impact of COVID-19 Pandemic on Earnings Management: An Evidence from Financial Reporting in European Firms, *Global Business Review*, 1-25. DOI: [10.1177/09721509211053491](https://doi.org/10.1177/09721509211053491).

Laux, C., & Leuz, C. (2010). Did fair-value accounting contribute to the financial crisis? *Journal of economic perspectives*, 24(1), 93-118.

- Leal, L.T.Y., Giraro, L.F.A., & Lucena, W.G.L. (2017). Persistence, value relevance and accrual quality in extreme earnings and cash flow situations. *Mackenzie, Management Review*, 18(3), 203-231.
- Lewellen. J., & Resutek, R.J. (2019). Why do accruals predict earnings, *Journal of Accounting and Economics*, 67(2), 336-356? DOI: [10.1016/j.jacceco.2018.12.003](https://doi.org/10.1016/j.jacceco.2018.12.003)
- Maheen, M.S. (2021). Impact of COVID- 19 on the performance of emerging market mutual funds: evidence from India, *Future Business Journal*,7(37), 1-8.
- McInnis, J., Silva, R. & Yu, V. (2022). The superiority of earnings over cash flows in predicting cash flows available to investors over the long run, Available at: <https://business.unl.edu/academic-programs/departments/accounting/about/seminar-series/documents/JohnMcInnis.pdf>. Accessed: 13 June 2023.
- Neag, R. & Masca, E. (2015). Identifying accounting conservatism: a literature review, *Procedia Economics and Finance*, 32(4), 1114-1121.
- Ozili, P.K. (2021). Accounting and Financial Reporting During a Pandemic. *Emerald Studies in Finance, Insurance, and Risk Management*, 87- 93.
<https://doi.org/10.1108/978-1-80043-968-920211005>
- Pavlatos, O., & Kostakis, H. (2015). Management accounting practices before and during economic crisis: Evidence from Greece. *Advances in accounting*, 31(1), 150-164.
- Penalva, F., & Wagenhofer, A. (2019). Conservatism in Debt Contracting: Theory and Empirical Evidence. *Accounting and Business Research*. 49 (6), 619–647.
- Persakis, A., & Iatridis, G.E. (2015). Earnings quality under financial crisis: a global empirical investigation, *Journal of Multinational Financial Management*, 30, 1-35.
- Peterson, k., Schmardebeck, R., & Wilks, T.J. (2013). Accounting consistency and earnings quality, available at : https://d30i16bbj53pdg.cloudfront.net/sites/default/files/media/peterson_paper.pdf, Accessed: 12 January 2023.

- Rajgopal, S., & Venkatachalam, M. (2011). Financial reporting quality and idiosyncratic return volatility, *Journal of Accounting and Economics*, 51 (1-2), 1-20.
- Ruch, G., & Taylor, G. (2015). Accounting conservatism: a review of the literature, *Journal of Accounting Literature*, 34, 17-38.
- Shen, Y., & Ruan, Q. (2022). Accounting conservatism, R&D manipulation and corporate innovation: evidence from China, *Sustainability*, 14, 1-25. <https://doi.org/10.3390/su14159048>
- Sodan, S. (2015). The impact of fair value accounting on earning quality in eastern European countries, *Journal of Economic and Finance*, 32, 1769-1786.
- Usheva, M., & Vagner, L. (2021). Earnings Management as a Tool of Bankruptcy Prevention during Global Pandemic of COVID-19. *SHS Web of Conferences*, 92, <https://doi.org/10.1051/shsconf/20219202063>
- Wang, J., Steven, X., & Yu, W. (2016). Information environment, systematic volatility and stock return synchronicity, Available at: <https://www.arx.cfa/up/post/2469/AFBC%20Wang,%20Wei%20&%20Yu.pdf>. Accessed: 10 February 2023.
- Xia, B.S., Liitiainen, E., & Beelde, I.D. (2019). Accounting conservatism, financial reporting and stock return, *The Bucharest University of Economic Studies*, 18(1), 4-24.
- Xia, H., & Xi, J. (2021). The COVID-19 and earnings management: China's evidence, *Journal of Accounting and Taxation*, 13(2), 59-77.
- Xu, J., & Lu, C. (2008). Accounting conservatism: a study of market level and firm level explanatory factors, *Journal of Accounting Research*, 19(1), 11-29.
- Zadeh, F.N., Askaramy, D., & Asl S.A. (2022). Accounting conservatism and earnings quality, *Journal of Risk and Financial Management*, 15, 1-18.