# Effect of Working Capital on Earnings Management Practices in Sub-Sahara Africa

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## Abstract

The study examined the effect of Working Capital (WC) on Earnings Management Practices (EMP) among non-financial listed firms in Sub-Sahara Africa. Discretional Accruals (DA) and Real Earnings Management (REM) were proxies by Modified Jones model  (1995)and Rowchowdhury (2006) models respectively. Secondary data sourced from annual reports of 276 listed firms for eleven years (2010 to 2020) were used in the study. The model of the study was estimated using Generalized Method of Moments estimator and Dumistrescu and Hurlin Panel Causality test technique. The findings revealed that WC among firms in Kenya, Tanzania South Africa and Zimbabwe ($\beta$=0.007; 0.002; 0.073; 0.115; P>|t|=0.000; 0.000; 0.000; 0.000<0.05 respectively) have positive and significant effects on DA. However, WC among firms in Nigeria and Ghana showed no significant effect on DA. More so, WC among firms in Nigeria, Kenya, South Africa and Zimbabwe ($\beta$=0.002; 0.049; 0.050; 0.215; P>|t|=0.000; 0.000; 0.005; 0.000, <0.05 respectively) revealed positive and significant effect on REM. The study concluded that WC have positive and significant effect on DA and REM among firms in Kenya, South Africa and Zimbabwe. More so, WC have positive and significant effect on DA in Tanzania as well as on REM in Nigeria. The study therefore recommended that firms in sub-Sahara Africa should reduce their operating cycles to avoid EMP.
**Keywords:**working capital, discretionary accruals, real earnings management, sub-Sahara Africa

## 1.1   Introduction

Investment creates wealth to the investor, but where decision to invest is made as a result of books of accounts that are 'cooked' the company may not perform as expected and may eventually 'sink' with the investor's funds (Uwah, 2018). According to Lilian *et al.* (2016), the high level of reliance placed on managers financial reports poses the risk of earnings management and probable failure of listed firms they manage. Earnings management is a significant social and economic issue as it has a powerful effect on the full range of a firm's business activities as well as on the decision-making. There are growing concerns about the earnings management practices and many factors have been traced to be responsible for the practice but these findings continue to generate more results that are inconclusive and therefore creating room for more research in the area. Working capital cycle describes how a product moves through the current asset accounts beginning as inventory, which is converted into receivables when it is sold, and finally converted to cash when collection is made. Moreover, it would be easier for firms with considerable credit sales to dealers to engage in 'channel stuffing' or accelerate the recognition of sales by shipping goods early to dealers and booking receivables. Thus, it is likely that a high stock of receivables generates a more effective ability to accelerate sales as well as a lower probability of detection by regulators. Barton and Simiko (2002) asserted that manager' generous assumptions about revenue recognition and measurement in one period reduce their ability to make equally generous assumptions in later periods if managers want to stay within the guidance provided by accounting regulators and profession group. Firms with longer operating cycles are afforded greater flexibility earnings management since they have larger accruals accounts and a longer period for accruals to reverse. A review of several empirical studies from continents in the world showed different results of working capital on earnings management. There seems to be dearth of literature in terms of examining the link between a firms' working capital cycle and its earnings management practices especially in sub-Saharan Africa. This current study therefore filled research gap by examining the effect of working capital on both accrual and real activities earnings management among listed firms in sub-Sahara African countries.

## 1.2   Research hypotheses

H$_{01}$      Working Capital has no significant effect on accrual based earnings management practices among listed firms in sub-Sahara African countries.

H$_{02}$      Working Capital does not significantly drive real activities based earnings management practices among listed firms in sub-Sahara African countries.

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## 2.0 Literature Review

### 2.1 Working Capital and Earnings Management

Working capital is current assets (cash, receivables, inventory, etc.) minus current liabilities (debt obligations due within one year) Ugrin *et al.* (2017). The study further explained that, working capital might be viewed as the amount of a business's current assets provided (financed) by long-term debt and/or equity. According to Eldiria *et al.* (2020), a positive working capital requirement, or conservative working capital policy, indicates a need for additional capital which firms can finance internally, reducing free cash flow, or externally, generally via commercial paper or lines of credit. Efficient working capital management involves planning and controlling current assets and current liabilities in a manner that eliminates the risk of inability to meet short term obligations on one hand and avoids excessive investment in these assets on the other hand. A firm's operating cycle is defined by Ross *et al.* (2013) as "the time period between the acquisition of inventory and the collection of cash from receivables." The study submitted that this cycle describes how a product moves through the current asset accounts beginning as inventory, which is converted into receivables when it is sold, and finally converted to cash when collection is made. The study further explained that this cycle has two components:

   i.    The inventory period, which is the time it takes to sell inventory and
   ii.   The accounts receivable period, which is the time it takes to collect the cash from the sale.

The operating cycle is therefore the sum of the firm's inventory period and its accounts receivable period. Firms with longer operating cycles are afforded greater flexibility for accruals-based earnings management since they have larger accruals accounts and a longer period for accruals to reverse (Eldiria *et al*., 2020). The same logic should also apply to listed firms in sub-Sahara African countries particularly on both accrual and real activities earnings management. Earnings management is not to be confused with illegal activities to manipulate financial statements and report results that do not reflect economic reality. These types of activities, popularly known as "cooking the books," involve misrepresenting financial results Ubesie *et al.* (2020). Iraya *et al.* (2015) described earnings management as a strategy used by the management of a company to deliberately manipulate the company's earnings so that the figures match a predetermined target for income smoothing. Thus rather than having years of exceptionally good or bad earnings, firms will try to keep the figures relatively stable by adding and removing cash from reserves account. Elkalla (2017) defined earnings management as the adjustment of reported economic performance by insiders either to mislead some stakeholders or to influence contractual outcomes. This study considered both accrual and real activities earnings management techniques.

Accruals are the difference between earnings and cash flows and are a standard component of a firm's transactions. As an illustration, if a firm makes a sale on credit, the sale is recognized as earnings regardless of whether cash has been received or not. This leads to the creation of a receivable, which is cancelled when cash is received in the future. Accounting practices allow discretion for managers in the financial information provided such that managers can either recognize revenues before they are earned or delay the recognition of expenses which have been incurred; thus resulting in accruals. Accruals-based earnings management occurs when managers intervene in the financial reporting process by exercising discretion and judgment to change reported earnings without any cash flow consequences (Kothari *et al.,* 2012). Real earnings management is defined by Swai (2016) as management operational activities to alter reported earnings in a particular direction, which is achieved by overproducing inventory to lower the cost of goods sold or cutting discretionary expenses (i.e., advertising expenditures, research and development expenditures, selling, general and administrative expenditures) to improve reported margins. In other words real earnings management is the management action that deviates from normal business practices and has suboptimal business consequences. It is imperative to assess working capital on both accrual and real activities based earnings management in sub-Sahara Africa.

### 2.2 Theoretical Review

#### 2.2.1 Threshold management theory

Burgstahler and Dichev (1997) were the first researchers postulated threshold management theory. Authors examined the irregularities in the distributions of accounting results, the theory stated that, company's managers use earnings management to reach a level of expected result called "threshold". Authors observed the existence of two types of thresholds: the threshold of zero result (to avoid losses) and the threshold of variation nil of the result (avoiding the decrease in income), yet the study by Degeorge *et al.,* (1999) has allowed to add a new threshold: the threshold of analysts' expectations. Analysts in the financial market use these thresholds as a tool to evaluate the performance of companies.

#### 2.2.2 Positive Accounting theory

Positive accounting theory has been one of the most important accounting theories in the last decades. It also called political-contractual theory, Watts and Zimmerman (1986) developed the positive accounting theory that aims to explain and predict accounting practice. It is concerned with actions such as which accounting policies management chooses and how management responds to proposed new accounting standards. It explains earnings management in the preparation of reported financial statements. Moreover, the aim of this theory is to

understand and predict the choice of accounting policies across different firms, recognizing that economic consequences exist.

### 2.2.3 Agency theory

Agency theory was originated first by Ross (1973) and improved by Jensen and Meckling (1976). This theory is founded on the divergence of interests and information asymmetry between these two parties. Indeed, the divergence of interests between shareholders and managers encourages the creation of compensation contracts based on the income of the company. Thus to increase their remuneration and benefit from these contracts executives tend to manage their results upward and maximize their well-being by presenting to shareholders the results they were expecting. In addition, in order to limit expenditure and unnecessary spending of managers, shareholders proceed to allocate charges (Mayaub & Miloudi, 2015). This distribution causes pressure on the managers and stimulates them measures to reduce their costs. Hence, leaders can use earnings management to defer some of these charges and show their good management. This showed that in firms where agency costs are lower; the extent of earnings management is higher, suggesting that earnings management does not appear to provide private benefits to management.

However, based on the various study examined, the analytical framework for this study will further be explained by threshold theory. Thus, the presence of irregularities around its threshold was interpreted as a manipulation of the accounting result. Companies manage their results to reach or even exceed these thresholds (Vidal, 2010). In fact, Executives avoid publishing a loss and prefer a null result or even a weak positive result. Finally, the realization of thresholds indicates the stability and the growth of the financial performance of the company (Jiang, 2007).

### 2.3 Empirical Review

**Working Capital and Earnings Management Practices**

The researcher observed limited recent empirical studies on working capital and earnings management, In Europe, Ugrin *et al.* (2017) carried out a study using OLS panel regression for 7469 firms across European countries for the period of 1990 to 2012. The findings revealed a positive and significant relationship between working capital and accrual based earnings management. In American Region, the work of Eldiria, *et al.* (2020) using GMM estimator for 382 non-financial firms in North America for the period of 1989-2016, the study showed that working capital had a positive and negative significant impact on real activities and accrual based earnings management respectively. In Africa, Elkalla (2017) considered 802 non-financial firms for the period of 1996-2014 in MENA countries and based on panel regression method revealed that working capital had a positive and negative significant impact on accrual and real activities based earnings management respectively. Limited research on working capital and earnings management deserve special attention of Researchers. Therefore, this study assessed the effect of working capital on both accrual and real activities based earnings management in Sub-Sahara Africa (SSA).

### 3.0 Methodology

The study employed *ex-post factor* research design because the investigation started after the fact has occurred. The population of study comprised of listed firms in SSA. Multistage sampling technique was employed. Stratified random sampling technique was used in the first stage to divide sub-Sahara Africa into four regions from which three regions and six countries were chosen. Purposive sampling technique was also used to choose non-financial listed firms with required secondary data for the period under study as shown in Table 3.1. Dynamic panel Generalized Method of Moments (GMM) estimator was used to assess the influence of working capital on accrual and real activities based earnings management while Dumistrescu and Hurlin panel causality tests were employed to ascertain causality direction.

**Table 1. List of Selected Stock Exchange and Non-Financial Listed Firms for the Study**

| Country | Governed by | Total Number of Listed Firms | Number of Non-financial Listed Firms | Percentage (%) |
|---|---|---|---|---|
| **Western Africa** | | | | |
| Nigeria | Nigerian Stock Exchange | 166 | 76 | 45.8 |
| Ghana | Ghana Stock Exchange | 31 | 12 | 38.7 |
| **Eastern Africa** | | | | |
| Kenya | Nairobi Stock Exchange | 64 | 26 | 40.6 |
| Tanzania | Dares Salam Stock Exchange | 25 | 7 | 28 |
| **Southern Africa** | | | | |
| South Africa | FTST/JST | 250 | 127 | 50.8 |
| Zimbabwe | Zimbabwe Stock Exchange | 63 | 31 | 49.2 |
| **Total** | | **599** | **279** | **46.6** |

**Source: Author's compilation, (2021).**

### 3.1 Model Specification

The model for DA is Modified Jones (1995) and it was adapted from the work of Lastari and Aeni (2019)
Discretionary accruals are estimated using the following equation;

$$NDA_t = \alpha_1\left(\frac{1}{A_{t-1}}\right) + \alpha_2\left(\frac{\Delta REV_t - \Delta REC_t}{A_{t-1}}\right) + \alpha_3\left(\frac{PPE_t}{A_{t-1}}\right) \dots\dots\dots\dots\dots\dots\dots(3.1)$$

Where,

$TA_{i.t}$ = Total accruals of firm i in year t., $NDA_{i,t}$ = Total accruals of non-discretionary firms i in year t., $DA_{i,t}$ = Total discretionary accruals firms i in year t, $\Delta REV_{i,t}$ = Changes in firm income i in year t. $\Delta REC_{i,t}$ = Change in Receivable i in year t. More so, $PPE_{it}$ = firm Non-current asset (property, plant and equipment) i in year t., $A_{i,t-1}$ = Total assets of firm i in year $t_{-1}$, $\varepsilon_{i,t}$ = Error term.

Measurement of real earnings management follows the Rowchowdhury (2006) model adapted from the work of Anabelen *et al.* (2020) as shown below.

The operating cash flow is estimated using the following model;

REM = (ACFO*-1) + APROD + (ADISEXP*-1)……………………………………….. (3.2)

Where,,$CFO_t$ = Cash flow from operation firm i in year t., $PROD_t$ = Production cost of firm i in year t., $DISEXP_t$ = Discretionary expenses of firm i in year t., ACFO = Abnormal cash flow from operation., APROD = Abnormal production cost., ADISEXP = Abnormal discretionary expenses.

REM = A combined measure of real earnings management.,

The functional form of the model is given as:

DA= f(WC, FAGE)…………………………………………......eqn (3.3)
DA= $\beta_0$ + $\beta_1$ WCit+ $\beta_2$ AGEit + U……………………………………..…eqn (3.4)
REM= f(WC, FAGE)……………………………………………......eqn (3.5)
REM= $\beta_0$ + $\beta_1$ WCit+ $\beta_2$ AGEit + U……………………………………….…eqn (3.6)

Where: DA= Discretionary Accruals, REM= Real Activities Earnings Management,
$\beta_0$ = Constant, $\beta_1$, $\beta_2$, = Slope Coefficient, WC= Working Capital, FAGE= Firm Age, U= Stochastic disturbance, i=ith firm, t=time period

**Table 2.  Measurement of Variables**

| S/N | Variables | Notation and Sources | Apriori Sign |
|---|---|---|---|
| $Y_1$ | Discretionary Accruals (DA) | Modified Jones model  (1995), Lastari and Aeni (2019) | |
| $Y_2$ | Real Activities Earnings Management (REM) | Abnormal operating cash flow plus abnormal production costs minus abnormal discretionary expenses. Anabelen *et al.* (2020) | |
| $X_1$ | Working Capital | Trade receivable divided by total revenue multiply 365 days. Ugrin *et al.* (2017) | +/- |
| $X_3$ | Firm Age (FA) | Firm listing age. Orazalin and Akhmetzhanov (2019) | +/- |

**Source: Authors' Compilation, (2022).**

## 4. Results and Discussion

### 4.1 Descriptive Statistics

The sample descriptive was presented in Table 3 where the minimum, maximum, mean and standard deviation of the study variables were described. The mean value for Discretionary Accruals (DA) shows that the level of DA does not differ significantly between Nigeria, Kenya, Ghana, Tanzania and Zimbabwe firms with positive mean values of 0.587, 0.646, 0.749, 1.833 and 1.808 respectively. However, the mean value was negative (-

1.373) for firms in South Africa. This implies that firms in Nigeria, Kenya, Zimbabwe, Ghana and Tanzania engaged in greater degree of DA compared with firms in South Africa. Furthermore, Firms in Nigeria, Tanzania and South Africa were found to have higher standard deviations compared with Ghana, Kenya, Tanzania and Zimbabwe, which is indicative of higher DA volatility. Regarding Real Earnings Management (REM), the mean values were positive for firms across the study countries except for South Africa. This suggests that firms in Nigeria, Ghana, Kenya, Tanzania and Zimbabwe with mean values of (0.937, 0.168, 0.378, 1.237 and 1.191 respectively) engaged in more income increasing REM. More so, firms in these five countries have higher standard deviations compared with firms in South Africa, indicating greater volatility. Concerning working capital, the mean values does not significantly differ across the countries as the mean values ranges from 1.453 to 1.808, except firms in Kenya that has a mean value of 5.592. Firm age revealed that, South Africa among the countries under study has been in existence for long period with maximum value of 126 while Tanzania showed the lowest maximum value of 23.

**Table 3**. **Descriptive Statistics**

| Countries | Variables | DA | REM | WC | FA |
|---|---|---|---|---|---|
| **Nigeria** | Minimum | -0.0012 | -0.0431 | 0.0020 | 1.0000 |
| | Maximum | 2.3941 | 3.3025 | 8.6978 | 56.000 |
| | Mean | 0.5873 | 0.9367 | 1.4529 | 26.576 |
| | Std. Dev. | 1.9127 | 0.5217 | 1.8451 | 13.413 |
| **Ghana** | Minimum | -0.0531 | -0.0743 | 0.1614 | 3.0000 |
| | Maximum | 3.5902 | 5.0542 | 9.1205 | 30.000 |
| | Mean | 1.8326 | 0.1679 | 1.6196 | 17.833 |
| | Std. Dev. | 0.9638 | 1.7632 | 1.7993 | 7.1207 |
| **Kenya** | Minimum | -0.0045 | -0.0367 | 2.3003 | 0.0000 |
| | Maximum | 4.1762 | 6.1985 | 6.3931 | 81.000 |
| | Mean | 0.6459 | 0.3782 | 4.8862 | 38.433 |
| | Std. Dev. | 0.7651 | 0.8376 | 0.8040 | 18.136 |
| **Tanzania** | Minimum | 0.3586 | -0.6129 | 0.3586 | 5.0000 |
| | Maximum | 4.2825 | 8.1705 | 4.2825 | 23.000 |
| | Mean | 1.8080 | 1.2367 | 1.8080 | 15.116 |
| | Std. Dev. | 0.9531 | 1.9632 | 0.9531 | 4.1957 |
| **South Africa** | Minimum | -0.0267 | -0.1345 | -1.4974 | 1.0000 |
| | Maximum | 2.0753 | 1.2188 | 6.3701 | 126.00 |
| | Mean | -1.3727 | -1.0268 | 1.9526 | 27.758 |
| | Std. Dev. | 1.8063 | 0.0986 | 1.6007 | 22.076 |
| **Zimbabwe** | Minimum | -0.0749 | 0.0981 | 0.0008 | 4.0000 |
| | Maximum | 1.0117 | 2.0962 | 7.9448 | 75.000 |
| | Mean | 0.7491 | 1.1913 | 1.6027 | 33.958 |
| | Std. Dev. | 0.9246 | 0.7066 | 1.2332 | 20.739 |

**Source: Authors' Computation, (2022).**

## 4.2 Correlation Analysis

A Pearson Correlation Matrix is computed and shown in Table to analyse the correlations between the model variables. The study observed that most of the correlation between variables are low, with all coefficient being less than 0.8, the limit to have multi-collinearity problem suggested by previous research Gujarati and Porter, (2003 cited in Khanh & Thu, 2019).

**Table 4**. **Pearson Correlation Coefficient Matrix**

| Countries | Variables | DA | REM | WC | FA |
|---|---|---|---|---|---|
| **Nigeria** | DA | 1.0000 | | | |
| | REM | -0.2398 | 1.0000 | | |
| | WC | 0.0761 | 0.1870 | 1.0000 | |
| | FA | -0.0003 | -0.0045 | -0.0721 | 1.0000 |
| **Ghana** | DA | 1.0000 | | | |
| | REM | 0.0768 | 1.0000 | | |
| | WC | 0.0912 | -0.0065 | 1.0000 | |
| | FA | -0.0005 | 0.2987 | 0.0072 | 1.0000 |
| **Kenya** | DA | 1.0000 | | | |
| | REM | 0.0032 | 1.0000 | | |
| | WC | -0.0006 | 0.0813 | 1.0000 | |
| | FA | 0.0218 | -0.0045 | 0.0698 | 1.0000 |
| **Tanzania** | DA | 1.0000 | | | |
| | REM | 0.0087 | 1.0000 | | |
| | WC | 0.0174 | 0.0862 | 1.0000 | |
| | FA | -0.0054 | 0.0009 | -0.0082 | 1.0000 |
| **South Africa** | DA | 1.0000 | | | |
| | REM | 0.0894 | 1.0000 | | |
| | WC | -0.0009 | 0.0852 | 1.0000 | |
| | FA | 0.0028 | -0.0089 | 0.0041 | 1.0000 |
| **Zimbabwe** | DA | 1.0000 | | | |
| | REM | -0.0007 | 1.0000 | | |
| | WC | 0.0612 | 0.0792 | 1.0000 | |
| | FA | 0.0008 | 0.0061 | -0.0006 | 1.0000 |

**Source: Authors' Computation, (2022).**

### 4.3 Multicollinearity Diagnostic of the Variables

Variance Inflation Factor (VIF) was used to test for multicollinearity diagnostic across the model variables as indicated in Table 5. Firm age in Ghana revealed highest VIF value of 1.10 and the mean VIF across the countries is 1.03. VIF values between the threshold of 5 and 10 are probable signs of multicollinearity. However, all VIF values were significantly lower than the threshold of 5 and therefore shown that, there is no significant problem of multicollinearity across the study model variables.

**Table 5: Variance Inflation Factor**

| Countries | Variables | VIF | Tolerance |
|---|---|---|---|
| **Nigeria** | WC | 1.01 | 0.992550 |
| | FA | 1.00 | 0.994540 |
| **Ghana** | WC | 1.03 | 0.967153 |
| | FA | 1.10 | 0.910176 |
| **Kenya** | WC | 1.01 | 0.992456 |
| | FA | 1.04 | 0.965100 |
| **Tanzania** | WC | 1.03 | 0.971700 |
| | FA | 1.03 | 0.972348 |
| **South Africa** | WC | 1.00 | 0.997899 |
| | FA | 1.04 | 0.962769 |
| **Zimbabwe** | WC | 1.06 | 0.944497 |
| | FA | 1.02 | 0.976204 |
| **MEAN** | | 1.03 | |

**Source: Authors' Computation, (2022).**

### 4.4 Effect of Working Capital on Earnings Management Practices in Sub-Sahara Africa

Table 6 showed the effect of working capital on accruals and real activities based earnings management using dynamic panel model. Speed and earnings management: The speed of adjustment presented by the coefficient to DA and REM $(1-\delta)$, which represents the coefficient of the lagged $DA_{t-1}$ and $REM_{t-1}$. The coefficient $(1-\delta)$ is positive and significant at 5% level for firms in Nigeria and South Africa. Moreover, it is negative and significant for firms in Ghana, Kenya and Zimbabwe. The findings revealed that Working Capital (WC) among firms in Kenya, Tanzania South Africa and Zimbabwe ($\beta$=0.007; 0.002; 0.073; 0.115; P>|t|=0.000; 0.000; 0.000; 0.000<0.05 respectively) have positive and significant effects on DA. This implies that firms in Kenya, Tanzania,

South Africa and Zimbabwe engage in DA through their working capital. This result is consistent with the research findings of Ugrin *et al.* (2017), but differ from the work of Eldiria *et al.* (2020) who revealed negative influence of working capital on DA in their work carried out among non-financial firms in North America. However, WC among firms in Nigeria and Ghana showed no significant effect on DA. More so, WC among firms in Nigeria, Kenya, South Africa and Zimbabwe ($\beta$=0.002; 0.049; 0.050; 0.215; P>|t|=0.000; 0.000; 0.005; 0.000, <0.05 respectively) revealed positive and significant effect on REM. This result provides evidence that a longer operating cycle leads to a higher degree of REM among firms in Nigeria, Kenya, South Africa and Zimbabwe. This supports the research findings of (Elkalla, 2017; Elidira *et al.*, 2020). In addition, Firm Size (FS) is found to have positive and significant effect among firms in Zimbabwe, South Africa and Nigeria ($\beta$=0.445; 0.337; 0.135; P>|t|=0.000; 0.000; 0.025, <0.05 respectively) on REM. However, FS among firms in Kenya and Ghana ($\beta$=-0.152; -1.018, P>|t|=0.000; 0.000; <0.05 respectively) have negative effect on REM. More so, FS shows positive and significant effect among firms in Kenya, Zimbabwe, South Africa and Nigeria ($\beta$=0.009; 0.159; 0.336; 0.274; P>|t|=0.004; 0.005; 0.000, 0.000, <0.05 respectively) on DA. However, FS among firms in Ghana ($\beta$=-0.136, P>|t|=0.013; <0.05) had a negative and significant effect on DA. There is insignificant effect of FS on DA among firms in Kenya.

The diagnostic tests including Wald test and Arellano-Bond test for higher order serial correlation AR (2)) were conducted. The Wald chi2 statistic of (REM: 23.96, P: 0.017; DA: 715.42, P: 0.000) for firms in Kenya, (REM: 124.13, P: 0.000; DA: 10.85, P: 0.028) for firms in Tanzania, (REM: 19.26, P: 0.021; DA: 108.38, P: 0.000) for firms in Zimbabwe. Further, (REM: 101.69, P: 0.000; DA: 126.60, P: 0.000) for firms in South Africa, (REM: 75.83, P: 0.000; DA: 192.22, P: 0.000) for firms in Nigeria as well as (REM: 161.34, P: 0.000; DA: 51.76, P: 0.000) for firms in Ghana showed that the model has a good fit. More so, Arellano-Bond test for zero autocorrelation in first-differenced errors shows that the Z-statistic of the second order autocorrelation test AR (2) were (REM: 0.768, P: 0.442; DA: -1.141, P: 0.253) for firms in Kenya, (REM: -0.855, P: 0.393; DA: -1.779, P: 0.075) for firms in Tanzania, (REM: -1.327, P: 0.184; DA: -1.737, P: 0.082) for firms in Zimbabwe. Further, (REM: -0.482, P: 0.630; DA: -1.827, P: 0.068) for firms in South Africa, (REM: 1.514, P: 0.130; DA: -3.251, P: 0.001) for firms in Nigeria and (REM: -1.817, P: 0.069; DA: -0.749, P: 0.453) for firms in Ghana Thus, the null hypothesis of the test, No autocorrelation cannot be rejected. Thus, there is no problem of autocorrelation in the model. Hence, the diagnostic statistics showed that the result is valid for policy inference.

**Table 6. Estimation results of the dynamic GMM for effect of working capital on earnings management practices in Sub-Sahara Africa**

| Variable | | Nigeria | Ghana | Kenya | Tanzania | S. Africa | Zimbabwe |
|---|---|---|---|---|---|---|---|
| | $DA_{t-1}$ | 0.069 | -0.283 | -0.139 | 0.074 | 0.368 | -0.256 |
| | | (0.000) | (0.031) | (0.000) | (0.863) | (0.000) | (0.000) |
| | $REM_{t-1}$ | 0.179 | -0.391 | -0.063 | 0.091 | 0.202 | -0.394 |
| | | (0.000) | (0.000) | (0.000) | (0.807) | (0.000) | (0.000) |
| WC | DA | -0.001 | -0.007 | 0.007 | 0.002 | 0.073 | 0.115 |
| | | (0.595) | (0.694) | (0.000) | (0.000) | (0.000) | (0.000) |
| | REM | 0.002 | 0.019 | 0.049 | 0.042 | 0.050 | 0.215 |
| | | (0.004) | (0.140) | (0.000) | (0.679) | (0.000) | (0.000) |
| FA | DA | 0.006 | 0.008 | 0.000 | 0.000 | 0.002 | 0.040 |
| | | (0.000) | (0.312) | (0.019) | (0.983) | (0.038) | (0.000) |
| | REM | 0.013 | 0.012 | 0.005 | 0.000 | -2.018 | -0.063 |
| | | (0.000) | (0.056) | (0.000) | (0.969) | (0.005) | (0.000) |
| Constant | DA | -1.356 | -0.045 | -0.018 | 0.159 | -1.473 | -1.532 |
| | | (0.000) | (0.869) | (0.496) | (0.823) | (0.000) | (0.000) |
| | REM | -0.451 | 3.625 | 0.195 | 4.960 | -2.018 | 0.660 |
| | | (0.071) | (0.015) | (0.000) | (0.783) | (0.000) | (0.021) |
| Wald chi2 Statistic | DA | 190.52 | 219.63 | 136.31 | 108.38 | 4.400 | 273.34 |
| | | (0.000) | (0.000) | (0.000) | (0.000) | (0.005) | (0.000) |
| | REM | 173.32 | 95.01 | 115.00 | 1.280 | 138.18 | 117.75 |
| | | (0.000) | (0.000) | (0.000) | (0.865) | (0.000) | (0.000)) |
| Second order autocorrelation | DA | -1.141 | -1.516 | -2.476 | -1.057 | -1.497 | -1.914 |
| | | (0.253) | (0.129) | (0.013) | (0.290) | (0.134) | (0.055) |
| | REM | 0.768 | -0.665 | -1.871 | -0.683 | -0.996 | -1.471 |
| | | (0.442) | (0.505) | (0.061) | (0.494) | (0.318) | (0.141) |
| **Observation** | | 286 | 77 | 341 | 1397 | 836 | 132 |

**Source: Authors' Computation, (2022).**

### 4.5 Dumitrescu-Hurlin Panel Causality Test for Working Capital and Accruals and Real Earnings Management in sub-Sahara Africa

Dumitrescu and Hurlin (2012) Granger causality test was employed to assess the direction of causality between Working Capital (WC) with DA and REM among firms across six countries in Sub-Sahara Africa. W (W-bar) and Z (Z-bar) Statistics were calculated in order to compute the *p*-values and critical values to determine either to reject or accept formulated null hypotheses. WC granger caused DA and REM in Nigeria, Tanzania, South Africa and Zimbabwe. Their p-values < 0.05 and it was bi-directional causality. This suggests that bi directional causality runs from WC to REM and DA among firms in Nigeria, Tanzania, South Africa and Zimbabwe. However, WC did not granger cause DA and REM in Ghana and Kenya since their p-values > 0.05.

**Table 7. Dumitrescu-Hurlin Panel Causality Test for Working Capital and Earnings Management Practices in sub-Sahara Africa**

| Null Hypotheses: | Decision | W-bar Stat. | Z-bar Stat. | P-Value |
|---|---|---|---|---|
| **Nigeria** | | | | |
| WC does not homogeneously cause DA | **Rejected** | 4.4757 | 1.7261 | 0.0000 |
| DA does not homogeneously cause WC | **Rejected** | 4.6931 | 1.7613 | 0.0000 |
| WC does not homogeneously cause REM | **Rejected** | 7.0802 | 2.1486 | 0.0000 |
| REM does not homogeneously cause WC | **Rejected** | 5.1281 | 1.8319 | 0.0000 |
| **Ghana** | | | | |
| WC does not homogeneously cause DA | **Accepted** | -1.4399 | 0.4122 | 0.1499 |
| DA does not homogeneously cause WC | **Accepted** | -0.1222 | 0.9501 | 0.9027 |
| WC does not homogeneously cause REM | **Accepted** | 2.7911 | 2.1395 | 0.0852 |
| REM does not homogeneously cause WC | **Accepted** | -0.7974 | 0.6744 | 0.4252 |
| **Kenya** | | | | |
| WC does not homogeneously cause DA | **Accepted** | 0.9338 | -0.2605 | 0.7945 |
| DA does not homogeneously cause WC | **Accepted** | 1.2183 | 0.8593 | 0.3902 |
| WC does not homogeneously cause REM | **Accepted** | 1.0762 | 0.3000 | 0.7642 |
| REM does not homogeneously cause WC | **Accepted** | 1.4047 | 1.5934 | 0.1111 |
| **Tanzania** | | | | |
| WC does not homogeneously cause DA | **Rejected** | 1.3686 | 2.9372 | 0.0033 |
| DA does not homogeneous cause WC | **Rejected** | 1.4972 | 3.9622 | 0.0001 |
| WC does not homogeneously cause REM | **Rejected** | 1.8917 | 7.1055 | 0.0000 |
| REM does not homogeneously cause WC | **Rejected** | 1.7437 | 5.9261 | 0.0000 |
| **South Africa** | | | | |
| WC does not homogeneously cause DA | **Rejected** | 5.6082 | 1.7038 | 0.0000 |
| DA does not homogeneously cause WC | **Rejected** | 5.7110 | 1.7167 | 0.0000 |
| WC does not homogeneously cause REM | **Rejected** | 8.2035 | 2.0295 | 0.0000 |
| REM does not homogeneously cause WC | **Rejected** | 3.9216 | 1.4921 | 0.0001 |
| **Zimbabwe** | | | | |
| WC does not homogeneously cause DA | **Rejected** | 7.5358 | 2.9141 | 0.0000 |
| DA does not homogeneously cause WC | **Rejected** | 8.0004 | 5.5721 | 0.0000 |
| WC does not homogeneously cause REM | **Rejected** | 4.4144 | 2.1213 | 0.0000 |
| REM does not homogeneously cause WC | **Rejected** | 11.794 | 3.9957 | 0.0000 |

**Source: Authors' Computation, (2022).**

### 5. Conclusion and Recommendation

The study concluded that Working Capital (WC) have positive and significant effect on Discretionary Accruals (DA) and Real Earnings Management (REM) among firms in Kenya, South Africa and Zimbabwe. More so, WC have positive and significant effect on DA among firms in Tanzania as well as on REM in Nigeria. The study therefore recommended that firms in sub-Sahara Africa should reduce their operating cycles to avoid earnings management practices.

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