Re-examining Causal Relationship between Dividend Policies and Commercial Bank Performance: Evidence from 30 Sub-Saharan Africa Countries

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Abstract: This paper aims to test for causality between two dividend policies (dividend payout and dividend reinvestment plans) and return on equity as a measure of financial performance. Dividend policies issues have been continually debated around the world with mixed results, and yet to date, no definite conclusions have been reached. The study used 250 commercial banks from 30 SSA countries over the period between 2006 and 2015 to run long-run causality tests. The results from the block exogeneity Wald test from the panel vector error correction model, and the pairwise Granger causality test shows that there is a unidirectional causality between return on equity and dividend payout ratio. This implies no causality between dividend payout ratio and banks' return on equity over the study period. Hence, we conclude that the widely adopted model for the payment of dividends in the SSA banking market is a win-lose game, as there is no causality between dividend payment and bank performance. As such, we recommend that other dividend policies that can minimize future financing costs, increase bank assets, and improve the future growth prospects of the region be explored.

Keywords: Dividend policy; Sub-Saharan Africa; Commercial banks; Causality test; Vector Error Correction Model

JEL Classifications: G21; L10; L21

1. Background

While maximising shareholders' wealth is the main corporate goal of any firm, how to achieve this is up to the individual firm. This goal is achieved through adequate consideration of other stakeholders' interests, short- and long-term financial planning and the implementation of various policies and strategies. (Andriof et al., 2017) A 2014 International Monetary Fund (IMF) summary noted that the ratio of bank assets to GDP is too low in most SSA countries except for South Africa and Mauritius. The summary and the Global Economy report list the ratio of bank assets to GDP as 44.1%, 18.91%, 18.25%, 14.85% and 12.05% in Kenya, Tanzania,

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Nigeria, Madagascar and Equatorial Guinea, respectively. This is due to the failure of SSA banks to use their earnings as a source of cheap equity that would enable them to operate at full growth potential, promote financial stability and contribute meaningfully to economic growth. (Mlachila et al., 2013b)

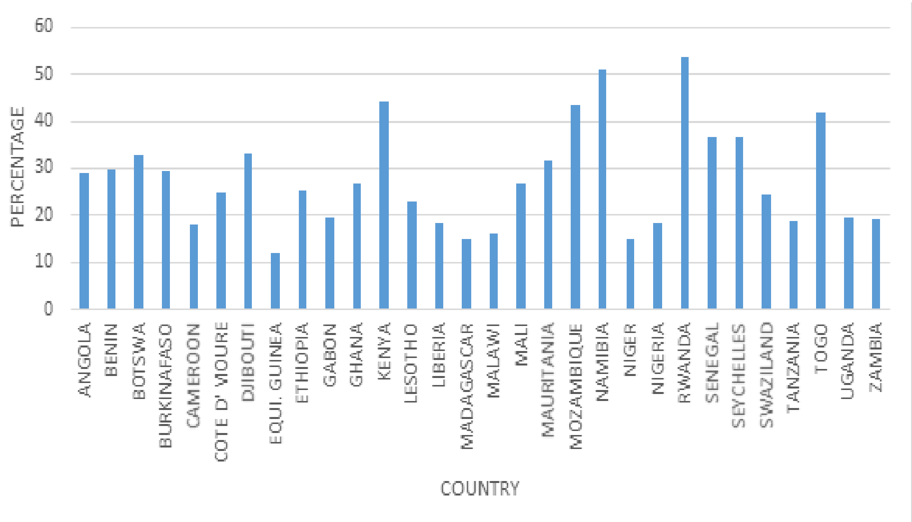


Figure 1. Bank asset-to-GDP ratio in selected SSA Countries in 2014

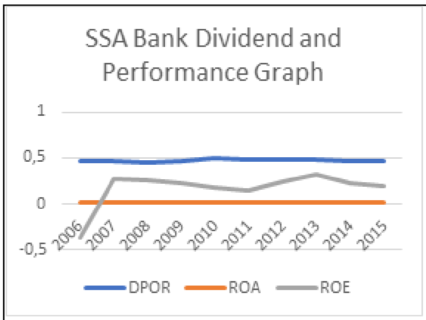
Source: Author's calculations based on data sourced from TheGlobaleconomy.com and The International Monetary Fund

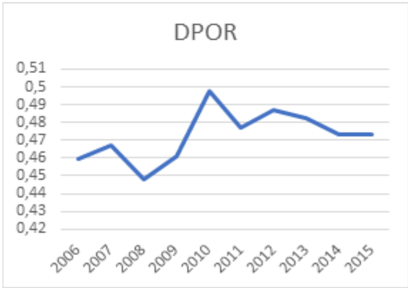
From Figure 1, the two countries with the highest bank assets to GDP ratio were Rwanda (53.8%) and Namibia (50.81%), while the others were below 50%. Over the past two decades, the banking sector in SSA has undergone dramatic changes which have led to accelerated economic growth, with commercial banks making the largest contribution. (Beck & Cull, 2013) According to Mlachila et al. (2013c), most countries in sub-Saharan Africa have an annual growth rate of 5.25%. While some commercial banks are well capitalized, which enabled them to survive the 2007-2009 global financial crisis, they are considered underdeveloped and are not in a position to sustain future growth prospects in the region. (Mecagni et al., 2015)

The financial system remains the engine of growth for SSA economies and is bank-based. (Moyo et al., 2014) The banking sector makes up more than 70% of this system and accounts for the biggest share of financial assets. (Akande & Kwenda, 2017, Enoch et al., 2015, Allen et al., 2011) However, in comparison with other regions, SSA banks are immature, underdeveloped, highly concentrated and generally inefficient when it comes to financial intermediation, inhibiting their growth. (Allen et al., 2011; Kablan, 2010; Mlachila et al., 2013a) Hindrances to their development include a low asset base, weak creditors' rights mechanisms, and limited access to financial services, high poverty rates and the small size of national markets in most countries.

The low asset base and its consequences is one of the major constraints to economic growth in the region. (Mlachila et al., 2013a) Should this problem remain unresolved, it will result in instability, regressive performance, a lack of stakeholder confidence, inability to diversify, huge financing costs, and a poor contribution to economic growth which will threaten the banks' survival. Since the banking sector is the engine of growth for sub-Saharan Africa, such challenges will hinder the growth of the entire region. There is thus a need to examine what constitute bank assets and how they can be increased to contribute meaningfully to the economic growth of the SSA region. An optimal dividend policy is a tool that can be used by commercial banks to minimise the total agency costs of debt and equity. (Shao et al., 2013) Jensen and Meckling (1976) identify two types of agency costs, the cost of debt arising from conflict between shareholders and debt holders and that of equity stemming from conflict between managers and shareholders. Both types of agency costs affect bank performance and should be minimised in formulating dividend policy. (Shao et al., 2013) A dividend policy that will minimise agency costs and increase bank performance is crucial to achieve corporate goals. (Patra et al., 2012) The agency costs of both debt and equity that emanate from the separation of ownership must be adequately minimised. (Shao et al., 2013)

It remains unclear why SSA banks still pay dividends and what drives their dividend payout policy even though they are characterised by strong concentration, weak creditors' rights and a low asset base which are impediments to their operational diversification, sustainability and future growth. According to Nnadi et al. (2013), most African firms, including banks, pay annual cash dividends to their shareholders. As shown in the graph below, SSA commercial banks, they consistently pay dividends and the return on equity (ROE) and assets (ROA) which are measures of performance are decreasing. As at 2010, the averaged dividend payout ratio for the selected countries increased dramatically, while the ROA and ROE fell, but picked up in 2011 when the dividend payout ratio (DPOR) started decreasing.



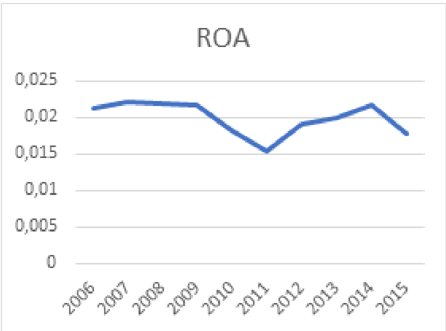


Combined Graph of Dividend and Performance in SSA banks

b) Dividend payout Ratio

c) Return on Asset of SSA countries

d) Return on Equity of SSA countries



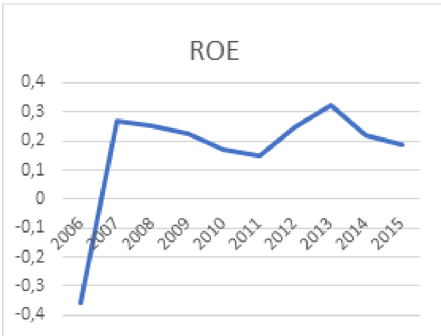


Figure 2. SSA dividend and performance graphs

Source: Authors' computation from data collected from BankScope for 2006-2015. Note that only 30 SSA countries are represented

Ongoing payment of dividends by SSA banks makes no provision to reduce future financing costs which will increase assets, and boost banks' performance and growth potential. This is because banks' earnings are important sources of equity that, if re-invested, lead to safe/healthy banking which promotes financial stability and consequently, enhances economic growth. Shao et al. (2013) posit that dividend policy is a crucial firm decision which leads to a conflict of interest between shareholders and creditors (depositors and debt-holders). An optimal dividend policy enables firms to manage the divergent interests of creditors and shareholders.

Dividend payments reduce shareholders' fears of expropriation by managers (insiders), while aggravating creditors' concerns about expropriation by shareholders. (Byrne & O'Connor, 2017) This is because a rational shareholder is more interested in the share price and dividend income than the riskiness of bank operations. (Mehran et al., 2011)

Notwithstanding, studies such as Agyei and Marfo-Yiadom (2011), Abiola (2014), Ehikioya (2015), and Abdella and Manual (2016) have revealed the correlation between dividend policy (mostly payout policy) and performance both in the banking and non-banking sector, even though it is not clear which between payout and retention policies will minimize agency problems and improve performance. Granger (1969) opined that it is meaningful and essential to test for causation as opposed to correlation or regression, because correlation/regression is a relationship that does not necessarily imply causation. Causal analysis eliminates the effect of intervention between variables and shows the cause and effect relationship. (Akinlo & Egbetunde, 2010) The absence of studies in this direction in SSA banking and the continuous debate on dividend policy make it imperative for this study to investigate the causal relationship between dividend policies (both retention and dividend payout) and financial performance of banks in SSA countries. Although it has been established that there is a feedback relationship between dividend policy and bank performance (Hamid, Yaqub & Awan, 2016), the form this policy should take to foster effective performance is still a gap that this study intends to bridge. Therefore, this study weighs the two common dividend policies in banking sector and establishes the causal relationship between each of them and bank performance in the SSA region. Since the focus of this objective is to test causality, block exogeneity Wald and pairwise Granger causality tests were conducted. This is different from the test of feedback relationship that has been done in previous research.

The paper is structured into 6 sections for logical presentation. The next section contains the literature review, which is followed by the theoretical underpinning in section three. The methodology is captured in section four, model estimation in section five, and conclusion in section six.

2. Literature Review

2.1. Empirical Review

Few studies have empirically examined the relationship between dividend policy and performance in the banking sector. Hamid et al. (2016) recent study investigated Pakistan banks' dividend policy. The results of the FEM showed that tax and financial slack (retained earnings) had no significant effect on bank performance. It is pertinent to examine if retained earnings impact performance despite its insignificant effect. Waseem et al. (2011) examined dividend policy and performance stability among 17 listed commercial banks in Jordan for the period 2000-2006 using pooled EGLS (cross-sectional random effect). The result showed that the cash dividend policy is unstable in Jordanian banks and hence has a negative effect on their performance. Agyei and Marfo-Yiadom (2011) examined 16 Ghanaian commercial banks for the period 1999 to 2003. Using the fixed and random effect model estimation, they found that, dividend paying banks enhanced their performance. This requires further enquiry because the study was silent on banks that retain earnings to enhance growth. There is a need to weigh both policies to determine which tends to promote bank performance. Evidence from Bangladesh for the period 2008 to 2010 using regression analysis showed that variations in dividend policy did not explain variations in the returns on shares among the listed commercial banks. (Zaman, 2011)

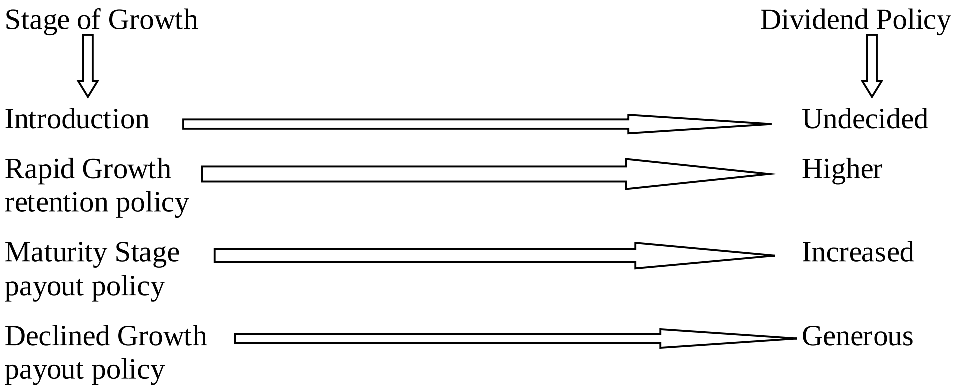
The review of the literature shows that, the majority of studies focused on non-banking sectors. Ouma (2012) examined Kenyan listed firms for the period 2002 to 2010 using regression analysis. The study found a strong and positive relationship between dividend payouts and firm performance. However, it did not consider other dividend policies. Ajanthan (2013) analysed the effect of dividend payouts on the performance of hotels and restaurants in Sri Lanka using multiple regression estimation. The study found a strong and positive relationship between dividend payouts and firm performance. Priya and Nimalathasan (2013) employed regression analysis to investigate hotels and restaurants in the same country for the period 2008 to 2012. The study found a significant positive relationship between dividend policy and firm performance. However, it did not specify the kind of dividend policy that influenced performance. Evidence from Nigerian manufacturing firms presented by Uwuigbe et al. (2012) and Ehikioya (2015) showed that dividend payouts significantly and positively impacts firm performance. However, both studies neglect retention policy and this requires further clarification as payout is not the only dividend policy. There are always some shareholders that prefer to retain profit to grow the firm and avoid external borrowing to finance viable investment projects. Furthermore, firms with financial constraints pay significantly lower dividends than those that are financially buoyant. (Obembe et al., 2014) Evidences from past research have shown conflicting findings on which dividend policy (payout or retention) should be adopted in firms such that the managers will maximize wealth and not profit even though majority believe banks should pay out. There is a discrepancy in the various theories on the choice of dividend policy and empirical findings have shown that not all firms that pay out have prospects of positive future performance as a result. Studies have shown that dividend policy has a great effect on bank performance, irrespective of the particular policy adopted. However, the policy that will cause performance has not been identified because correlation does not mean causality.

2.2. Theoretical Underpinning

Life Cycle Theory of Dividend

The life cycle theory of the firm was propounded by Mueller (1972) and the life cycle theory of dividends was developed by Bulan and Subramanian (2009) and Thanatawee (2011). The major argument of this theory is that the stage a firm has reached in its life cycle determines its optimal dividend policy. The life cycle runs from inception to maturity with many circumstances arising along the way, including a declining growth rate, shrinking investment opportunities, and the decreased cost of raising capital externally. The optimal dividend policy involves a trade-off between the costs and benefits associated with raising capital for new projects taking life-cycle-related factors into account. Dividend policies change over the life cycle of a firm, and, surprisingly, as a firm matures, its ability to explore profitable investment opportunities is overtaken by its ability to generate cash.

The relationship between a firm's life cycle and dividend policy is shown schematically below:



3. Methodology

3.1. Research Design and Data Source

Following, to name but a few, Díez Esteban and López de Foronda Pérez (2001), Flamini et al. (2009), Nnadi et al. (2013), Francis (2013) and Akande and Kwenda (2017) regional studies on African or SSA banks that used unbalanced panel datasets from several commercial banks, this study is based on unbalanced panel of 250 commercial banks from 30 SSA countries. As noted in the previous chapter, all these countries have similar economic and banking features such that their banking markets are oligopolistic in nature. Panel data was used to cater for the heterogeneity problem that individual bank characteristics might cause. (Hsiao, 2014) Not all the data required to capture the variables of interest were available for all the SSA countries for the study period; hence, it was unbalanced. The unbalanced panel data analysis approach was used rather than a balanced panel because we are less interested in goodness of fit and more concerned with understanding the explanatory and illuminating powers of the specific variables, using the available data. The annual data were collected from BankScope database by Fitch/IBCA Bureau Van Dijk covering the period 2006 to 2015. The SSA countries considered in this study exclude those regarded as outliers such as South Africa and Mauritius due their highly competitive and sophisticated banking systems. (Beck & Cull, 2013) Countries such as such as Democratic Republic of Congo, Comoros, Guinea-Bissau, Sao Tome and Principle and that lacked data due to the effects of war were also excluded. (Akande & Kwenda, 2017; Flamini et al., 2009) The countries selected are bank-based economies in which commercial banking holds more than 70% of financial system assets on average. They have similar economic and banking characteristics such as weak creditors' rights, underdeveloped infrastructure, high inflation and poverty rates, external shocks, high concentration, a shallow financial system and non-adherence to global regulatory requirements. (Akande & Kwenda, 2017; Allen et al., 2014; Flamini et al., 2009)

3.2. Model Specification

Theories such as the bird-in-the-hand theory, the signaling hypothesis, as well as the empirical findings of Agyei and Marfo-Yiadom (2011); Zakaria, Muhammad, and Zulkifli (2012); and Hamid et al. (2016) have averred the feedback relationship between dividend policy and performance.

Therefore,

$$Y = f(X) \tag{i}$$

That is,

Performance = *f* (dividend policies)

As recently noted by Hamid et al. (2016), though dividend policies are unstable in the banking sector, there are two commonly adopted policies: dividend payout policy (in form of cash) and dividend re-investment plan (DRIP). Note that DRIP is otherwise called retention policy.

Hence,

Performance = f (dividend payout ratio, retention ratio)

To avoid the omission of a germane variable which can lead to a simultaneity bias, the capital adequacy ratio is included as a control variable.

$$ROE_{it} = f(DPOR_{it}, RERA_{it}, CAR_{it}) \tag{ii}$$

$$ROE_{it} = \beta i + \beta_1 DPOR_{it} + \beta_2 RERA_{it} + \beta_3 CAR_{it} + u_{it} \quad \text{(iii)}$$

All variables are in their natural form.

$\beta_1, \beta_2 and \beta_3$ are the estimated parameters of the respective explanatory variables which show the percentage change in financial performance caused by percentage change in the explanatory variables;

β_0 is the intercept/constant term.

ROE $= \frac{Profitbeforeinterestandtax}{TotalEquity} * 100$, DPOR= $\frac{Totaldividend}{TotalEarnings} * 100$,

RERA= $\frac{Retainedearnings}{TotalEarnings} * 100$ and CAR= $\frac{Totalequity}{Totalasset} * 100$.

3.3. Estimating Technique

Specifically, Pairwise Granger Causality and Granger causality tests from the Panel-Vector Error Correction Block Exogeneity Wald test were used to establish both the short and long run uni-directional, bi-directional causality or no-causal relationships between the pairs of variables.

$$\begin{bmatrix} \Delta ROE_{it} \\ \Delta DPOR_{it} \\ \Delta RERA_{it} \\ \Delta CAR_{it} \end{bmatrix} = \begin{bmatrix} \theta_0 \\ \beta_0 \\ \alpha_0 \\ \delta_0 \end{bmatrix} + \sum_{k=1}^{p} \begin{bmatrix} \theta_{1i} & \theta_{2i} & \theta_{3i} & \theta_{4i} \\ \beta_{1i} & \beta_{2i} & \beta_{3i} & \beta_{4i} \\ \alpha_{1i} & \alpha_{2i} & \alpha_{3i} & \alpha_{4i} \\ \delta_{1i} & \delta_{2i} & \delta_{3i} & \delta_{4i} \end{bmatrix} \begin{bmatrix} \Delta ROE_{i(t-k)} \\ \Delta DPOR_{i(t-k)} \\ \Delta RERA_{i(t-k)} \\ \Delta CAR_{i(t-k)} \end{bmatrix} + \begin{bmatrix} \theta_5 \\ \beta_5 \\ \alpha_5 \\ \delta_5 \end{bmatrix} ECT_{t-1} + \begin{bmatrix} u_{1it} \\ u_{2it} \\ u_{3it} \\ u_{4it} \end{bmatrix}$$

$$\Delta ROE_{it} = \theta_0 + \sum_{k=1}^{p} \theta_{1i} \Delta ROE_{i(t-k)} + \sum_{k=1}^{p} \theta_{2i} \Delta DPOR_{i(t-k)} + \sum_{k=1}^{p} \theta_{3i} \Delta RERA_{i(t-k)} +$$

(iv)

$$\sum_{k=1}^{p} \theta_{4i} \Delta CAR_{i(t-k)} + \theta_5 ECT_{t-1} + u_{1it}$$

(v)

$$\Delta DPOR_{it} = \beta_0 + \sum_{k=1}^{p} \beta_{1i} ROE_{(t-k)} + \sum_{k=1}^{p} \beta_{2i} \Delta DPOR_{i(t-k)} + \sum_{k=1}^{p} \beta_{3i} \Delta RERA_{i(t-k)} +$$

$$\sum_{k=1}^{p} \beta_{4i} \Delta CAR_{i(t-k)} + \beta_5 ECT_{t-1} + u_{2it}$$

$$\Delta RERA_{it} = \alpha_0 + \sum_{k=1}^{p} \alpha_{1i} \Delta ROE_{i(t-k)} + \sum_{k=1}^{p} \alpha_{2i} \Delta DPOR_{i(t-k)} + \sum_{k=1}^{p} \alpha_{3i} \Delta RERA_{i(t-k)} + \sum_{k=1}^{p} \alpha_{4i} \Delta CAR_{i(t-k)} + \alpha_5 ECT_{t-1} + u_{3it} \quad \text{(vi)}$$

$$\Delta CAR_{it} = \delta_0 + \sum_{k=1}^{p} \delta_{1i} \Delta ROE_{i(t-k)} + \sum_{k=1}^{p} \delta_{2i} \Delta DPOR_{i(t-k)} + \sum_{k=1}^{p} \delta_{3i} \Delta RERA_{i(t-k)} + \sum_{k=1}^{p} \delta_{4i} \Delta CAR_{i(t-k)} + \delta_5 ECT_{t-1} + u_{4it} \quad \text{(vii)}$$

Where:

$\theta_0, \beta_0, \alpha_0, \delta_0$ are respective constants. $\theta_1 - \theta_5, \beta_1 - \beta_5, \alpha_1 - \alpha_5, \delta_1 - \delta_5$ are respective estimated coefficients Δ denotes the first difference operator. ECT_{t-1} represents the one-year lagged Error Correction Term. It is the co-integrating vector that acts as the speed of adjustment for the long run association between the variables. $u_{1it} - u_{4it}$ are mutually uncorrelated stochastic (white noise) error terms with finite covariance matrix and zero mean value. t is the time period that ranges from $1,2,.......10$, i is the cross-section (banks) that ranges from $1,2,........250$ and lastly, k is the number of lags while p is the optimal lag length selected by using the Sequential modified LR test statistic, Final Prediction Error, Akaike Information Criterion (AIC), Schwarz Bayesian criterion (SBC), and Hannan-Quinn information criterion. To conduct a multivariate causality test, CAR_{it}, which is the measure of Capital Adequacy Ratio, was included to avoid the omission of germane variables that can cause simultaneity bias and thereby lead to a bogus relationship between the variables. (Gujarati & Porter, 2003) For any commercial bank to adopt a policy, it must be adequately capitalized to justify the continuity of banking activities and hence, their persistent future growth. This follows from the fact that banks avert risk by maintaining a high degree of capitalization.

4. Model Estimation and Interpretation of Findings

4.1. Preliminary Analysis

4.1.1. Summary Statistics

This section shows the description of the characteristics of the variables ranging from the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, and probability of the distribution.

Table 1. Descriptive Analysis

	ROE	RERA	CAR	DPOR
Mean	0.198431	0.544922	0.135358	0.459001
Median	0.222880	0.567239	0.112732	0.437637
Maximum	13.88820	1.000000	1.073452	2.670570
Minimum	-31.53604	-1.670570	-2.067475	0.000000
Std. Dev.	0.859533	0.241318	0.133588	0.237609
Skewness	-21.07763	-0.849753	0.005022	0.866069
Kurtosis	827.0631	7.155175	58.96471	7.421875
Probability	0.000000	0.000000	0.000000	0.000000

Source: Author's estimation, 2018

Table 1 shows the descriptive analysis results of all the activities regarding the causal relationship of dividend policy and bank performance for the period between 2006 and 2015. return on equity (ROE) measured the performance of the banking industry while dividend payout ratio (DPOR), retention ratio (RERA), and capital adequacy ratio (CAR) were used to capture the dividend policy. The result revealed that the average ROE, DPOR, RERA, and CAR are 0.20, 0.46, 0.54, and 0.14, respectively. This result implies that the average performance of the banking industry as determined by the return on equity is small and not encouraging. The maximum & the minimum values for rate of ROE, DPOR, RERA, and CAR are: 13.89 & -31.54, 2.67 & 0.00, 0.98 & -8.31, 1.00 & -1.67, and 1.07 & -2.07, respectively. The standard deviation values of 0.86, 0.24, 0.24, and 0.13 revealed the rate at which the ROE, DPOR, RERA, and CAR, respectively, deviated from their respective average or expected values. Also, it was discovered that CAR and DPOR, which are 0.01 and 0.87 respectively, are positively skewed because their distribution has a long tail to the right. On the other hand, ROE and RERA which are -21.08, and -0.85 respectively, are negatively skewed because their distribution has long tail to the left. However, the kurtosis of the financial variables showed that all the variables under consideration are leptokurtic in nature because the kurtosis coefficient indexes are all positive. The Jarque-Bera and probability values revealed ROE, DPOR, RERA, and CAR are not normally distributed, but statistically significant when examining the impact of dividend policy on the performance of SSA banking industry.

4.1.2. Panel Unit Root Test

To run analysis on secondary data, it is necessary to run stationarity tests in order to know the nature of data and avoid spurious estimations. As noted by Akinlo and Egbetunde (2010), none of the unit root tests is free from size and power properties shortcomings. Thus, to be affirmative about the order of integration, several unit root tests are conducted in this study as shown in table 2 below.

Table 2. Panel unit root test at level for the variables

Variables	Levin, Lin & Chu t* Statistic	Prob	ADF Statistic	Prob	PP Statistic	Prob
ROE	-59.6740	0.0000	18.4207	0.0001	18.4207	0.0001
RERA	-2.88111	0.0020	136.346	0.0000	147.042	0.0000
CAR	-5.64249	0.0000	195.317	0.0000	212.920	0.0000
DPOR	-8.75976	0.0000	188.866	0.0000	163.428	0.0000

Source: Author's estimation, 2018

The panel unit root test presented in Table 2 above shows that all the variables were stationary. The ROE, dividend policy ratio (DPOR), retention ratio (RERA), and capital adequacy ratio (CAR) were all stationary at order one for both cross-section and individual level during the period under investigation. This is evident as the probability of Levin, Lin and Chur t-statistic values: 0.000, 0.002, 0.000 and 0.000; the Augmented Dickey Fuller (ADF) test-statistic and Philip Perron statistic values: 0.000, 0.000, 0.000, 0.000 and 0.000 for each of the variables was less than the probability of the error margin 0.05 allowed for the estimate in this study. This result implies that there is a short-run equilibrium relationship among the variables under investigation. The short-run stability of these variables revealed by the panel unit root test led to the estimation of co-integration to determine the long-run equilibrium relationship or stability of the linear combination of the variables in the long-run.

4.1.3. Panel Co-integration Test

Since all our variables at non-stationary at order one (1), a co-integration test was used to establish the long-run relationship between the variables using the Johansen methodology. Johansen's approach derives two likelihood estimators for the co-integrating rank: a trace test and a maximum Eigen value test. The co-integrating rank was formally tested using the trace and the maximum eigen value statistic.

Table 3. Co-integration Rank Test using Trace Statistic

Eigen value	Trace Statistic	5% Critical Value	Prob	Hypothesized No. of CE(s)
0.220906	1933.973	69.81889	1.0000	None *
0.165168	935.2810	29.79707	0.0001	At most 1 *
0.124231	527.2958	15.49471	0.0001	At most 2 *
0.095763	227.5006	3.841466	0.0000	At most 3 *

Source: Author's estimation, 2018

Note that * represents the significance of the test statistics

Table 4. Co-integration Rank Test using Maximum Eigen Value Statistic

Eigen value	Maximum Eigen Value Statistic	5% Critical Value	Prob	Hypothesized No. of CE(s)
0.220906	564.1485	33.87687	0.0001	None *
0.165168	407.9852	21.13162	0.0001	At most 1 *
0.124231	299.7953	14.26460	0.0001	At most 2 *
0.095763	227.5006	3.841466	0.0000	At most 3 *

Source: Author's estimation, 2018

Note that * represents the significance of the test statistics

These test statistics indicate three co-integrating vectors at 5 percent level of significance as presented in Tables 3 and 4 above. This implies that a long-run equilibrium relationship exists among the variables under study. Thus, the stability of the dividend policy captured by the DPOR, RERA, and CAR has affected SSA banks' performance measured by ROE in both the short and long-run. The above tables also show, that the maximum-eigen value test indicates three normalized co-integrating equation(s) at 5 percent significant level. The details of these three normalized co-integrating equations and their adjustment coefficients are presented in Table 5 below.

Table 5. Co-integration Equations

ROE	RERA	CAR	DPOR
1.000000	0.000000	0.000000	0.068027
			(0.03589)
0.000000	1.000000	0.000000	0.377640
			(0.01003)
0.000000	0.000000	1.000000	0.182568
			(0.01407)
Adjustment coefficients (standard error in parentheses)			
D(ROE)	-0.912529	0.047255	-0.063485
	(0.03621)	(0.17490)	(0.08983)
D(RERA)	-0.005543	-0.369680	-0.205679
	(0.00864)	(0.04174)	(0.02144)
D(CAR)	0.007637	0.050936	-0.053140
	(0.00428)	(0.02069)	(0.01063)
D(DPOR)	-0.008845	-0.200160	-0.352320
	(0.00835)	(0.04032)	(0.02071)

Source: Author's estimation, 2018

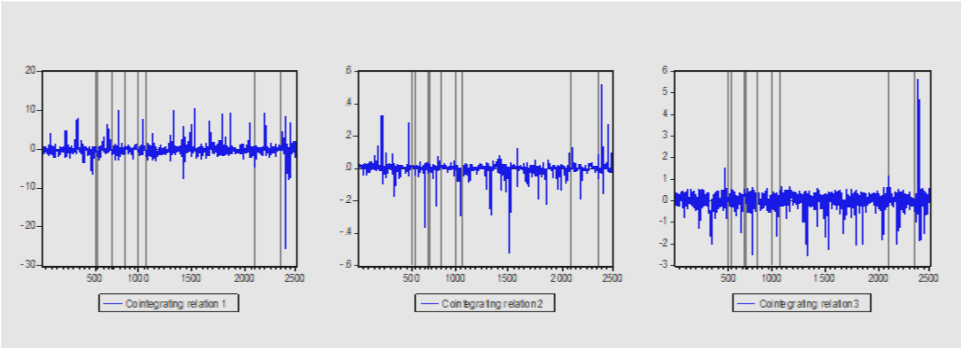


Figure 3. Graphical Representation of Cointegrating Equations

Source: Author's estimation, 2018

Table 5 and Figure 3 present the normalized co-integrating equation(s) coefficients with their standard error in parentheses. The normalized co-integrating coefficients only load on the dividend payout ratio with both positive and negative coefficients. The coefficients of the dividend payout ratio, 0.068, 0.378 and 0.183 are statistically significant based on the standard error test. This implies that banking performance as shown by the cointegrating equations can be determined by future-state and the stability of ROE, RERA, and CAR while the DPOR mainly determines the current level of banking performance and its movement in the right direction to bring the system back to equilibrium. The co-integration adjusted coefficients measure the long-run equilibrium or stability of banking performance. The ROE value of -0.913 in the first co-integrating equation reveals the performance level of the selected SSA banks which is not encouraging and calls for improvement. The adjustment coefficients values of -0.006 and -0.009 from co-integrating equation one reveal the negative impact of the RERA and DPOR, both dividend policies, on banking performance. However, the capital adequacy ratio value of 0.007 contributes positively to SSA banking performance. In the second co-integrating equation, the performance of the banking industry improved, as the performance level stood at 0.047. This was hampered in the third equation as a result of the negative impact of the DPOR in the first and second co-integrating equation which limits the performance of the banking industry by 0.009 and 0.200, respectively. The negative impact of the retention ratio in the second co-integrating equation also hampered SSA bank performance during the period under study. This implies that the more attention that is devoted to formulating effective dividend policy, the better will be the performance of the SSA banking industry.

4.1.4. Optimal Lag Selection

Table 6. VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2654.561	NA	9.20e-06	2.593428	2.607144	2.598458
1	-1527.413	2247.701	3.14e-06	1.518686	1.600979	1.548864
2	-1437.331	179.1966	2.95e-06	1.455223	1.606093*	1.510549*
3	-1403.290	67.55168	2.92e-06*	1.446407*	1.665854	1.526880
4	-1385.211	35.78683	2.94e-06	1.453156	1.741181	1.558778
5	-1362.029	45.77771	2.95e-06	1.454928	1.811530	1.585698
6	-1335.590	52.07799	2.94e-06	1.453525	1.878705	1.609443
7	-1321.220	28.23597	2.97e-06	1.463891	1.957647	1.644957
8	-1295.670	50.07920*	2.97e-06	1.463354	2.025688	1.669568

Source: Author's estimation, 2018

Table 6 shows the result of the vector autoregressive lag length to choose the optimal lag for this study. The result shows a lag order of three (3) using the Akaike information criterion with a value of 1.446 while the lag order of two (2) using the Schwarz information criterion and Hannan-Quinn information criterion has values of 1.606 and 1.511, respectively. All these information criteria were statistically significant at 5 percent level. Based on this evidence, lag order two (2) which was the smallest minimum lag order revealed by Schwarz information criterion and Hannan-Quinn information criterion was selected for this study.

4.2. Panel Vector Error Correction Model Estimation

A Vector Error Correction Model (VECM) is a restricted Vector Auto- Regression (VAR) used for non-stationary cointegrated series. Therefore, since our series is cointegrated, a VECM with four (4) simultaneous equations is estimated in this study to evaluate the short-run properties of the long-run relationships among ROE, DPOR, RERA and CAR. Optimal lag two (2) of SIC was chosen for this estimation as noted by Hyndman and Athanasopoulos (2014) that SIC is the most suitable for VECM as AIC tends to choose larger number of lags that make the estimate insignificant.

Table 7. Vector Error Correction Estimates

Cointegrating Eq:	CointEq1	CointEq2	CointEq3	
ROE(-1)	1.000000	0.000000	0.000000	
RERA(-1)	0.000000	1.000000	0.000000	
CAR(-1)	0.000000	0.000000	1.000000	
DPOR(-1)	0.068027	0.377640	0.182568	
	(0.03592)	(0.01003)	(0.01408)	
C1	-0.131002	-0.183238	0.038462	
Error Correction:	D(ROE)	D(RERA)	D(CAR)	D(DPOR)
CointEq1	-0.912529	-0.005543	0.007637	0.008815
	(0.03624)	(0.00865)	(0.00429)	(0.02657)
CointEq2	0.047255	-0.369680	0.050936	-0.504038
	(0.17502)	(0.04177)	(0.02070)	(0.12831)
CointEq3	0.108874	0.199250	-0.270764	-0.512624
	(0.14556)	(0.03474)	(0.01722)	(0.03356)
CointEq4	-0.063485	-0.205679	-0.053140	-0.352320
	(0.08989)	(0.02145)	(0.01063)	(0.02072)
D(ROE(-1))	-0.066835	-1.05E-05	-0.000862	-0.004100
	(0.03043)	(0.00726)	(0.00360)	(0.00701)
D(ROE(-2))	-0.034568	-0.002248	-0.000578	0.000651
	(0.02241)	(0.00535)	(0.00265)	(0.00517)
D(RERA(-1))	-0.006249	-0.296242	-0.038291	0.163172
	(0.17328)	(0.04135)	(0.02050)	(0.03995)
D(RERA(-2))	-0.162397	-0.097199	-0.025696	0.085151
	(0.14162)	(0.03379)	(0.01675)	(0.03265)
D(CAR(-1))	-0.014263	-0.156189	-0.100861	0.119614
	(0.18496)	(0.04414)	(0.02188)	(0.04264)
D(CAR(-2))	0.043268	-0.042329	-0.117200	0.013583
	(0.17573)	(0.04194)	(0.02079)	(0.04052)
D(DPOR(-1))	0.012641	-0.012609	0.003116	0.001286
	(0.05576)	(0.01331)	(0.00659)	(0.01285)
D(DPOR(-2))	0.005704	0.003621	-0.002557	-0.013647
	(0.04561)	(0.01088)	(0.00539)	(0.01051)
C2	8.81E-05	0.000140	-0.000235	-0.000130
	(0.01882)	(0.00449)	(0.00223)	(0.00434)
R-squared	0.493118	0.267416	0.190113	0.288941
Adj. R-squared	0.489957	0.262848	0.185063	0.284507
Sum sq. resids	1797.073	102.3385	25.14159	95.52210
S.E. equation	0.894694	0.213507	0.105825	0.206274
F-statistic	156.0030	58.53543	37.64233	65.16166
Log likelihood	-2947.799	290.3617	1876.613	368.2505
Akaike AIC	2.621946	-0.243683	-1.647445	-0.312611
Schwarz SC	2.659931	-0.205698	-1.609460	-0.274626
Mean dependent	-0.000383	-0.000275	-0.000289	0.000223
S.D. dependent	1.252770	0.248675	0.117227	0.243860

Source: Author's estimation, 2018

The presence of cointegration between variables suggests a long-term relationship among the variables under consideration. The VCEM can then be applied. The vector error correction estimate with standard error in parenthesis for the long run relationship between dividend policy and banking performance for three co-integrating equations is presented in Table 7 above. The C1 in the co-integrating equation are correctly signed, revealing that it will take 13 and 18 percent, respectively for the maladjustment in the co-integrating equation 1, and 2 to attain or adjust to the long run equilibrium or stability. In examining the impact of the error correction of the dividend policy on banking performance, it was found from the fitted VECM that ROE at lag one and two, RERA at lag one and two, and CAR at lag one have an inverse relationship with the banks' ROE (performance). Thus, ROE at lag one and two, RERA at lag one and two, and CAR at lag one will worsen the banks' ROE ratio (performance measure) by 6.68, 3.46, 0.62, 16.24, and 1.43 percent, respectively. This implies that particular circumstances in the countries examined during the study period impacted the influence of the dividend retention policy on bank performance because all things being equal, this should not be a negative effect. This finding is contrary to Uwuigbe et al. (2012) and Agyei and Marfo-Yiadom (2011) studies that found that either payout or retention dividend policy has a positive relationship with performance. However, CAR at lag two, and DPOR at lags one and two have a direct relationship with banking performance. This is in tandem with the findings of Brighi and Venturelli (2014) and Odunga et al. (2013). The results further reveal that CAR at lag two and DPOR at lags one and two improved the performance of banking industry by 4.33, 1.26 and 0.57 percent, respectively. This positive effect reveals the signalling effect of dividends during this period such that it had a direct effect on bank performance as revealed by Ehikioya (2015). The positive relationship between capital adequacy and performance implies the significance of capital adequacy in formulating dividend policy. As noted by Nnadi et al. (2013), a bank must be adequately capitalised before making dividend decisions. The positive relationship further depicts the nexus between the capital ratio and funding costs. A bank with a high capital ratio incurs lower funding costs because of reduced bankruptcy costs. (Brighi & Venturelli, 2013) The C2 estimate of 8.81E-05 reveals that the banking industry's performance could have been enhanced and improved through dividend policy during the period under investigation without serious risk. The significance of the VECM was examined using the R-square statistic and it was revealed that 49 percent of the variation in the error associated with the performance of SSA banks can be explained by the dividend policy captured by the RERA, CAR and DPOR. The F- statistic value of 156.00 > $F_{0.05}$ (3, 1714) = 3.00 shows that the fitted VECM was statistically significant and hence adequate and reliable in determining the causal relationship between the dividend policy and banking performance (ROE) in SSA.

4.2.1. P-VECM Stability Check

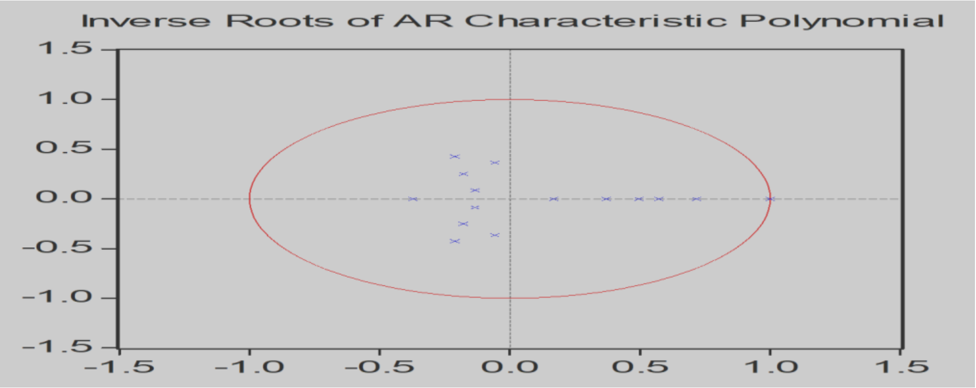


Figure 4. Diagrammatic Representation of VECM Stability Condition Check

Source: Author's estimation, 2018

The results in Figure 4 show the VECM stability condition for the relationship among ROE, RERA, CAR and DPOR. However, the figure shows that, all the roots or the eigen values were within the unit circle. This implies that the VECM satisfied the stability condition. It can hence be used for policy formulation and implementation.

4.3. Granger Causality Test

According to Fisher (1993), economic theory guarantees causality in at least one direction of any cointegrated series. Therefore, there is need to test for causality in this study. Table 8 shows the block exogeniety Wald test following the study conducted by Gul and Ekinci (2006) where it was posited that causality can be established using probability and chi-square statistics under the null hypothesis of no causality.

Table 8. VEC Granger Causality/Block Exogeneity Wald Tests

Dependent variable: D(ROE)			
Excluded	Chi-sq	D.f.	Prob.
D(RERA)	1.930692	2	0.3809
D(CAR)	0.087883	2	0.9570
D(DPOR)	1.756823	2	0.4154
All	6.394357	6	0.6031
Dependent variable: D(RERA)			
D(ROE)	0.360031	2	0.8353
D(CAR)	12.54067	2	0.0019***
D(DPOR)	17.95587	2	0.0001***

All	37.31987	6	0.0000***
Dependent variable: D(CAR)			
D(ROE)	0.061813	2	0.9696
D(RERA)	3.784374	2	0.1507
D(DPOR)	19.16546	2	0.0001***
All	44.22851	6	0.0000***
Dependent variable: D(DPOR)			
D(ROE)	0.947218	2	0.6228
D(RERA)	16.75244	2	0.0002***
D(CAR)	8.226999	2	0.0164**
All	68.30802	6	0.0000***

Source: Author's estimation, 2018

Note that *** and ** represent rejection of Ho at 1% and 5% respectively

The result of vector error correction Granger causality among the financial variables under consideration are presented in Table 8 above to show the direction of causal relations between each pair of the financial variables such as return on equity, retention ratio, capital adequacy ratio and dividend payout ratio. There is a unidirectional causality of error between the capital adequacy ratio and retention ratio; dividend payout ratio and retention ratio; and dividend payout ratio and capital adequacy ratio. It was also found that there was bidirectional causality of error between the retention ratio and dividend payout ratio; and capital adequacy ratio and dividend payout ratio. This is evident in the estimated probability of Chi-square statistic values of 0.002, 0.000; 0.016, and 0.001< 0.05. Thus, error as a result of the capital adequacy ratio and dividend payout ratio Granger causes error that arises as a result of the retention ratio; and errors as a result of the retention ratio and capital adequacy ratio Granger cause the dividend payout ratio. Furthermore, the combined error of return on equity, capital adequacy ratio and dividend payout ratio Granger causes error of the retention ratio. The combined error of return on equity, retention ratio, and dividend payout ratio Granger causes error of the capital adequacy ratio and the combined error from return on equity, retention ratio, and capital adequacy ratio Granger causes error that occurs from the dividend payout ratio at 5 percent level of significance. In other words, knowing the combined error from the retention ratio and dividend payout ratio, the level of error from the capital adequacy ratio can be determined. The combined error from return on equity, retention ratio and capital adequacy ratio also determines the level of error from the dividend payout ratio. Similarly, following the study conducted by Dhamala et al. (2008) where it was established that causality can be tested using F-statistics and probability values under the null hypothesis of no causality, the Pairwise causality test was used to test the causality between dividend policies and the ROE of SSA commercial banks as shown in Table 9 below, since none of the policies granger cause ROE in the estimate of the block exogeneity Wald test.

Table 9. Pairwise Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Probability	Decision on Null Hypothesis
RERA does not Granger Cause ROE	2401	0.23145	0.79340	Do not Reject
ROE does not Granger Cause RERA		0.96503	0.38112	Do not Reject
CAR does not Granger Cause ROE	2402	0.84799	0.42840	Do not Reject
ROE does not Granger Cause CAR		3.22989	0.03973**	Reject
DPOR does not Granger Cause ROE	2363	0.96910	0.37958	Do not Reject
ROE does not Granger Cause DPOR		3.60122	0.02744**	Reject
CAR does not Granger Cause RERA	2487	1.18586	0.30566	Do not Reject
RERA does not Granger Cause CAR		4.36451	0.01282***	Reject
DPOR does not Granger Cause RERA	2403	8.44241	0.00022***	Reject
RERA does not Granger Cause DPOR		20.3805	1.7E-09***	Reject
DPOR does not Granger Cause CAR	2404	1.18027	0.30737	Do not Reject
CAR does not Granger Cause DPOR		2.57339	0.04349**	Reject

Source: Author's estimation, 2018

Note that *** and ** represents rejection of Ho at 1% and 5% respectively

The result of the Granger causality among the financial variables under consideration is presented in Table 9 to show the direction of causal relations between each pair of the financial variables such as ROE RERA, CAR and DPOR. The result shows that, there was a unidirectional causality between ROE and CAR; ROE and DPOR; RERA and CAR; and capital adequacy and DPOR and bidirectional causality between DPOR and RERA. This is evident from the estimated probability of F-statistic values given as 0.039, 0.027, 0.013, 0.000, 0.002 and 0.004 < 0.05.

Thus, i) ROE Granger causes capital adequacy and this implies that banks' returns determine their ability to be adequately capitalized.

ii) ROE Granger causes DPOR, implying that the more banks earn from equity, the more they implement payout policy as against retention policy.

iii) RERA Granger causes capital adequacy and this implies that the more banks adopt dividend reinvestment plans, the more they generate earnings to increase their assets and solidify their capital base. This will not only serve as a cushion in times of shocks but promote their future growth.

5. Conclusions and Recommendations

Having established that RERA Granger causes bank performance using ROA and further conducting a robustness check using ROE as the measure of financial performance, our findings revealed that ROE Granger causes DPOR (unidirectional causality between ROE and DPOR) while neither DPOR nor RERA Granger cause ROE. This implies that when banks generate income from total shareholders' equity, they will stick to payout policy even though this policy does not enhance their performance (ROE) in SSA. In conclusion, paying out does not create value because the unidirectional causality was from banks' ROE to DPOR. A win-lose game will result if banks continue to payout, as is the case with SSA banks. An optimal dividend policy that promotes the firm's future growth must cater for future financing and increased assets. This finding is logical as what is generated should normally determine what will be paid out. However, given that SSA regional economic growth depends solely on the financial system and that the banking sector is at the forefront of the financial landscape, banks should adopt policy that will enhance growth.

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