

## ASSESSING THE CONSEQUENCES OF DIVIDEND POLICY ON FINANCIAL PERFORMANCE OF DOMESTIC SYSTEMICALLY IMPORTANT BANKS IN NIGERIA



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### ABSTRACT

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In Nigeria, five banks have been designated as ‘too-big-to-fail’ given their critical importance to the wellbeing of the Nigerian economy. It is thus of critical importance to understand the factors that are important in ensuring that these Domestic Systemically Important Banks (D-SIBs) continue to perform well financially for the foreseeable future. This importance is further heightened by the fact that at the end of 2020, the Central Bank of Nigeria voiced its concern regarding the decline in the capital adequacy ratio and the increase in the ratio of non-performing loans of Nigerian banks. It is against this backdrop that this study investigates the effect of dividend policy on all of Nigeria’s D-SIBs. It determined whether the influence was homogenous among the selected banks. It found that in the short run, the effect of dividend policy on profitability is heterogenous among banks. This study adopted an ex post facto research design, with dividend policy and bank performance data obtained from the audited financial statements and official annual reports of five D-SIBs (First Bank, GTB, Zenith Bank, UBA, and Access Bank) over a 10-year period (2011–2020). The data were analyzed using panel regression and pooled mean group (PMG) estimators. The study observed that dividend policy had significant impact on the profitability and efficiency of these five D-SIBs, a partial impact on their valuation, and no impact on their liquidity and solvency. Managers of D-SIBs in Nigeria must find a balance between how much dividends they pay to their shareholders and how much they retain to ensure continued profitability.

**Contribution/Originality:** This study contributes to the existing literature by assessing the influence of dividend policy on five designated Domestic Systemically Important Banks (D-SIBs) in Nigeria. In another academic contribution, the study will also ascertain if the effect of dividend policy on profitability is homogenous in D-SIBs.

### 1. INTRODUCTION

Dividends paid out by companies around the world are forecast to drop by as much as 35% in 2020 compared to 2019 due to the negative consequences of the Covid-19 pandemic on the global economy (Howcroft, 2020). The dividend signaling theory explains that this phenomenon is due to the fact that companies are pessimistic about their growth prospects and are sharing their pessimism with current and potential investors by reducing the amount of dividends they will pay shareholders in 2020 (Michael, 2019). The theory thus posits that higher dividend payouts are a signal of management optimism about a firm’s prospects, while reduced dividend payouts are a signal to investors about the management’s pessimism about a firm’s future growth prospects (Aduda & Ongoro, 2020). In other words, a firm’s dividend policy from year to year should have a significant impact on its performance; a higher

than industry average dividend payout should have a significant positive impact on a firm's financial performance, while a relatively lower dividend payout should have a significant negative impact on a firm's financial performance (Turakpe, 2020).

The reality of course is that, like any other theory, the dividend signaling theory cannot fully capture the actual complexities of the real world. The decision-making process is much more complex as managers have to consider many issues, some of which include the industry within which they operate, their growth expansion plans, and the amount of debt the firm currently services (Ain, Yuan, Javaid, Usman, & Haris, 2020; Evodila, Erlina, & Kholis, 2020; Trinh, Cao, Dinh, & Nguyen, 2021). The complexity surrounding the dividend policy decision is evidenced by the fact that empirical studies have found mixed results regarding the ability of the dividend signaling theory to explain the relationship between dividend payouts and the financial performance of firms (e.g., (Basse, Klein, Vigne, & Wegener, 2021; Hariyanto & Murhadi, 2021; Saens & Tigero, 2021)).

Like other publicly owned firms, public financial institutions are concerned about adopting the best dividend policy in order to ensure that their shareholders always believe that the future prospect of their investment is bright (Angel, 2021). Understanding to what extent a bank's dividend policy can predict its financial performance is arguably even more important than understanding this same relationship for other kinds of firms due to the crucial role banks play in determining the overall health of the global economy (Liu, 2021; Wang & Huang, 2021). Financial institutions facilitate economic activity by ensuring liquidity through the provision of affordable credit facilities to organizations, managing debt and equity markets, and distributing risk among different clientele (Shipalana & O'Riordan, 2020). Financial institutions are also a great determinant of how well a country performs in terms of GDP because they play a major role in shaping citizens' decisions on how much to invest in the economy and how much to save for a rainy day (Ribaj & Mexhuani, 2021). Financial institutions such as banks provide citizens with a safe and secure place to save their hard-earned incomes as opposed to keeping their money at home where it is more susceptible to being stolen (Diako, 2020).

The 2007/2008 global financial crisis triggered a series of bank regulation reforms centered on strengthening the regulation and supervision of the banking industry with the objective of ensuring that such a crisis never happens again (Lins, 2021; Schiozer, Abou Mourad, & Martins, 2021). Of particular concern to banking regulators was the fact that the many of the largest and most important financial institutions in developed and developing economies of the world were critically affected by the crisis and survival was due to governments' injection of funds (Barua & Barua, 2021; Czerny, Fu, Lei, & Oum, 2021). The future stability of these financial institutions, dubbed "domestic systemically important banks" (D-SIBs) and "global systemically important financial institutions" (G-SIFIs), was considered absolutely critical for the long-term sustainability of the global economy (Fagetan, 2021; Jabbour, 2021).

From a Nigerian point of view, the Central Bank of Nigeria (CBN) in collaboration with the Nigeria Deposit Insurance Corporation (NDIC) designated the following eight banks as D-SIBs in 2014: First Bank of Nigeria Limited (First Bank), Guaranty Trust Bank Plc (GTB), Zenith Bank Plc, United Bank for Africa Plc (UBA), Access Bank Plc, Skye Bank Plc, Ecobank Nigeria and Diamond Plc (Akonye, Okonkwo, & Okoye, 2019; Bayero, 2019; Yusuf & Tijani, 2019).

However, at the end of 2020, First Bank, GTB, Zenith Bank, Access Bank and UBA were the five qualified D-SIBs in Nigeria (Central Bank of Nigeria, 2021). All these banks are listed on the Nigeria Stock Exchange and are thus owned by shareholders. Designation of some banks as D-SIBs were included in the revised Bank and Other Financial Institutions (BOFIA) Act 2020 so as to subject them to enhanced regulation and supervision (Central Bank of Nigeria, 2021). Considering the importance of the financial health of D-SIBs to the overall stability of the Nigerian economy, this study empirically evaluates the influence of dividend policy on the financial performances of these 'too-big-to-fail' banks.

The CBN released its 2020 annual report on the state of the Nigerian Banking Industry and there were two issues that were causes for concern. The first concern was the fact that the average capital adequacy ratio fell from 15.5% in October, 2020 to 15.1% in December, 2020, while the second concern was that the ratio of non-performing loans increased from 5.7% to 6% over the same three-month period (Anaeto, Eche, Abubakar, & Salawu, 2021). The implication of these two metrics is that Nigerian banks had difficulty in getting some customers to pay back their loans and could not establish enough of a capital buffer to overcome the losses from these non-performing loans (Anaeto et al., 2021). The capital adequacy ratio (CAR) is one of the most important indicators of the health of a nation's banking industry as it indicates the solvency of a nation's financial system and thus its overriding stability and efficiency (Hayes, 2020). The fact that the CAR of the Nigerian banking industry declined in 2020 is something that policy makers and financial analysts will be wary of going forward.

A review of recent scholarship on bank performance revealed that dividend policy has been hypothesized as an important factor in determining bank performance (Al-Homaidi, Farhan, Alahdal, Khaled, & Qaid, 2021; Batatineh, 2021; Johari, Chronopoulos, Scholtens, Sobiech, & Wilson, 2020). The results of empirical studies that tested this hypothesis have provided mixed results regarding the actual impact of dividend policy on the financial performance of banks. Some studies found that dividend policy had a positive effect on the financial performance of banks (e.g.,

(Baral & Pradhan, 2018; Kumar, Kanujiya, & Kumar, 2018; Olarewaju, Migiro, & Sibanda, 2018)), while others found no impact (e.g., (Oloruntoba & Adeleke, 2018; Singh, 2019)) or a negative impact (e.g., (Handorf, 2016; Rasintha, 2017)) between the two variables.

This study investigates the effect of dividend policy on all of Nigeria's most important banks which have been designated as D-SIBs with data from 2011 to 2020. Many studies have investigated the impact of dividend policy on the financial performances of various Nigerian banks, including some of those designated as D-SIBs (e.g., (Ideweke & Murad, 2019; Musa, Abubakar, & Garba, 2020; Olarewaju et al., 2018; Ugwu, Onyeka, & Okwa, 2020)). The results of these studies were mixed with some finding that dividend policy had a positive impact on bank profitability (e.g., (Ideweke & Murad, 2019; Olarewaju et al., 2018; Ugwu et al., 2020)), while others found no significant relationship between dividend policy and bank profitability (e.g., Musa et al. (2020)). However, as far as the researcher is aware, no study has examined the effect of dividend policy on all five Nigerian banks based on their designation as D-SIBs at the same time in a single study. This study addresses this important unexplored research problem.

Another problem with the extant literature on the impact of dividend policy on the performance of Nigerian banks is the fact that these studies focused primarily on profitability or valuation as proxies of financial performance (e.g., (Ideweke & Murad, 2019; Musa et al., 2020; Ugwu et al., 2020)). This only provides a narrow understanding of what constitutes the financial performance of banks in Nigeria. This study addresses this problem by examining the financial performance of Nigerian D-SIBs from a more comprehensive perspective by examining five dimensions of performance (profitability, liquidity, solvency, efficiency and valuation), and not from the perspectives of profitability and valuation alone. Stobierski (2020) explains that the overall financial health of a firm can be determined by looking at these five key aspects of a firm's financial performance. This will provide a better understanding of the overall impact of dividend policy on the financial performance of the five banks in Nigeria currently designated as 'too-big-to-fail'. In another academic contribution, the study will also ascertain if the effect of dividend policy on profitability is homogenous in D-SIBs.

Considering the central role these financial institutions play in the overall health of the Nigerian economy, this study is important as it will provide empirical evidence of the impact of dividend policy on the financial performances of the most important financial institutions, the domestic systemically important banks (D-SIBs). The findings of this study will be very useful for the Central Bank of Nigeria as it will help in deciding what policy direction to pursue in the context of determining the optimal dividend policy that D-SIBs should adopt to help improve the overall financial health. The study will also be of great interest to managers of D-SIBs, who can utilize the findings to understand the impact of their dividend policy on their overall financial performance over the last decade and make the necessary changes to their dividend policy as a proactive measure to improve their performance sustainably, and even develop a competitive advantage over their competitors. Shareholders of D-SIBs will benefit from the findings of this study as it will provide them with evidence of whether a pro-dividend strategy or a pro-retention strategy is more beneficial for the financial performances of the banks they own. Individual and institutional customers of D-SIBs can also benefit from this study's results by having an understanding of the overall financial health of these banks.

The rest part of the paper includes a literature review, methodological notes, data analysis, results and the conclusion.

## 2. LITERATURE REVIEW

Several studies have examined the influence of dividend policies on the financial performance of banks (Agyei & Marfo-Yiadom, 2011; Duraipandian, 2015; Handorf, 2016; Sulhan & Purnamasari, 2020; Zia & Kochan, 2017), with some making references to non-banking sectors (Adeiza, Sabo, & Abiola, 2020; Kanakriyah, 2020; Kim & Kim, 2019), and diverse results were recorded.

Agyei & Marfo-Yiadom (2011) examined the effect of dividend policy on the financial performance of 16 commercial banks in Ghana utilizing financial statement data from the banks over a five-year period (1999–2003). The results of the regression analyses revealed that dividend policy has a significant positive impact on the financial performance of commercial banks in Ghana. Similarly, Duraipandian (2015) and Kumar et al. (2018) sought to determine if dividend policy affected the financial performance of listed banks on the Nifty Bank Index in India. Likewise, the study by Baral & Pradhan (2018) focused on the Nepali banking industry to evaluate the effect of dividend policy on the share prices of ten listed commercial banks. Financial data for 2012–2013 and 2016–2017 was used to achieve the study's objectives. Four proxies (dividend announcements, earnings per share, price equity ratio and dividend payout ratio) were used to measure the banks' dividend policies. Regression analyses revealed that dividend announcements, earnings per share and the price equity ratio all had a significant positive effect on the share prices of the ten listed commercial banks; the dividend payout ratio did not have a significant effect on share price.

Handorf (2016) and Zia & Kochan (2017) evaluated the impact of dividend policy on the share value of US banks with a time span that covered the periods before and after the global financial crisis of 2007/2008. However, unlike

Handorf (2016), who singled out systemically important US banks, Zia & Kochan (2017) captured the entire US banking industry. Specifically, the data were split into three time periods: 1) pre-financial crisis (the first quarter of 2003 to the second quarter of 2007), 2) financial crisis period (the fourth quarter of 2007 to the fourth quarter of 2008) and 3) the post-financial crisis period (the first quarter of 2009 to the last quarter of 2013). Dividend policy was conceptualized as size of dividend cuts by banks during the three time periods, while share value was determined by examining the share prices of these banks during the time periods under consideration. Regression analyses revealed that dividend cuts did not lead to significant reductions in the share value of the US banks considered in the study during the pre-financial and financial crisis time periods. However, dividend cuts in the post-financial crisis period had a significant negative effect on the share values of the US banks under consideration.

Sulhan & Purnamasari (2020) assessed the impact of dividend policy, funding policy and investment policy on the firm value of 43 banks listed on the Indonesia Stock Exchange. The assessment was made based on financial data obtained from financial statements covering the years 2013–2017. Although the authors did not mention how each variable was measured, the results of the partial least squares analyses revealed that only investment policy had a significant positive impact on bank value. Biza-Khupe & Themba (2016) investigated the relationship between financial performance and the dividend payouts of 12 listed companies from management, financial services, and retail and property development industries. The data were obtained from the financial statements of the 12 companies over an unspecified five-year period. Firm performance served as the independent variable and was measured using net operating profits after tax, while dividend payouts were measured using total dividends paid during the five-year period covered by the study. Correlation analysis revealed that the financial performances of the 12 listed firms were positively related with their dividend payouts.

In Nigeria specifically, Olorunoba & Adeleke (2018) examined the influence of dividend policy in Zenith Bank Plc as focal study point. The results of the ordinary least squares regression revealed that the three measures of dividend policy had no significant impact on the share price of Zenith Bank over the ten-year period covered by the study. Also, Olarewaju et al. (2018) evaluated data from 250 commercial banks across 30 Sub-Saharan countries (including Nigeria) in order to determine if dividend payout can predict financial performance of commercial banks over a ten-year period (2006–2015). Return on assets was used to measure banks' financial performance, dividend payout was measured using the dividend payout ratio and the retention ratio, and the capital adequacy ratio was utilized as a control variable as it is a statutory requirement for all commercial banks considered in the study. Idewebe & Murad (2019) focused on 15 deposit money banks quoted on the Nigerian Stock Exchange relying on data from the banks' financial statements for the years 2009–2014. However, unlike Olarewaju et al. (2018), financial performance measured using return on equity served as the study's independent variable, dividend policy was measured using the dividend payout ratio, and dividend yield served as the dependent variable. Regression analyses revealed that return on equity had a significant positive effect on the dividend payout ratio, while it had an insignificant negative effect on dividend yield.

Ajibade, Amuda, & Olurin (2019) provided an inter-country comparison of the effect of dividend policy on the financial performances of manufacturing firms by testing the hypothesis in a Nigerian and Kenyan context. Data were collected from the financial statements of ten conveniently selected manufacturing firms (five from Nigeria and five from Kenya) covering the period from 2008 to 2017. Dividend policy was measured using dividends per share, firm performance was measured using return on assets, and company size served as a moderating variable. The results of an ordinary least squares regression revealed that in Kenya, dividends per share had a positive effect on the firms' return on assets, while for the Nigerian sample, the effect was insignificant.

With respect to non-banking sectors, Adeiza et al. (2020) investigated the impact of dividend policy on the financial performances of two of Nigeria's most popular oil and gas companies, Total and Mobil, based on financial statements covering the period from 2015 to 2018. Dividend policy was measured using the dividend payout ratio, and financial performance was measured using both return on assets and return on equity. The exact data analysis technique was not explicitly mentioned by Adeiza et al. (2020), nor were the results clearly presented, which are significant weaknesses of the study, but it could be inferred that regression was utilized. The authors chose to present the analysis on a year-by-year basis rather than providing the overall impact of dividend policy on firm performance over the four-year period covered by the study. This decidedly cumbersome approach goes against the usual practice adopted by other studies (Rajverma, Misra, Mohapatra, & Chandra, 2019; Ting, Kweh, & Somosundaram, 2017). Total's dividend payout ratio had a significant negative effect on firm performance in 2015 and 2016 but an insignificant negative effect on firm performance in 2017 and 2018. Mobil's dividend payout ratio only had a significant negative effect on firm performance in 2015.

Kim & Kim (2019) investigated the impact of dividend policy on the performances of listed US firms from 1993 to 2015. The firms considered were divided into four groups based on their dividend policies: a) firms that had never offered dividends or share repurchases by choice, b) firms that offered dividends, but no share repurchases, c) firms that had never paid dividends but had issued share repurchases, and d) firms that had offered dividends as well as share repurchases. A comparison of the future performances (measured by operating income) of these four categories



of firms revealed that the first category, that never offered dividends or share repurchases despite having the ability to do so, outperformed the other three categories of firms.

Kanakriyah (2020) investigated the impact of dividend policy on firm performance among 92 firms listed on the Amman Stock Exchange in Jordan. Dividend yield and dividend payout ratio were used to measure dividend policy, return on assets and return on equity were used to measure firm performance, and current ratio, leverage ratio and firm size served as control variables. Data on the various variables were obtained from the financial statements of the 92 firms over the period from 2015 to 2019. Regression analyses revealed that both proxies of dividend policy had a positive and significant impact on both proxies of firm performance. Murtaza, Noor-Ud-Din, Aguir, & Batool (2020) investigated the effect of dividend policy on the performance of 42 chemical manufacturing firms listed on the Pakistan Stock Exchange utilizing financial statement data from 2012 to 2017. The dividend payout ratio was used to measure the dividend policy, while return on assets was used to measure firms' financial performance. The results of the panel regression analyses revealed that the dividend payout ratio had a significant positive impact on the 42 firms under consideration. Musa et al. (2020) provided insight regarding the impact of dividend policy on firm performance among 13 listed firms on the Nigerian Stock Exchange that provide different consumer goods and services to the Nigerian populace. Data were collected for an eight-year period (2010–2017) from the financial statements of the 13 firms under consideration. Dividend policy was measured using the dividend payout ratio and dividend yield, while firm performance was measured using return on assets and return on equity. The results of the regression analyses revealed that dividend policy had no significant effect on firm performance. Interestingly, Ugwu et al. (2020) investigated the relationship between dividend policy and financial performance using the same type of firms (Nigerian consumer goods firms) that Musa et al. (2020) explored. However, they utilized data from fewer years (2015–2019) and examined fewer companies (10 rather than 13) than Musa et al. (2020). On the other hand, they used three proxies (dividend payout ratio, earnings per share and dividends per share) to measure dividend policy compared to Musa et al. (2020), who used two proxies (dividend payout ratio and dividend yield). However, unlike Musa et al. (2020), who used two proxies for firm performance (return on assets and return on equity), Ugwu et al. (2020) only used return on equity. Results of the regression analyses revealed that only dividend per share had a significant positive impact on firm performance. It is interesting to note that both Musa et al. (2020) and Ugwu et al. (2020) found that the dividend payout ratio had no significant impact on firm performance among Nigerian consumer product firms.

### 3. METHODOLOGICAL NOTES

#### 3.1. Model Specification

In line with Abdou, Ellelly, Elamer, Hussainey, & Yazdifar (2021); Abu, Khan, Mather, & Tanewski (2020) and He, Tian, Yang, & Zuo (2020), the following model is adopted for this research:

$$FP_t = \varphi_0 + \varphi_1 DPR_t + \varphi_2 RR_t + e_i \quad (1)$$

Where FP = financial performance, DPR = dividend payout ratio, RR = retention ratio,  $e_i$  = error term, and  $\varphi_0$  is constant.

In this study, five aspects of financial performance are measured – profitability ratio, liquidity ratio, solvency ratio, efficiency ratio, and valuation ratio. Therefore, the study will run five different multiple regressions as follows:

$$PR_t = \varphi_0 + \varphi_1 DPR_t + \varphi_2 RR_t + \varphi_3 LR_t + \varphi_4 SR_t + \varphi_5 ER_t + \varphi_6 VR_t + e_i \quad (2)$$

$$LR_t = \varphi_0 + \varphi_1 DPR_t + \varphi_2 RR_t + \varphi_3 PR_t + \varphi_4 SR_t + \varphi_5 ER_t + \varphi_6 VR_t + e_i \quad (3)$$

$$SR_t = \varphi_0 + \varphi_1 DPR_t + \varphi_2 RR_t + \varphi_3 PR_t + \varphi_4 LR_t + \varphi_5 ER_t + \varphi_6 VR_t + e_i \quad (4)$$

$$ER_t = \varphi_0 + \varphi_1 DPR_t + \varphi_2 RR_t + \varphi_3 PR_t + \varphi_4 LR_t + \varphi_5 SR_t + \varphi_6 VR_t + e_i \quad (5)$$

$$VR_t = \varphi_0 + \varphi_1 DPR_t + \varphi_2 RR_t + \varphi_3 PR_t + \varphi_4 LR_t + \varphi_5 SR_t + \varphi_6 ER_t + e_i \quad (6)$$

Where PR = profitability ratio, LR = liquidity ratio, SR = solvency ratio, ER = efficiency ratio, and VR = valuation ratio. Where applicable, each of the variables are adopted as control variables following Le, Yin, & Zhao (2020),  $\varphi_0$  is the constant, and  $\varphi_1$  to  $\varphi_6$  are the parameters to be estimated. This study relied on secondary data obtained from the audited financial statements and official annual reports of the five D-SIBs over a ten-year period (2011–2020).

#### 3.2. Method of Data Analysis

To achieve the aim of this research, this paper adopted the panel pooled OLS estimation technique in line with Purwaningsih (2020); Rehan, Alvi, & Hussein (2020); and Siladjaja & Anwar (2020). The data were analyzed with both the random effects and fixed effects models, and the Hausman test was used to determine the most appropriate model for interpretation. Robust standard errors that control for heteroscedasticity were used (Driscoll & Kraay, 1998), and cross-sectional dependency was adopted for a robustness check. Again, to ascertain whether the effect of dividend policy on profitability is homogenous across all the five D-SIBs in Nigeria, this study followed the panel

estimation approach using the pooled mean group (PMG) estimator used by Pesaran, Shin, & Smith (1999) and Pesaran, Shin, & Smith (2001), which is a dynamic panel ARDL approach used to determine both the short-term and long-term effects.

In general, an ARDL panel (p, q, q..., q) model can be established as follows:

$$y_{it} = \sum_{j=1}^p \delta_{ij} y_{i,t-j} + \sum_{j=0}^q \beta_{ij} X_{i,t-j} + \gamma_i + \varepsilon_{it} \tag{7}$$

Where  $y_{it}$  stands for the dependent variable;  $(X'_{it})'$  is all the independent variables assumed to be integrated at I(0) or I(1);  $\delta_{ij}$  signifies the coefficient of the estimated lag of the dependent variable;  $\beta_{ij}$  is the coefficient of the independent variables to be estimated;  $\gamma_i$  represents the fixed effects time and panel members;  $p$  and  $q$  are the optimum lag orders which are estimated from the unrestricted model; and  $\varepsilon_{it}$  represents the error term.

For the benefit of this research, the augmented ARDL panel (p, q, q..., q) error correction model is represented in Equation 8 as follows:

$$\begin{aligned} \Delta PR_{it} = & \theta_i [PR_{i,t-1} - \phi'_i(DPR_t + RR_t + LR_t + SR_t + ER_t + VR_t)] + \sum_{j=1}^{p-1} \lambda_{ij} \Delta PR_{i,t-j} + \\ & \sum_{j=0}^{q-1} \phi'_{ij} \Delta DPR_{t-j} + \sum_{j=0}^{q-1} \phi'_{ij} \Delta RR_{t-j} + \sum_{j=0}^{q-1} \phi'_{ij} \Delta LR_{t-j} + \sum_{j=0}^{q-1} \phi'_{ij} \Delta SR_{t-j} + \sum_{j=0}^{q-1} \phi'_{ij} \Delta ER_{t-j} + \\ & \sum_{j=0}^{q-1} \phi'_{ij} \Delta VR_{t-j} + \alpha_i + \varepsilon_{it} \end{aligned} \tag{8}$$

Notes:  $\theta_i$  = the coefficient for speed of adjustment to equilibrium, which is expected to be less than 0.

$\phi'_i$  = represents the long-run coefficient.

$ECT = [PR_{i,t-1} - \phi'_i(DPR_t + RR_t + LR_t + SR_t + ER_t + VR_t)]$  stands for the error correction term to be estimated.

$\lambda_{ij}$  and  $\phi'_{ij}$  stand for the coefficients of the dynamic in the short run.

All other variables remain as previously described.

The unit root tests developed by Im, Pesaran, & Shin (2003) and Levin, Lin, & Chu (2002) were also deemed suitable for use in this study.

#### 4. ANALYSES AND RESULTS

Results in Table 1 disclose that none of the variables are highly correlated with each other. Thus, all the variables can be estimated in one regression analysis. Azu, Jelivov, Aras, & Isik (2021) emphasized that when variables are correlated, it should be separated in a regression analysis, otherwise the issue of multicollinearity will emerge.

The stationarity test results presented in Table 2 reveal that the dividend payout ratio, dividend retention ratio, liquidity ratio and valuation ratio are stationary at level, while the profitability ratio, solvency ratio and efficiency ratio are stationary at first difference.

Table 1. Correlation matrix.

Variable	DPR	RR	PR	LR	VR	SR	ER
DPR	1						
RR	0.369	1					
PR	0.112	0.243	1				
LR	0.128	0.046	0.110	1			
VR	-0.218	-0.130	0.210	0.118	1		
SR	-0.117	0.076	-0.602	-0.012	-0.295	1	
ER	-0.115	0.332	-0.252	0.007	-0.075	0.447	1

Table 2. Unit root test result.

Variable	LLC		IPS	
	LEVEL	FIRST	LEVEL	FIRST
Dividend Payout Ratio	-5.316***	-10.244***	-2.258***	-3.037***
Retention Ratio	-1.389*	-6.375***	-0.144	-3.969***
Profitability Ratio	3.567	3.187	1.458	-1.530*
Liquidity Ratio	-4.764***	-8.475***	-1.614*	-3.040***
Valuation Ratio	-1.394*	-4.707***	-1.474*	-2.537***
Solvency Ratio	1.561	-2.507***	-0.469	-1.484*
Efficiency Ratio	100.5	76.40	-0.621	-1.446*

Note: \* denotes significance at the 10% level; \*\*\* denotes significance at the 1% level.

The results of the analyses are reported in Tables 3 to 5 and Appendices 1 and 2. The Hausman test prefers a random effects estimation technique, which is reported in Table 3, while the fixed effects and robustness estimations are reported in Appendices 1 and 2. In each of the estimations, the dividend policy is captured in two perspectives: dividend payout ratio and retention ratio. This enables the outcome to give the direction in which dividend policy influences profitability. In the first instance, the dividend payout ratio (DPR) has a positive effect on the profitability of D-SIBs as a measure of financial performance, which suggests that a percentage increase in the dividend payout ratio causes an approximate increase of 0.260% in financial performance as explained by their profitability ratio and is statistically significant at 1%. On the other hand, the retention ratio (RR) variable has a panel regression coefficient of -0.020. This implies that the retention ratio has a negative effect on the profitability of D-SIBs as a measure of financial performance, suggesting that, with a percentage increase in the retention ratio, the banks will see an approximate decrease of 0.020% in financial performance as explained by their profitability ratio. This result is statistically significant at 5%.

Again, the analysis showed that the dividend payout ratio has a positive effect on the banks' liquidity as measure of performance but falls short in the level of significance. Also, the effect of the dividend retention ratio is reported to have a positive coefficient of 0.893 but is not statistically significant. This implies that there is a likelihood that payout policy and retention policy could lead to an increase in liquidity, but such an influence is less noticeable and is statistically irrelevant, which means that this result cannot be generalized. Furthermore, these findings are not consistent with Mamaro & Tjano (2019).

In another dimension, the research assessed the influence of dividend policy on the solvency of D-SIBs in Nigeria. It was discovered that the dividend policy variable, as represented by the dividend payout ratio, has a panel regression coefficient of -0.539, which implies that the dividend payout ratio has a negative effect on the banks' solvency as a measure of performance. This suggests that with a percentage increase in the dividend payout ratio, the banks will see a decrease of approximately -0.539% in the solvency ratio. This result is not statistically significant, but with the retention ratio as the independent variable, there is an indication of inconsistency with the result. A coefficient of 0.0421 was reported, but it is not statistically significant. It can therefore be concluded that there is an insignificant and non-generalizable effect of the retention ratio on the solvency ratio, just as there is also an insignificant and non-generalizable effect of the dividend payout ratio on the solvency ratio. Solvency ratios are used to measure firms' solvency and it includes such ratios as the debt-to-assets ratio, equity ratio, interest coverage ratio and debt-to-equity ratio (Rahman, Yousaf, & Tabassum, 2020). This has not been used as a proxy for financial performance when measuring the effect of dividend policy, hence forming one of the innovations of this research.

**Table 3.** Analysis of the effect of dividend policy on D-SIB's performance (random effect).

Variable	PR	LR	SR	ER	VR
Dividend Payout Ratio	0.260*** (0.075)	10.52 (32.43)	-0.539 (1.620)	-0.173* (0.154)	-5.022** (3.085)
Retention Ratio	-0.020** (0.009)	0.893 (3.710)	0.0421 (0.185)	0.032* (0.017)	36.79 (366.2)
Liquidity Ratio	-0.0002 (0.001)	-	-0.001 (0.009)	-3.835 (0.001)	70.86*** (11.76)
Profitability Ratio	-	-31.57 (63.42)	-3.529 (3.122)	0.962*** (0.259)	8.134 (6.120)
Solvency Ratio	-0.010 (0.009)	-0.278 (3.432)	-	0.034** (0.016)	-174.8 (337.2)
Efficiency Ratio	0.300*** (0.081)	-1.646 (35.55)	3.696** (1.660)	-	-1.221 (3.500)
Valuation Ratio	6.07e-06 (4.57e-06)	0.007*** (0.001)	-4.49e-05 (8.66e-05)	-2.926 (8.376)	-
Constant	-0.121 (0.095)	2.212 (35.98)	5.559*** (1.524)	0.415*** (0.158)	3.133 (3.507)
Observations	50	50	50	50	50
Number of Banks	5	5	5	5	5
Year FE	YES	YES	YES	YES	YES

Note: Standard errors are in parentheses, \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

The analysis showed that the dividend payout ratio has a panel regression coefficient of -0.173, which implies that it has a negative effect on the banks' efficiency as a measure of financial performance and is statistically significant. In other words, with a percentage increase in the dividend payout ratio, the banks will see a decrease in

its efficiency ratio. With retention policy as the independent variable, the estimated result is reportedly a positive coefficient of 0.032 and is statistically significant at 10%. The conclusion here is that there is a significant and generalizable effect of dividend policy on efficiency as a measure of performance. The results suggest that different proxies show different directions of effect and are therefore not robust. The outcome in part corroborates with Kumar et al. (2018) but differs from Sulhan & Purnamasari (2020), who assessed the effect of dividend policy, funding policy and investment policy on the firm value of 43 banks listed on the Indonesia Stock Exchange. With data for 2013–2017, it was discovered that only investment policy had a significant positive effect on bank value. In another dimension, the effect of dividend policy on the valuation of D-SIBs in Nigeria was evaluated. The dividend payout ratio was found to have a panel regression coefficient of -5.022, which implies that it has a negative effect on the banks' valuation as a measure of performance. This suggests that with a percentage increase in the dividend payout ratio, the banks will see an approximate decrease of 5.022% in its performance as explained by the valuation ratio. This result is statistically significant at 5%. The result is robust and consistent with fixed effects and the robustness check. However, the effect of the retention ratio is not statistically significant, although it reported a positive coefficient. Therefore, one can conclude that there is a significant and generalizable effect of dividend policy on the banks' valuation as a measure of performance, which emanates from the direction of dividend payout policy rather than dividend retention policy. Valuation is a market-based measure of a firm's financial performance (Boyer, 2020). Valuation ratios help potential investors to assess the investment potential of a firm, and include price to earnings, price to book value, price to sales and price to cash flow. The dividend payout ratio is said to have a negative effect on the valuation ratio as measure of performance which can be generalized. This is in line with Rajverma et al. (2019), who explained that these results revealed that dividend payouts reduced the amount of free cash available to the firms, which, in turn, had a negative effect on their profitability. It evaluated the effect of dividends and ownership structure on the profitability of 421 non-financial firms listed on the National Stock Exchange of India for the period from 2007 to 2017. Last, a PMG estimation was conducted to ascertain whether there are any significant variations on the effect of dividend policy on profitability across banks designated as D-SIBs in Nigeria. The results are reported in Table 4. It determined the homogenous long-term and short-term effects and the short-term heterogeneous effect. There is no indication of a long-term relationship since the coefficient of the error correction term is negative but not statistically significant. The short-term effect is consistent with the long-term effect, which indicates that there is no significant homogenous effect of the dividend payout ratio on the profitability ratio. Similarly, with the retention ratio as an independent variable, both the short-term and long-term homogenous coefficients are not statistically significant, albeit negative.

**Table 4.** Regression analysis of homogeneous effect of dividend policy on profitability ratio.

Short Term		Long Term	
Variable	Coefficient	Variable	Coefficient
ECT	-0.133 (0.233)	-	-
D. Dividend Payout Ratio	-0.042 (0.043)	Dividend Payout Ratio	-0.034 (0.037)
D. Retention Ratio	-0.002 (0.009)	Retention Ratio	0.001 (0.002)
D. Profitability Ratio	-0.0005 (0.0004)	Profitability Ratio	-0.0001 (0.0001)
D. Liquidity Ratio	-0.003 (0.002)	Liquidity Ratio	0.0102** (0.004)
Constant	0.001 (0.005)	-	-
Observations	45	Observations	45
Year FE	YES	Year FE	YES

Note: Standard errors are in parentheses, \*\*  $p < 0.05$ .

Individually, as reported in Table 5, the heterogeneous short-term effect reveals that UBA and Zenith Bank have positive coefficients of 0.009 and 0.006, respectively, and are statistically significant at 10% and 5%, respectively, while Access Bank experienced a negative coefficient of -0.214 and is statistically significant at 10%. Access Bank reported a positive dividend payout ratio coefficient of 0.025 and is statistically significant at 5%, while GTB reported a negative coefficient of -0.034 and is statistically significant at 1%.



Table 5. Regression analysis of the heterogeneous effect of dividend policy on profitability ratio.

Variable	(1)	(2)	(3)	(4)	(5)
	GTB	UBA	ACCESS	FIRST	ZENITH
ECT	-1.041*** (0.034)	0.049 (0.064)	-0.066 (0.081)	0.239** (0.120)	0.156** (0.066)
D. Dividend Payout Ratio	-7.491 (0.035)	0.009* (0.005)	-0.214* (0.111)	-0.012 (0.007)	0.006** (0.003)
D. Retention Ratio	-0.034*** (0.005)	0.003 (0.005)	0.025** (0.012)	0.001 (0.001)	-0.005 (0.003)
D. Profitability Ratio	2.911* (1.591)	-0.002 (0.002)	-4.841** (2.031)	-0.0002 (0.0003)	-5.051* (3.011)
D. Liquidity Ratio	-0.013*** (0.003)	-0.003*** (0.001)	-0.001 (0.003)	-0.001 (0.001)	0.001** (0.001)
Constant	0.021 (0.023)	0.0002 (0.002)	-0.01* (0.006)	-0.001 (0.005)	-0.005** (0.002)
Observations	45	45	45	45	45
Year FE	YES	YES	YES	YES	YES

Note: Standard errors are in parentheses, \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

This indicates that there is a heterogeneous effect of dividend policy on profitability. This is captured as one of the innovations of this research as previous researchers have omitted this aspect (Agyei & Marfo-Yiadom, 2011; Handorf, 2016).

## 5. CONCLUSION

The aim of this research was to assess the consequences of dividend policy on the financial performance of domestic systemically important banks in Nigeria. Dividend policy was captured in two standpoints – dividend payout ratio and dividend retention ratio – while five aspects of financial performance were measured – profitability ratio, liquidity ratio, solvency ratio, efficiency ratio, and valuation ratio. The pooled OLS with random effects estimation technique was preferred.

The outcome demonstrates that dividend policy affects financial performance differently. The dividend payout ratio (DPR) has a positive effect on profitability, while retention ratio (RR) has a negative effect, and these effects are heterogeneous among the banks examined. The effect of both the dividend payout ratio and the retention ratio on liquidity are not statistically significant. Also, it can be concluded that there is an insignificant and non-generalizable effect of the retention ratio on the solvency ratio, just as there is also an insignificant and non-generalizable effect of the dividend payout ratio on the solvency ratio. Again, the dividend payout ratio has a negative and significant effect on the banks' efficiency and valuation ratio. However, retention policy was found to have a positive and significant effect on the efficiency ratio, while its effect on the valuation ratio is not statistically significant. Thus, managers of D-SIBs in Nigeria must find a balance between the dividends they pay to their shareholders and how much they retain to ensure continued profitability.

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## APPENDIX

Appendix 1. Analysis of the impact of dividend policy on D-SIB's performance (fixed effect).

Variable	PR	LR	SR	ER	VR
Dividend Payout Ratio	0.316*** (0.081)	9.73 (35.96)	-0.553 (1.314)	-0.175* (0.164)	-2.671* (2.810)
Retention Ratio	-0.018* (0.01)	2.284 (3.779)	0.079 (0.136)	0.034* (0.018)	16.73 (294.0)
Liquidity Ratio	0.0002 (0.0005)	- -	0.005 (0.007)	-3.855 (0.001)	60.70*** (8.870)
Profitability Ratio	- -	27.10 (67.13)	0.540 (2.416)	0.965*** (0.262)	-977.5 (5.231)
Solvency Ratio	0.003 (0.014)	3.624 (5.040)	- -	0.036** (0.015)	-617.8 (378.8)
Efficiency Ratio	0.253*** (0.086)	-12.68 (36.04)	1.168 (1.279)	- -	966.9 (2.803)
Valuation Ratio	-1.19e-06 (6.37e-06)	0.010*** (0.001)	-0.0001 (8.08e-05)	-2.934 (8.368)	- -
Constant	-0.206 (0.126)	-18.39 (48.33)	7.371*** (1.103)	0.416*** (0.162)	4.435 (3.679)
Observations	50	50	50	50	50
R-Squared	0.625	0.690	0.355	0.67	0.726
Number of Banks	5	5	5	5	5
Year FE	YES	YES	YES	YES	YES

Note: Standard errors are in parentheses, \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

Appendix 2. Regression analysis of the impact of dividend policy on D-SIB's performance (robust).

Variable	PR	LR	SR	ER	VR
Dividend Payout Ratio	0.260** (0.124)	10.52 (18.34)	-0.539 (1.520)	-0.173* (0.095)	-5.022** (2.189)
Retention Ratio	-0.02** (0.01)	0.893 (0.904)	0.0421 (0.149)	0.032*** (0.009)	36.79 (145.0)
Liquidity Ratio	-0.0002 (0.0002)	- -	-0.001 (0.008)	(0.001) -2.926	70.86*** (8.173)
Profitability Ratio	- -	-31.57 (32.47)	-3.529*** (0.647)	0.962*** (0.201)	8,134*** (3,055)
Solvency Ratio	-0.01 (0.0071)	-0.278 (3.482)	- -	0.034** (0.017)	-174.8 (523.1)
Efficiency Ratio	0.300* (0.176)	-1.646 (36.77)	3.696** (1.785)	-3.835 -	-1.221 (4.283)
Valuation Ratio	6.07e-06 (4.04e-06)	0.007*** (0.001)	-4.49e-05 (0.0001)	- (8.486)	- -
Constant	-0.121 (0.101)	2.212 (26.46)	5.559** (2.259)	0.415*** (0.0264)	3.133 (4.248)
Observations	50	50	50	50	50
Number of Banks	5	5	5	5	5
Year FE	YES	YES	YES	YES	YES

Note: Standard errors are in parentheses, \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

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