The Effects Of COVID-19 On Macroeconomic Variables and The Performance of The Banking Sector in Ghana

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Abstract

The Banking industry of any economy plays a key role in inducing socioeconomic growth through its financial intermediation activities. Banks channel resources to productive areas that are fundamental to the progress of an economy. However, the emergence of COVID-19 since 2019 has left behind some worrying signals on the performances of both the real sectors and the financial sectors of many economies, particularly in Africa. Several lockdowns were experienced around the world including Ghana, which affected economic activities and performance of the banking industry. The objective of this study is to examine the effects of COVID-19 on the banking sector performance in Ghana. Two econometric techniques were used; namely, the pooled regression and the seemingly unrelated regression (SURE) techniques. The study employed two performance indicators; namely, Return on Asset (ROA) and Net Interest Margin (NIM) in order to check the robustness of the results. The aim of using SURE was to examine the objective of the study on bank-by-bank basis since there could be contemporaneous effects among the banks. The study considered the performances of ten banks for the period 2008-2020. This study used secondary data obtained from the financial statements of the sampled banks for the financial period from 2008 to 2020. The pooled results indicated that COVID-19 robustly reduced banking sector performance. Both the ROA and NIM results confirmed the negative effects of COVID-19 on the banking sector performance. For the macroeconomic variables, the result revealed that inflation exerted adverse effect on the performance of the banking sector whiles government expenditure and GDP per capita showed statistically significant positive impact on the operations of the banking sector. Bank size as bank specific factor has statistically significant positive effect on the operations of the banks. Similarly, interest rate even though reveals positive effect was statistically insignificant. On policy implication, the study recommends that there should be effective implementation of the necessary preventive and curative measures against COVID-19 and related pandemics, particularly the vaccination program. Also, the adoption of appropriate macroeconomic policy mix that has the potential of inducing economic growth becomes necessary. This could be the use of both expansionary fiscal and monetary policies. These policies will boost banking sector activities through general increase in savings, investment and economic activities.

Introduction

The banking sector plays a crucial role in the socio-economic growth of the economy through its impetus on the financial system of every country, especially the developing ones (Idun, 2021). The financial system of most countries in the world is made up of the financial institutions (consisting mainly of banks, loans and savings institutions) as well as financial markets (mainly of stock markets, bond markets, and money markets). The Banking sector plays an intermediating role between lenders and borrowers in the economy by channeling financial resources to the areas that need it most for economic growth and development (Agyeman et al. 2018). The dominant role played by the financial system involves the deployment of the mechanisms that facilitate smooth operations. An efficient financial system improves the flow of funds from savers to borrowers, provides good quality services for customers and promotes profitability. The role of the banking industry in converting funds from saving to investments propels economic growth and development (Arize et al. 2018, Levine et al., 2000).

The financial sector in Ghana and in many other countries in Africa is dominated by commercial banks (Bank of Ghana, 2020). The Banking industry is the engine of modern trade and commerce. The sector facilitates the mobilization of savings and investments for economic progress in the Ghana. It provides the needed finances to undertake meaningful economic activities for wealth creation (Guru et al. 2019). In Ghana, the banking sector accounts for about 70% of the financial sector (BoG, 2020). The survival of most firms hinges on the performance of banks (Guptha and Rao, 2018). Since banks constitute the backbone of business financing, the soundness of banking system cannot be compromised (Mhadib et al. 2019). For a bank to be successful as cooperate entity, then it should put in place the requisite measures to predict and minimise the risk associated with losses (Swamy & Dharani, 2018). Profit remains the surest source of funding the operations of many profit-oriented organisations, including banking institutions, hence a major pursued goal in the banking industry (Guru et al. 2019). Arize et al. (2018) posit that the factors propelling profitability in the banking sector are classified into internal and external, with the internal factors comprising banks specific features and attributes. The bank specific features include; volume of deposits, size of bank, structure of capital, loan amounts, and the state of innovation (Fidrimuc et al. 2015). The internal factors are affected by management decisions and goals to be achieved by the bank. The external factors on the hand are those factors outside of the control of the bank. They are closely connected with the macroeconomic environment of the country. These macroeconomic factors include the national income (GDP), inflation, competition, capital adequacy, money supply and interest rates.

It is worth noting that the stability of the macroeconomic environment serves as prerequisite for a stabilized banking system. Stable banking system promotes efficient and effective savings and investment decisions (Tadesse & Abafia, 2019). Efficient performance of the banking system in terms of transparent monetary and fiscal policies as well as financial stabilization are largely influenced by the state of the macroeconomic environment. For instance, monetary policies such as changes in interest rates influence the cost of capital with the attendant consequences on savings, investment and consumption decisions.

The recent occurrence of COVID-19 pandemic created an eyesore on the operations of the banking sector and for that matter their general economic performance in many nations (Aboagye, 2020). Each country

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in this world faced one economic consequence or the other relative to the pandemic on both the real sector performance (the robustness of the financial system) and the general outlook of the economies (Issahaku and Abu, 2020). Given the evolving nature of the COVID-19 pandemic, the full extent of its adverse consequences becomes difficult to examine, but job losses and increases in poverty levels were observed (Xu & Lien, 2021). The pandemic led to almost zero economic growth in many countries around the globe (Jackson, 2021). Stock market performances across the globe have been negatively affected. The Dow Jones Industrial Index reportedly fell by 36.4% between February 18, 2020 and March 23, 2020 (DJIA 2020). Most countries went the same route and created generous support measures for businesses and citizens. The COVID-19 pandemic has significantly affected countries around the world due to lockdowns. In some countries such as Italy and Spain, there was total lockdown for several days that affected not only the financial system but the real sector as well (Lewis et al. 2020). Policymakers are working on modalities to fashion out appropriate measures to reverse the negative economic impacts of the COVID-19 outbreak. The COVID-19 pandemic has triggered several studies on the performance of macroeconomic variables in many countries around the globe, hence a considerable body of evidence on the negative effects of COVID-19 on macroeconomic variables has been documented in the literature (Michael et al. 2021, Eko et al. 2021, Marwa et al. 2020, Narayan et al. 2020, Zhan et al. 2020, Issahaku et al, 2020). While some scholars focused attention on the effects of COVID-19 on the banking sector performance, others examined the broader consequences of the pandemic on the total economic performance of different countries.

Marwa et.al (2020) examined the global banking stability in the wake of COVID-19 outbreak. The study revealed that there was a strong evidence that COVID-19 outbreak has had detrimental impacts on financial performance across various financial markets around the globe. The study considered 1090 banks from 116 countries for quarterly periods during the period of 2019-20. Examining different bank-level characteristics across income-generation levels, the results were consistently observed for various regions (US, China, and others). The results show varied effects of the pandemic on alternative banking systems (i.e conventional and Islamic banking). The trend analysis revealed the negative impact of COVID-19 on the banking sector based on bank average performances and financial stability over quarterly periods. The negative consequences of the pandemic culminated into low profitability levels in the banking sector exacerbated by worsening assets risk, default risk, liquidity risk, among others.

Michael et. al (2021) examined the effects of COVID-19 on the stock market performance in Ghana. The results indicate that the COVID-19 pandemic had contributed to the deterioration in the stock returns volatility in Ghana by 8.23%. The study further revealed the existence of volatility clustering and asymmetric effect.

Narayan et al.(2020) posit that the introduction of travel bans, lockdowns and advancement of stimulus programmes to combat the COVID-19 menace have all impacted negatively on macroeconomic variables in most countries, including the G7 nations. The study reveals that such impacts on the macroeconomic variables have spillover consequences on the banking sector

In a post COVID-19 examination of the key factors that significantly affected levels of deposits and related banking activities among conventional and Islamic banks in Indonesia, Eko et. al (2021) posit that the

COVID-19 pandemic negatively impacted interest rates of conventional banks and the equivalent yield rate of Islamic banks also significantly affected depositors' trust.

2. Methodology

Relying on descriptive research design, this study employed the inductive approach to gain better understanding of the research problem. This study used secondary data obtained from the financial statements of the sampled banks for the financial period from 2008 to 2020. Also, the macroeconomic indicators were obtained from World Development Indicators bulletins.

Exploring macroeconomic variables and banking activities require the gathering of relevant information from the banking sector. Considering these conditions, using a purposive sampling technique was deemed appropriate for the selection of respondents for this study, due to data availability. Ten (10) banks were selected purposively. Consideration was given to the banks that were duly registered and have been in the system for a reasonable period of time (at least, 13 years old). These sampled banks are listed in Table 1.

Table 1: Sampled banks

No.	Bank
1	Ghana Commercial Bank (GCB)
2	Zenith Bank
3	Fidelity Bank
4	Prudential Bank
5	ADB
6	Stanbic Bank
7	ECOBANK
8	Cal bank
9	Republic bank
10	National Investment Bank (NIB)

Source: Author's own construct, 2021

Profitability Measurement

This study relies on the Return on Asset (ROA) and the Net Interest Margin (NIM) indicators of profitability. Return on Asset (ROA) is the ratio of net income after taxes divided by total assets (Qin & Pastory, 2012). The ROA serves as a good indicator of corporate profitability. It can be the basis of assessing the efficiency of a firm as well as the performance of management in respect of the utilization of corporate assets. ROA assesses the profit earned per cedi of assets, including how well the managers of banks use the banks real investment resources to generate profits (Alkassim, 2005). The higher the ratio, the higher the performance level and vice versa, ceteris paribus. ROA is a good measure of profitability over time and a useful tool for comparing profitability of one bank with others or with the industry performance indicator. ROA is an appropriate measure of bank profitability since it cannot be distorted by high equity multiplier (Donkor and Tweneboah, 2013). It is a key profitability measure as it considers the risk derived from financial leverage which Return on Equity (ROE) does not (Athanasoglou et al., 2005). ROA is considered superior to ROE in terms of the assessment of bank performance (Flamini et al., 2009). On the other hand, the Net Interest Margin (NIM) is a measure of the net return on banks earning assets, which include investment securities, loans and leases. It is the ratio of interest expense divided by

earnings assets. Net Interest Margin has been widely employed as a performance tool in many organisations. This study seeks to use the Rate of Return on Assets (RoA) and the Net Interest Margin (NIM) to evaluate the performance of the banks.

Econometric Technique

Two econometric techniques were used in this study, namely the Pooled Regression and Seemingly Unrelated Regression (SURE) techniques. Two bank performance indicators were measured in the study, namely the Return on Asset (ROA) and the Net Interest Margin (NIM). Following from Flamini et al. (2009), Sufian and Habibullah (2009), macroeconomic variables (GDP per capita, government spending, and inflation) have been included in the model. Therefore, we estimated two equations in logs form. The two equations were based on the return on asset and net interest margin, with the ROA and NIM as the dependent variables to analyze robustness;

$$lnroa_{it} = \alpha + \beta_1 lnrint_{it} + \beta_2 lngdppc_{it} + \beta_3 lngov_{it} + \beta_4 lninfl_{it} + \beta_5 lnbs_{it} + \beta_6 D1 + \varepsilon_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.1$$

$$lnnim_{it} = \gamma + \theta_1 lnrint_{it} + \theta_2 lngdppc_{it} + \theta_3 lngov_{it} + \theta_4 lninfl_{it} + \theta_5 lnbs_{it} + \theta_6 D1 + \mu_{it} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots.2$$

Where

$lnroa$= log of returns on assets,

$lnnim$ = log of net interest margin,

$lnrint$ = log of real interest rate

$lngdppc$ = log of GDP per capita

$lngov$ = log of government expenditure

$lninfl$ = log of inflation

$lnbs$ = log of bank size

t is the time which in this case is years and i is the bank.

$i = 1, 2\dots\dots\dots.N$

$t = 1, 2\dots\dots\dots\dots T$

α = constant in equation 1

γ = constant in equation 2

$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ are partial coefficients of equation 1

$\theta_1, \theta_2, \theta_3, \theta_4, \theta_5 \; and \; \theta_6$ are partial coefficients of equation 2

$D1$ is the dummy variable that measures the year of COVID-19 and defined as:

$$D1 = \begin{cases} 1 \; if \; year \; 2020 \\ 0, other \; wise \end{cases}$$

Therefore, we estimated two dummy variable regressions in order to have robust results.

The second technique, the Seemingly Unrelated Regression (SURE) was used to estimate equation by equation, in accordance with the banks in the sample. This allows for detail examination of the objectives of each bank in the sample. SURE, according to Zellner (1962) takes a system of 'seemingly unrelated regression equations' as a single large equation to be estimated. Therefore, by postulating a separate regression for each individual bank, thus we have:

$$y_{it} = \alpha + \beta_1 x_{1t} + \varepsilon_{1t}$$

$$y_{NT} = \alpha + \beta_N x_{NT} + \varepsilon_{NT} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

These equations are simplified by stacking into a single model. Let $Y_t = [y_{it} \ldots, y_{Nt}]'$, $X_t = diag(x_{1t} \ldots, x_{NT})$, $U_t = [\varepsilon_{1t} \ldots, \varepsilon_{NT}]$, $\beta = [\beta_1 \ldots, \beta_N]'$,. Then the final SURE equation is given by 4:

$$Y_t = \alpha + \beta X_t + U_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

The main advantage of SURE over estimates using equation by equation under ordinary least squares (OLS) is that there is gain in efficiency if there exists contemporaneous correlation among the equations. The underlying assumption of SURE method is that the equations are related through the non-zero covariance associated with the error term. Thus, while it assumes statistically that the errors for each bank taken separately conform to the standard linear regression model, each bank's errors may also correlate with the contemporaneous errors of the other banks (Judge et al, 1988). There is reason to believe that common factors may influence macroeconomic and financial data from these banks and therefore increase the chances of the presence of contemporaneous correlation in the model. This cross-sectional dependency may arise because of several reasons which include; spatial correlation, economic distance, spillover effects and common unobserved shocks among the banks. The study therefore used Breuch-Pagan (LM) test to verify the existence of such contemporaneous correlation.

Analysis

Descriptive Statistics

The data of the study was obtained from ten (10) Commercial Banks for the period 2008 to 2020. Table 2 shows the summary statistics of the variables. It indicated that from 2008 to 2020 (13 years), average inflation was about 12% (maximum was about 19% and minimum of about 6%). Per capita income was on average 1578 (the maximum was 1880 and minimum of about 1207). Average government expenditure was about GHC16biliion (a maximum of about GhC21billion and a minimum of GHC10 billion).

Table 2: Summary Statistics of the Variables Used

Variable	Obs	Mean	std.Dev	Min	Max
Nim	143	0.084408	0.104448	0	0.85
Roa	143	1.14368	1.778567	-0.025	7
Rint	143	27.83615	2.261383	22.6	32.75
Gdppc	143	1577.887	215.9375	1207.834	1880.262
Gov	143	16.19471	3.671799	10.35531	20.88796
Infl	143	12.29592	4.10352	6.087	19.251
Banksize	143	5.522182	5.445734	0.4	25.02174

For the banking sector performance measured by ROA, the data revealed an average of 1.14 whiles the average NIM was 0.084. Real interest rate indicated an average of about 28%. Bank size has minimal deviations of about 5.5 with wide difference between the minimum (0.4) and the maximum (25).

Analysis of the determinants of ROA and NIM

The results in Table 3 indicate that the model was correctly specified as revealed by the F-Statistic of $F_{(8, 36)} = 24.81$ with probability value of 0.000. The Return on Asset (ROA) is the dependent variable. Adjusted R-square is about 81%. This implies that 81% of the variation in ROA comes from the explanatory

variables. Similarly, the model for the Net Interest Margin (NIM) was equally correctly specified as revealed by the F-Statistic of $(8, 36) = 18.32$ with the probability value of 0.000. The study therefore conclude that the ANOVA statistics of the two models were accurately stated.

Since the objective of the study was to examine the effects of COVID-19 on the performance of the banking industry, we used dummy variable for 2020. From Table 3, the results indicated that the dummy variable D1 for COVID-19 was not only negative but also statistically significant in all the models. The main model is indicated in column 5 and it demonstrates that COVID-19 reduced banking performance measured by ROA in 2020. To determine whether this result was by chance, the study estimated different models by adding one explanatory variable at a time to examine if its significance. The outcome shows that the estimated result was not by chance, as its significance remains.

Table 3: Analysis of ROA and the determinants

VARIABLES	(1) Lnroa	(2) Lnroa	(3) Lnroa	(4) lnroa	(5) Lnroa
d1	-1.802**	-1.763**	-1.569**	-1.823**	-1.580*
	(0.739)	(0.748)	(0.754)	(0.786)	(0.831)
Lnbs	0.237***	0.237***	0.240***	0.240***	0.241***
	(0.0364)	(0.0365)	(0.0364)	(0.0363)	(0.0364)
Lnlnfl		-0.23**	-0.103**	-0.361**	-0.219**
		(0.098)	(0.047)	(0.138)	(0.088)
Lngov			1.311	2.089*	2.931**
			(0.843)	(1.083)	(1.429)
Lngdppc				0.258**	0.221***
				(0.105)	(0.0387)
Rint					0.151
					(0.167)
Constant	-3.468***	-4.032***	-7.367***	-27.47	-38.86*
	(0.294)	(1.484)	(2.603)	(17.79)	(21.81)
Observations	139	139	139	139	139
R-squared	0.274	0.275	0.288	0.295	0.299

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

From models 1 up to 4, it is clear that the COVID-19 dummy was not only statistically significant but it also retarded the performance of the banking sector in 2020. Therefore, COVID-19 had adverse effects on macroeconomics variables with the attendant consequences on the banking sector. The findings of this study are in conformity with the expectations of the study. As there were nationwide lockdowns, business activities were significantly slowed down hence negative effect on savings that form an important and critical aspect of banks liquidity mobilization.

Table 4 shows the performances of the sampled banks using the Net Interest Margin (NIM) performance indicator. It clearly corroborates the results on the Return on Assets in Table 3. Similar to the results of the Return on Asset (RoA), the Net Interest Margin (NIM) results indicated that the dummy variable D1

for COVID-19 was not only negative but also statistically significant in all the models. The main model is indicated in column 5 and it demonstrates that COVID-19 reduced banking performance measured by NIM in 2020.

Table 4: Analysis of NIM and the determinants

VARIABLES	(1) Lnnim	(2) Lnnim	(3) Lnnim	(4) Lnnim	(5) lnnim
d1	-1.870***	-1.796***	-1.783***	-1.837***	-1.823***
	(0.295)	(0.296)	(0.301)	(0.313)	(0.326)
Lnbs	0.0343**	0.0338**	0.0340**	0.0340**	0.0340**
	(0.0139)	(0.0138)	(0.0139)	(0.0139)	(0.0139)
Lnlnfl		-0.393*	-0.384*	-0.439*	-0.394**
		(0.225)	(0.228)	(0.244)	(0.159)
Lngov			0.0832	0.250	0.313
			(0.328)	(0.420)	(0.558)
Lngdppc				0.497*	0.561**
				(0.281)	(0.268)
Rint					0.0111
					(0.0645)
Constant	-2.876***	-3.843***	-4.055***	-8.302	-9.147
	(0.111)	(0.565)	(1.008)	(6.747)	(8.358)
Observations	138	138	138	138	138
R-squared	0.264	0.281	0.281	0.283	0.283

Standard errors in parentheses

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

It is worth noting that COVID-19 robustly reduced banking sector performance as demonstrated by the results of the Return on Asset (RoA) and Net Interest Margin (NIM) in Tables 3 and 4 respectively.

In terms of macroeconomic variables, the study considered inflation, government expenditure and GDP per capita as major variables. Table 3 indicated that inflation reduced bank performance during the period 2008-2020. The results show that a 1% increase in inflation leads to less than proportionate decrease in bank performance of about 0.2%. Models 2, 3 and 4 support this assertion. The implication of the results is that as inflation increases, the real value of money reduces leading to economic agent relying on withdrawals from previous savings in the bank. These withdrawals reduce bank liquidity and thus, bank's performance. The effect of the inflationary variable in Table 3 is not significantly different from the results in Table 4. Thus, the results are robust.

In addition, government expenditure indicates statistically significant positive effect on the performance of the banks in model 5 in Table 3. Thus, a 1% increases in government expenditure leads to a more than proportionate increases in bank's performance by about 3%. More government spending in the form of infrastructural development makes funds available to households who will then save these funds into the

banking industry. This causes bank expansion and therefore increased performance. Similarly, Table 4 reveals a positive effect of government expenditure on the performance of the banking sector but the results are statistically insignificant. Thus, the study suggests that government expenditure does not have robust effect on the banking sector performance.

Finally, GDP per capita indicated a positive and statistically significant effect on the performance of the banking sector. Model 4 of Table 3 shows that increases in per capita income translates positively on bank performance. The results of Table 3 are corroborated by models 4 and 5 of Table 4, Thus, we can conclude that per capita income induces bank's performance. Thus, increases in per capita income boost economic activities and as these economic activities grow, they induce financial intermediation of the banking sector leading to increased performance of the sector. This outcome is robust.

The study also examined the effects of bank-specific factors on the performance of the banks for the period 2008-2020. Due to data availability, banking sector specific factors were represented by bank size and interest rate. Bank size had statistically significant positive effect on the performance of the banks using ROA in Table 3. In the main model in column 5, it reveals that a 1% increases in the size of a bank caused bank performance to increase by about 0.24%. This result is also robust because the variable remains statistically significant in models 1 to 4. Table 4 corroborates these results, however, the coefficient is relatively lower. This outcome is in conformity with the theoretical expectation of the study. As a bank increases in size, it enjoys both internal and external economies of scale that make operations more profitable. The study of Sarita et al. (2012) corroborates this finding. Similarly, interest on loans even though reveals positive effect on bank performance, it was statistically insignificant in Table 3, this outcome was supported by the results in Table 4.

4.4 Analysis of ROA results using SURE

As a condition for the application of the Seemingly Unrelated Regression (SURE), this section starts with the analysis of the contemporaneous test. Breusch-Pagan test was used and the results are shown in Table 5. The Chi-square of the test was 57.927 with probability value of 0.0935, suggesting there existed a contemporaneous relationship among the banks in the sample as shown in Table 5. Thus, the study proceeded to estimate SURE as shown in Table 6.

Table 5: Analysis of Correlation Matrix of Residuals

	roagcb	Roaecb	Roaadb	Roastb	Roanib	roaznit	roafidl	roacalb	roareb	roaprub
Roagcb	1.000									
Roaecb	0.0155	1.000								
Roaadb	0.5566	-0.2493	1.000							
Roastb	-0.1002	-0.2116	-0.0837	1.000						

Roanib	-0.0391	-0.023	0.2294	0.6854	1.000				
roaznit	0.1126	0.1517	0.1237	-0.2183	-0.2409	1.000			
Roafidl	0.0505	0.524	0.1349	-0.008	-0.2419	0.1849	1.000		
roacalb	-0.0029	-0.0588	-0.2708	0.4842	-0.1163	0.3806	0.539	1.000	
Roareb	0.5868	0.0934	0.1263	0.3614	-0.3895	0.5075	0.1587	-0.2859	1.000
roaprub	0.4944	0.3321	0.3206	0.2436	0.658	-0.261	0.2639	0.2266	0.1943	1.000

Breusch-Pagan test of independence: $chi2(45) = 57.927$, $Pr = 0.0935$

The results in Table 6 indicated that out of the ten (10) banks in the sample, the results of eight (8) banks revealed that COVID-19 had varied negative effects on their performances. Out of the eight (8) banks, the results of seven (7) of them were statistically significant with only one bank (Prudential Bank) with a coefficient which was statistically insignificant. The banks that were negatively affected by COVID-19 were GCB, Eco bank, STANBIC, NIB, Zenith, Fidelity, Republic and Prudential banks. However, two banks (ADB and CALbank) experienced positive effect of the pandemic with the coefficient of the latter being statistically significant.

Table 4.5 showing SURE results using ROA as the dependent variable										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
VARIABLES	GCB	ECOBANK	ADB	STANBIC	NIB	ZENITH	FIDELITY	CALBANK	REPBANK	PRU
D1	-2.829***	-1.512***	0.00866	-0.0312***	-0.117***	-2.911***	-2.491***	0.0189***	-0.0384***	-0.00214
	(1.230)	(0.548)	(0.00903)	(0.00641)	(0.0119)	(0.609)	(0.669)	(0.00712)	(0.01122)	(0.00506)
Lnbs	-0.299***	-0.102***	0.00923***	0.01511***	0.00941***	-0.487***	-0.166***	0.0240***	0.0208***	0.00157***
	(0.00438)	(0.0115)	(0.00170)	(0.00125)	(8.10e-05)	(0.00764)	(0.0336)	(0.000504)	(0.000171)	(0.000354)
Lnlnfl	0.196***	0.0950*	0.00197***	-0.00132***	-0.00253***	0.00868	0.121***	0.000739	-0.00197***	0.000506
	(0.0735)	(0.0499)	(0.000717)	(0.000469)	(0.000886)	(0.0328)	(0.0446)	(0.000510)	(0.000707)	(0.000367)

Lngov	0.358***	0.105***	0.00186***	6.51e-05	-0.00170**	0.102***	0.117***	0.00337***	0.000625	0.00106***
	(0.0685)	(0.0338)	(0.000716)	(0.000463)	(0.000664)	(0.0115)	(0.0364)	(0.000380)	(0.000566)	(0.000287)
Lngdppc	0.00129*	0.00167**	0.000112***	4.56e-07**	0.000127***	0.00220***	0.00384***	0.00021***	-0.0003***	-9.60e-06**
	(0.000680)	(0.000655)	(2.19e-05)	(1.93e-07)	(8.99e-06)	(0.000293)	(0.000549)	(5.90e-06)	(6.55e-06)	(4.37e-06)

Lnrint	0.0950*	-0.0199	-0.000475	-0.000553	-0.00423***	0.0405***	-0.263***	-0.0054***	8.56e-05	-0.002***
	(0.0492)	(0.0571)	(0.00132)	(0.000561)	(0.000818)	(0.00904)	(0.0369)	(0.000456)	(0.000390)	(0.000342)
Constant	0.095	0.105	-0.269***	0.0370**	-0.0099	0.00107	-0.01168	0.00923	0.129***	0.0359***
	(0.1499)	(0.3338)	(0.0709)	(0.0175)	(0.157)	(0.0655)	(0.0328)	(0.1737)	(0.00465)	(0.00355)
Observations	13	13	13	13	13	13	13	13	13	13
R-squared	0.521	0.636	0.766	0.571	0.663	0.231	0.631	0.821	0.347	0.592
Standard errors in parentheses										

The size of banks was statistically significant for all the ten (10) banks but with mixed effects. Whiles the size of the bank had positive effect on ADB, STANBIC, CAL bank, Republic bank and Prudential bank, the effect was negative for the rest of the banks. In addition, interest rate charge by the individual banks also revealed mixed results. Whiles the effect was positive for three banks (GCB, Zenith and Republic banks), it was negative for the rest of the banks. The negative effect was statistically significant in four banks (NIB, Fidelity, Cal, and Prudential banks). The negative effect of interest rate imply that increases in interest rate repel deficit units from engaging in borrowing. Interest on loans is one critical areas of bank growth.

The macroeconomic variables (inflation, government spending and GDP) also exhibited mixed results. Inflation had negative effects on the performance of three (3) banks (STANBIC, Republic and Zenith banks). While the results of STANBIC and Republic banks were statistically significant, that of Zenith bank was not statistically significant. The rest of the banks exhibited positive effects. The positive effect of inflation on CAL bank and Prudential bank were statistically insignificant. The effect of government expenditure was positive on all the banks except NIB. This positive effect is in line with the estimates in the pooled regression. Thus, increases in government spending boost the amount of money in circulation thereby increasing banking activities. Finally, economic growth measured by GDP per capita indicated a positive effect on the performance of eight (8) banks. This implies that higher economic performance induces the performance of these banks. On the contrary, it has a statistically significant negative effects on two (2) banks (STANBIC, and Republic banks). The seemingly unrelated regression (SURE) results revealed a mixed outcome of the effect of COVID-19 on the performance of the banking sector. Similarly, the bank specific indicators as well as macroeconomic factors also indicated such mixed results.

The study concludes that COVID-19 largely affected the banking sector negatively. Macroeconomic variables such as government expenditure and GDP per capita are important factors that positively induce banking sector performance. However, inflation retards the performance of the industry.

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