The Effect of Financial Integration on Financial Performance of Commercial Banks in CEMAC Zone

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Abstract— This paper aims to examine the effect of financial integration on financial performance of commercial banks in CEMAC zone. In order to achieve this objective, we use a methodological approach based on panel data ranging from 2000 – 2021 in six (6) CEMAC zone countries. This study used panel data multiple regression model to ascertain this objective by making comparison among three models, panels corrected standard errors (PCSEs) model, fixed effect model, and random effect model while estimating econometric models. The result pertains to the panels corrected standard errors (PCSEs) regression. The analysis demonstrated that financial integration, does positively affect commercial banks performance in terms of bank deposits and ROA but the findings on ROA was insignificant. This outcome can be attributed to the fact that financial integration facilitates cross-border capital flows and enhances access to a broader range of financial products and services. These factors collectively boost public confidence in the banking sector, leading to increased deposits. To significantly boost the influence of financial integration on the financial performance of commercial banks in the CEMAC zone, targeted policy actions and strategic investments are required. Banks should work on deepening regional integration by actively participating in the CEMAC's financial infrastructure projects, such as the establishment of a regional payments system that can facilitate smoother and more efficient cross-border transactions.

Keywords— Financial Integration, Financial Performance, CEMAC Zone.

INTRODUCTION

In contemporary periods, the landscape of the financial sector has undergone a profound transformation, largely driven by the increasing integration of financial markets worldwide (Smith & Johnson, 2020). This transformation has significantly influenced the operations, activities, strategies, and performance of commercial banks, shaping the way they conduct business and interact with their customers. Understanding the effects of this emergent financial integration on the financial performance of commercial banks has become imperative for stakeholders ranging from policymakers to investors. Financial integration, defined as the process of interconnectedness among financial markets and institutions across borders, has emerged as a significant phenomenon in the global economy. Over the past few decades, advancements in technology and globalization have facilitated increased cross-border flows of capital, leading to a more integrated global financial system. This integration has profound implications for various economic agents, particularly banks, which serve as pivotal intermediaries in the financial system (Claessens, & Kose, 2017). A study by Claessens and van Horen (2015) highlights that financial integration can enhance bank performance by increasing access to funding sources, diversifying risk, and fostering competition.

The effects of financial integration on the performance of commercial banks have been the subject of extensive scholarly inquiry. Scholars have examined the impact of factors such as liberalization of capital controls, cross-border mergers and acquisitions, foreign bank entry, and the adoption of international financial standards on the performance metrics of commercial banks. Understanding these effects is crucial not only for policymakers seeking to design effective regulatory frameworks but also for banks themselves as they navigate an increasingly interconnected and competitive landscape (Caprio & Honohan, 2001). Indeed, the effect of financial integration on bank performance is not uniform across institutions or markets. On one hand, greater integration offers banks access to diverse funding sources, enhanced market liquidity, and opportunities for risk diversification (Hartmann et al., 2007). On the other hand, it exposes banks to heightened competition, regulatory complexities, and systemic risks associated with cross-border financial flows (Kalemli-Ozcan et al., 2019). Large multinational banks may benefit from expanded market presence and economies of scale, while smaller domestic banks may face increased pressure to adapt and compete in a more interconnected and dynamic environment (Claessens & van Horen, 2015).

The last few years have witnessed a rapid integration of the world's financial markets. A key factor underlying this process has been the increased globalization of investments seeking higher rates of return and the opportunity to diversify risk internationally (van Horen, 2005). Financial integration has created a pathway for market co-movement, which is the rationale for the tremendous economic growth in the transformation stemming from globalization. This transformation could be attributed to productivity and efficiency in market operations influenced by the flow of information (Ibrahim et al 2016)

According to Gupta (2014), every economy needs a strong banking system to function. Banks play a pivotal role in promoting and accelerating economic growth as they are the principal source of capital for business (Abusharbeh, 2020). In this regard, Allay (2013), coins it that the banking system is crucial to the survival of financial institutions and markets. Banks performs the services of financial intermediaries, effectively transforming society's savings into various investments and loans, thereby promoting economic growth and social development. The stability of the entire economy hinges on the performance of these financial institutions. In developing regions like the Central African Economic and Monetary Community (CEMAC) zone, commercial banks face unique challenges and opportunities influenced by rapid financial integration. The performance of these banks is crucial for maintaining financial stability and supporting economic growth. In recent years, the banking sector within the CEMAC zone has faced significant challenges in achieving its profitability objectives. The volatile market climate, characterized by uncertainty, complexity, and political risk, has adversely affected bank performance (Baba & Nasieku, 2016). This issue has been exacerbated by the global financial crises of 2008 and the increasing globalization of the world's economy. For instance, commercial banks in the CEMAC zone saw a notable decrease in Return on Assets (ROA) by 8% between 2014 and 2016, with a pronounced acceleration of this decline from mid-2016 (IMF, 2017).This implies that, sound management of the banking industry is closely related to economic growth, and thus increases the need for rigorous performance evaluations of the industry. To improve performance and reduce operating costs, the banking industry has to transform its management system and become steadfast to enhancing competitiveness through cost structure analysis.

It is against the aforementioned challenges that this paper sought to investigate the effect of financial integration on financial performance of commercial banks in CEMAC zone. This paper is organized into five section, which includes the introduction as the first section, review of literature in section II, the empirical strategy and data presentation in section III, the empirical findings are presented and discussed in section IV, and conclusion and policy suggestion is made in section V.

LITERATURE REVIEW

A number of scientific papers have investigated the effects of financial integration on financial performance of commercial banks. Findings established have shown mixed views on the direction of effect. This has raised doubt on the kind of effect financial integration could have on financial performance of commercial banks in CEMAC region. Some empirics are or the view that financial integration has a positive effect on financial performance, while others are of the fact that it has a negative effect and some establishes that the effect is not significant or contingent on other factors.

Tembo (2023) investigated the impact of regional financial integration on banking sector development with specific focus on the impact of the Southern African Development Community protocols on trade and finance and investment. With a total of 14 countries, the study employed the panel cointegration fully modified ordinary least squares model (FMOLS) alongside the generalized method of moments (GMM) to estimate the nature of the impact. The study findings establish that regional integration through the protocol on trade had a positive and significant impact on size and efficiency of the banking sector using the FMOLS estimator. GMM estimations for the same variables were largely insignificant. Study findings also pointed to an improvement in global financial integration indicators as a result of the trade protocol, which in turn also contributed to an increase in the level of monetization of regional financial markets. Fiskara (2022) investigated the relationship between financial integration proxied by composition of capital inflows and financial development in emerging economies. Using dynamic panel data GMM estimation from 79 countries in emerging economies, the estimation results found that composition of capital inflow have positive and statistically significant in developing all aspect of financial development in emerging economies. Specifically, FDI inflow as the largest portion of capital inflow in emerging economies is closely associated with financial institutions depth, access and efficiency, and financial market depth and access. External debt inflow positively affected financial institutions efficiency and financial market depth and efficiency. Moreover, portfolio equity inflow which hold the smallest portion among other inflow is closely related to financial institution depth, access and efficiency, and financial market depth and access.

Moreover, Taghizadeh-Hesary et al. (2019) assessed the impact of financial integration on financial development and establishes thresholds for materializing gains of financial advances from financial globalization using a sample of 34 countries from the East Asian and Pacific region. According to the findings, the effect of financial integration on financial development significantly changes across different financial inflows. When external debt was substituted as a proxy for financial openness, there exists a robust significant inverted U-shaped relationship between financial integration and financial development. Their empirical findings also suggest that the financial integration development nexus is contingent on the level of trade openness, national income, and institutional quality. Their results are robust to different measures of financial development and integration. Beck et al. (2016)

used a comprehensive dataset to analyze the relationship between financial integration and bank performance across multiple countries. Their findings suggested that financial integration improves bank performance by increasing access to capital and enhancing operational efficiencies. Karim (2010) investigated the influence of financial integration on bank performance in South Asian countries. According to their empirical analysis, financial integration positively impacted performance by fostering competition and innovation within the banking sector. Similarly, Claessens et al. (2010) examined the effects of financial integration on bank profitability using a broad dataset of international banks. Their analysis revealed mixed results, indicating that while financial integration can enhance profitability, the effects vary depending on the specific market conditions and regulatory environments.

Mishkin (2007) also noted that there exists a positive impact of financial integration on financial development. According to him, the entry of foreign companies into the domestic financial markets is sometimes link with adoption of best practice standards in the domestic market thereby resulting to efficient financial markets. Similarly, Farid (2013) investigated into the issues of regional financial integration and its impact on stock mark development from an African context. Considering timeframe of 30 years, using the GMM approach, the study reveals that formal harmonisation and integration of African stock markets requires that appropriate steps be taken to conducive environment. Perhaps, the study fails to explain the enabling environment needed for the integration process to be successful

However, Mishkin (2007) also emphasizes that liberalization can result in financial crises because domestic banks engage in risky transactions through lending to international markets which is risks they are not quite familiar with. Moreover, because of insufficient experience in screening and monitoring borrowers, the loans to international markets may eventually end up as non-performing loans which might cause bank failures. He went further to explain that if domestic financial institutions obtain loans from international markets at high rates of interest, this could lead to excessive risk taking and huge loan loses which can eventually lead to financial crises. His study is based on the observations of countries that experience financial crises after liberalizing their financial markets. Mishkin (2007) argues that financial liberalization can only succeed under prudential supervision. In the same light, Stiglitz (2000) warns that if embraced, too quickly, financial integration can destabilize the financial system.

David, Mlachila and Moheeput (2014) reveals a negative effect of financial integration on financial development in the context of African markets. The study was focused on the links between trade and capital account openness and financial development in Sub-Saharan African countries. They note no robust direct link between trade and capital account openness and financial development and recommend that policymakers to be cautious about their expectations regarding immediate benefits such as financial deepening from greater trade and capital account openness. The mixed findings on the effect of financial integration on commercial banks performance has stirred debate on the nature of effect that exist. Moreover, it can also be observed that most of the empirical reviews measured financial integration in terms of trade protocol/openness or capital inflows which include; foreign direct investment, foreign equity portfolio, and/or external debt. This study adopts a different concept as a measure of financial integration which is a quadratic difference between a country's interest rate spread and an equally

weighted average spread for countries in the region. This measure of financial integration is a more reliable and adopted. This literature gap prompted the researcher to carry out this study to feel in the gap. Furthermore, we also closely observe that most of the previous were carried in different localities raising a lot of doubt on the nature of financial integration on financial performance of commercial banks within the CEMAC region. This study comes in to verify such an effect.

ECONOMETRIC STRATEGY

Empirical model specification

The main objective of this study was to examine the effect of financial integration on the financial performance of commercial banks in the CEMAC member states. This study used Panel data multiple regression model to ascertain this objective. The use of panel model come with numerous advantages some of which include; it eliminates bias from the calculated coefficient by separating country-specific unobserved and time-fixed impacts from the error term in a panel setting (Wooldridge 2012). Panel data can model both the common and individual behaviours of groups. it contains more information, more variability, and more efficiency than pure time series or cross-sectional data. Also, it can minimize estimation biases that may arise from aggregating groups into a single time series. Its main benefits it that panel modeling centers around addressing the likely dependence across data observations within the same group. That it allows for heterogeneity across groups and introduce individual-specific effects.

The standard approach to panel model that depicts the relationship between the X (independent variables) and Y (dependent variables) is given as follows;

$$Y_{it} = \alpha_1 + \beta X_{it} + \mu_{it} \quad \text{.. (1)}$$

To investigate if financial integration affects financial performance measured by total deposits and ROA of commercial banks in the CEMAC zone? The panel model for this study is established as follows

$$TD_{it} = \alpha_0 + \alpha_1 FI_{1it} + \alpha_2 PCGDP_{2it} + \alpha_3 ER_{3it} + \alpha_4 XCAR_{4it} + \mu_{it} \quad \text{.. (2)}$$

$$ROA_{it} = \alpha_0 + \alpha_1 FI_{1it} + \alpha_2 PCGDP_{2it} + \alpha_3 ER_{3it} + \alpha_4 XCAR_{4it} + \mu_{it} \quad \text{..................................... (3)}$$

Where

TD= Total Deposit

FI= Financial Integration.

PCGDP= Per Capital Gross Domestic Product

ER= Exchange Rate

CAR= Capital Adequacy Ratio.

μ= Error Term

α_0 is the constant term, α_1, α_2, α_3, α_4 and α_5 are the parameters to be estimated.

Dependent variables

In the context of this study, financial performance is used as the dependent variable. Financial performance is the ability of a company to generate profit and increase shareholder value over time. It is a measure of how well a company is managing its resources and achieving its financial goals. In other word, financial performance refers to the overall financial health of the business. It is a reflection of all the elements that contribute to profitability, separately as line items, and holistically as a collective dynamic. In this study, financial performance is operationalized into return on asset and total deposits.

Return on Asset (ROA): Return on Assets (ROA) is metric that measures the profitability of a business in relation to its total assets. In other word, return on assets shows the percentage of how profitable a company's assets are in generating revenue. This ratio indicates how well a company is performing by comparing the profit it is generating to the capital it's invested in assets. ROA can be used by management, analysts, and investors to determine whether a company uses its assets efficiently to generate a profit or not. The higher the return, the more productive and efficient management is in utilizing economic resources. Data on ROA is obtained from WDI and is measured as commercial banks' after-tax net income to yearly average asset.

Total Bank Deposit: Bank deposits are a savings product that customers can use to hold an amount of money at a bank for a specified length of time. In return, the financial institution will pay the customer the relevant amount of interest, based on how much they choose to deposit and for how long. In other words, bank deposits consist of money placed into banking institutions for safekeeping. These deposits are made to deposit accounts such as savings accounts, checking accounts, and money market accounts at financial institutions. Data on total bank deposit is obtained from WDI and measure as bank total value of demand, time and saving deposits at domestic money bank as a percentage of GDP.

Independent variables of interest

Financial Integration: Financial integration is a phenomenon where the financial markets in the region, neighbourhood or global economies are very closely associated with each other like crossborder capital flows, international participation in the domestic financial markets and sharing of information among financial institutions (Selvarajan & Ab-Rahim, 2020). Financial integration is one of the essential pre-conditions for a stable monetary policy. Organizational changes in the economic conditions, such as proper integration of economies or complicated financial integration, affect productive factors and establishments such as commercial banks. Integration can uplift the funding chances of individual financial establishments, authorizing them to generate high profits at a similar extent of risk. Data on integration is sourced from Global Financial Development Data Base measured as a quadratic difference between a country's interest rate spread and an equally weighted average spread for countries in the region.

Control variable

Capital Adequacy Ratio (CAR): The capital adequacy ratio is an indicator of how well a bank can meet its obligations. Also considered as the ratio of a bank's capital to its risk. In other words, the capital adequacy ratio is a measure of how much capital a bank has available, reported as a percentage of a bank's risk-weighted credit

exposures. The purpose is to establish that banks have enough capital on reserve to handle a certain number of losses, before being at risk for becoming insolvent. It's used to protect depositors and promote the stability and efficiency of financial systems around the world. Data on APMs is sourced from IMF financial access survey measured as the ratio of a bank's capital to its risk weighted asset.

Country's Specific Characteristics: These capture the economic status of a country. In the context of this study, per capita GDP was used as a key metric for country's specific characteristic with data obtained from WDI.

Data

The data utilized in this study covers the period from 2000 to 2021 and is derived from 52 active commercial banks. The data is secondary and was sourced from the World Bank's World Development Indicators (WDI, 2022) and the IMF Financial Access Survey (FAS, 2022). Specifically, data on financial integration, proxied by deposit interest rates, were obtained from the IMF Financial Access Survey. Data on financial performance, proxied by Return on Assets (ROA) and total deposits, was collected from the World Bank's WDI. Additional independent variables of interest, including exchange rates, capital adequacy, inflation rates, and country characteristics such as GDP, were also sourced from the WDI (2022).

Trend of financial integration has been largely variables over time in the different countries and in the CEMAC region in general. These trends are shown in Figure 4.1
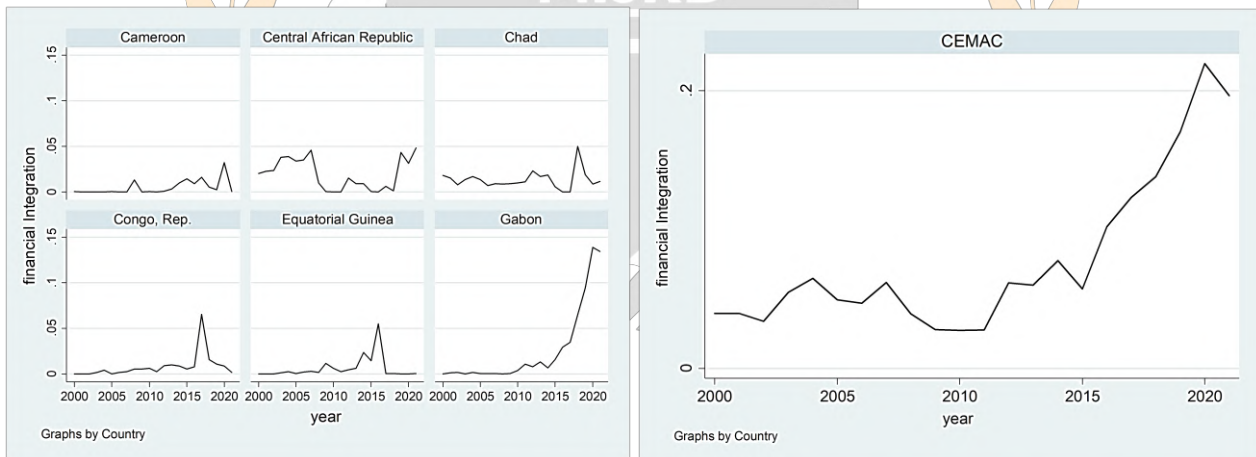

Figure 1: Trend of financial integration

Source: Author's Computation, 2024

In Cameroon, financial integration shows a generally low but variable trend from 2000 to 2021. The early 2000s saw extremely low integration levels, with figures dropping to near-zero levels in 2001 and 2002. This stagnation can be attributed to the country's limited financial infrastructure and the underdevelopment of financial markets at the time. Starting in 2008, there was a notable spike to 0.01355, reflecting the impact of improved financial services and regional integration efforts. By the early 2010s, financial integration began to increase more substantially, reaching 0.014669 in 2015. This rise aligns with the regional financial reforms and the adoption of more inclusive financial policies. However, the years following 2015 saw fluctuations, with a significant drop in

2018 to 0.005455, potentially due to political instability and economic challenges. The notable increase in 2020 to 0.032175 could be linked to the global financial impacts of the COVID-19 pandemic, which disrupted many financial systems, and the subsequent decline in 2021 to 0.000499 might reflect the aftereffects of the pandemic and associated economic uncertainties.

The Central African Republic exhibits a volatile pattern in financial integration. From 2000 to 2008, the integration levels were relatively high and stable, peaking at 0.046116 in 2007. This stability may reflect regional economic stability and some improvement in financial services. However, the global financial crisis of 2008 likely contributed to the sharp decline in 2008 to 0.009855. The subsequent years from 2009 to 2011 saw a significant drop in financial integration, with figures falling to as low as 0.000267 in 2011, possibly due to domestic instability and political turmoil. A brief resurgence occurred from 2012 to 2015, with integration peaking again in 2014 at 0.009373, but was followed by another decline. The dramatic decrease in 2020 to 0.031579 and a slight increase in 2021 to 0.048287 could be related to both internal conflicts and the impact of the COVID-19 pandemic, which further strained financial systems and economic stability.

Chad's financial integration shows a relatively low but fluctuating trend. Early 2000s data indicate modest integration, with levels peaking at 0.018424 in 2000 but dropping in the subsequent years due to limited financial development and infrastructure. The years from 2007 to 2015 saw some fluctuations, with a notable increase to 0.16552278 in 2015. This rise could be attributed to improvements in financial systems and regional economic integration efforts. However, the subsequent years saw a decline, likely influenced by Chad's political instability and conflict-related disruptions. The spike in 2018 to 0.050237 may reflect temporary improvements or reforms, while the more recent data suggest ongoing volatility, potentially due to the ongoing economic challenges and global financial uncertainties affecting the region.

In the Republic of Congo, financial integration data indicates modest levels with notable fluctuations. From 2000 to 2007, integration levels were relatively low but saw a gradual increase, reaching 0.005383 in 2008. This period might have been influenced by efforts to stabilize the financial sector and improve regional economic cooperation. The integration levels peaked at 0.065425 in 2017, reflecting the impact of improved regional financial policies and economic reforms. The subsequent drop in 2020 to 0.008592 and the minimal increase in 2021 to 0.001569 suggest a period of financial instability or restructuring, possibly influenced by both domestic challenges and global financial pressures.

Equatorial Guinea experienced significant fluctuations in financial integration over the years. Early 2000s data show low integration levels, with minor increases in 2003 and 2004. The substantial rise to 0.023741 in 2014 reflects increased financial activity, likely driven by oil revenues and regional integration efforts. However, the data show a dramatic drop in 2017 to 0.000407 and continued low levels through 2021. This sharp decline might be attributed to the volatile global oil market, economic mismanagement, and reduced financial activity due to political and economic instability.

Gabon's financial integration shows a clear upward trend over the period from 2000 to 2021. Starting from relatively low levels, there was a consistent increase in integration, peaking at 0.58790225 in 2021. This trend

likely reflects Gabon's efforts to strengthen its financial sector, regional economic reforms, and increased financial openness. The global financial crisis of 2008 and subsequent regional economic challenges caused temporary fluctuations, but Gabon's ongoing financial reforms and investments in infrastructure helped maintain a general upward trajectory. The consistent rise in financial integration indicates a more developed and stable financial system compared to its regional peers.

The Central African Economic and Monetary Community (CEMAC) shows significant fluctuations in financial integration. From 2000 to 2007, there was a relatively high and stable integration level. The peak in 2008 aligns with increased regional financial cooperation.

However, the years following the global financial crisis saw substantial volatility, with dramatic fluctuations in integration levels. The significant spikes in 2012 and 2015 indicate periods of increased regional financial activity or reform. The most recent years, particularly 2020 and 2021, show high integration levels, which might be influenced by efforts to stabilize and enhance regional financial systems amidst global economic challenges and the COVID-19 pandemic.

Trends in Return on Assets (ROA)

In analyzing the trends in Return on Assets (ROA) for each country and the CEMAC region, several patterns emerge, shaped by national, regional, and global factors. These trends are influenced by a mix of local issues, such as political instability and economic mismanagement, and global factors, including commodity price fluctuations and economic crises. The varying ROA across these countries reflects their unique economic contexts and the challenges they face within a broader regional and global framework.
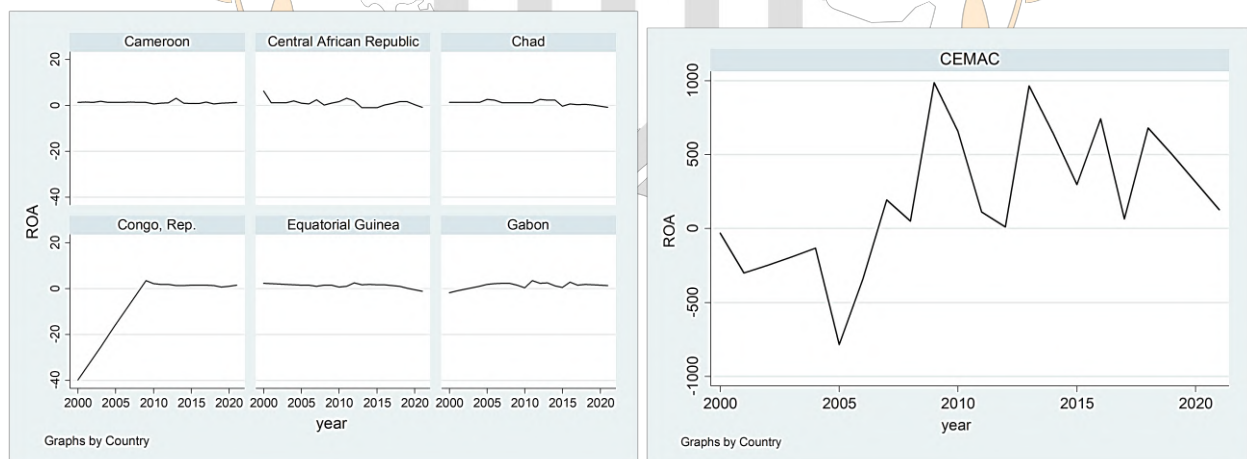

Figure 2: Trend of Return on Assets

Source: Author's Computation, 2024

Cameroon experienced a notable variability in ROA from 2000 to 2021. Initially, ROA was relatively stable but showed a significant increase in 2003, peaking in 2013. This surge can be attributed to improved economic conditions and better business performance during the early 2010s. The sharp decline post-2013 could reflect the economic impacts of the Anglophone crisis and other local disruptions. A recovery was seen in the late 2010s and

early 2020s, likely driven by various economic reforms and increased investor confidence despite ongoing challenges.

Central African Republic saw extreme fluctuations in ROA, with a dramatic peak in 2000 followed by a consistent decline until 2016, reaching negative values and low recovery afterward. The high ROA in 2000 could have been influenced by an exceptional year of economic performance or specific profitable projects. The subsequent decline reflects prolonged instability and conflict, particularly after the 2013 coup, which severely impacted economic performance. The modest recovery after 2016 suggests slow improvements amid ongoing challenges.

Chad displayed a relatively stable ROA from 2000 to 2004, with a notable increase in 2005, reflecting a period of economic improvement, possibly due to increased oil revenues. However, the subsequent decline from 2015 onwards, including negative values in the later years, highlights the economic difficulties faced by Chad, likely due to falling oil prices, political instability, and security issues affecting economic stability and business profitability.

Congo had a dramatic negative ROA from 2000 to 2008, reflecting severe economic challenges and instability. This could be attributed to economic mismanagement and political turmoil. The positive turn from 2009 onwards, peaking in 2015, indicates a period of recovery and improved economic conditions, possibly due to better management and increased investment. However, recent years show a decline, reflecting renewed challenges or external economic pressures.

Equatorial Guinea saw relatively high ROA values initially, with a peak in 2000. This high performance can be attributed to booming oil revenues during that period. However, the decline from 2009 onwards, turning negative in recent years, reflects the impact of falling oil prices, decreased production, and economic mismanagement. The significant volatility in recent years indicates ongoing struggles in stabilizing the economy.

Gabon experienced a generally positive trend in ROA from 2000 to 2021, with significant peaks around 2011 and 2015. This consistent performance suggests that Gabon's economy, driven by oil revenues and reforms, has had periods of strong profitability. The downturn in some years, like 2009, may reflect global economic downturns or localized issues, but the overall trend remains upward, indicating a relatively resilient economy compared to its regional peers.

CEMAC as a region shows highly volatile ROA figures, with significant fluctuations reflecting the diverse economic conditions of member states. The sharp decline from 2001 to 2006 highlights regional economic struggles, possibly due to global economic crises or internal issues within member states. The significant recovery in 2009 and subsequent years, despite fluctuations, indicates some regional economic stabilization and improvements, likely due to coordinated regional policies or external factors improving overall economic conditions.

Summary Statistics

The summary statistics for the key variables analyzed in the study focus on their distribution across and within countries. The summary statistics provide insights into the central tendency, dispersion, and range of each variable, including the mean, standard deviation, minimum, and maximum values, along with the number of observations. By examining these statistics, we gain a clearer understanding of the variability and consistency of

the data both within individual countries and across the broader sample, laying the foundation for subsequent analyses and interpretations.

Table 1 above represents the summary of descriptive statistics for all the variables included in the various models of this study. In the CEMAC zone, the Return on Assets (ROA) of financial institutions shows a mean of 1.31% with a standard deviation of 1.02%, indicating a relatively stable ROA overall. The within-panel variation of 0.9993 reflects significant fluctuations in ROA within individual countries over time, suggesting that financial performance can vary considerably within each country due to local economic conditions or specific institutional challenges. Conversely, the between-panel variation of 0.2261 is lower, indicating that ROA across countries in the CEMAC zone is more consistent. This relative stability across countries could be attributed to similar regulatory environments or economic conditions influencing financial institutions similarly across the region.

Bank deposits, with a mean of 11.21 and a standard deviation of 5.15, demonstrate stability both overall and within individual countries. The low within-panel deviation of 3.5931 implies that deposit levels were consistent over time within each country, likely due to stable economic conditions or banking practices. The between-panel deviation of 4.0292 indicates that, while there are some differences in deposit levels across countries, these differences are not extreme. This relative stability suggests that the banking sector in the CEMAC zone is generally stable with moderate variations in deposit levels.

Financial integration, with a mean of 0.094 and a standard deviation of 0.158, shows minimal variation both overall and within countries. The low within-panel deviation of 0.148 suggests that financial integration did not fluctuate significantly over time within each country. Similarly, the low between-panel deviation of 0.059 indicates that financial integration levels were fairly uniform across the CEMAC zone. This stability might reflect uniform regional policies or similar levels of financial market development across the countries.

Financial technology has a mean of 0.279 and a standard deviation of 0.205, indicating relative stability in the adoption of financial technology. The low within-panel deviation of 0.17252 suggests consistent technological adoption over time within each country. The between-panel deviation of 0.1202 indicates some differences in financial technology adoption across the CEMAC zone, which could be due to varying levels of technological development and investment across countries.

Table 1: Summary Statistics

Variable		Mean	Std. dev.	Min	Max	Observations
ROA	Overall	1.3135	1.0198	-1.35	6.33	N = 104
	Between		0.22613	1.184	1.7751	n = 6
	Within		0.99929	-1.3735	6.44636	T = 17.3333
Deposit	Overall	11.2086	5.15191	2.663	22.876	N = 132
	Between		4.0292	6.3216	15.845	n = 6
	Within		3.5931	2.0723	20.40	T = 22
Financial Integration	Overall	0.0941	0.1581	0	1	N = 132

	Between		0.0592	0.0366	0.1841	n =	6
	Within		0.14844	-0.0897	0.9101	T =	22
Gdppc	Overall	4011.88	5191.42	166.176	22942.6	N =	126
	between		4703.212	403.2444	12004.3	n =	6
	within		2893.065	-6266.87	14950.18	T =	21
Bank regulatory capital	overall	13.3579	23.25274	-74.4791	44.6921	N =	132
	between		13.42083	-6.68342	27.84632	n =	6
	within		19.73437	-62.944	53.73767	T =	22
Interest Rate Spread	overall	0.170519	0.117461	0.001668	0.587902	N =	127
	between		0.076336	0.068251	0.266275	n =	6
	within		0.094169	-0.06537	0.492146	bar =	21.1667
Inflation	overall	2.928295	3.116556	-8.97474	14.89868	N =	132
	between		0.974471	2.012211	4.428754	n =	6
	within		2.985892	-8.58191	13.97103	T =	22
Central bank assets to GDP (%)	overall	5.843115	4.751967	0.005111	18.7558	N =	132
	between		3.606744	3.026909	12.69794	n =	6
	within		3.414372	-0.11476	12.35941	T =	22

Source: Author's Computation, 2024

Bank regulatory capital has a mean of 13.36 and a standard deviation of 23.25, indicating variability in regulatory capital levels. The within-panel deviation of 19.73437 shows fluctuations in regulatory capital within countries, which could be influenced by changing regulatory requirements or financial stability issues. The between-panel deviation of 13.42083 reflects differences in regulatory capital across countries, possibly due to varying regulatory practices and financial sector conditions.

Internet subscription rates have a mean of 10.76 with a standard deviation of 16.68, revealing significant variability. The high within-panel deviation of 14.491 suggests substantial fluctuations in internet access within individual countries, which could be due to differences in infrastructure development or technological adoption rates. The between-panel deviation of 8.8919, though lower, still indicates that there are notable differences in internet subscription rates across the countries, reflecting uneven technological progress and infrastructure development within the CEMAC zone.

GDP per capita, with a mean of 4011.88 and a standard deviation of 5191.42, shows substantial variability. The high within-panel deviation of 2893.065 suggests significant economic fluctuations within countries over time, while the between-panel deviation of 4703.212 reflects substantial economic disparities across the CEMAC countries. These variations highlight the uneven economic development and performance across the region. Interest rate spread, with a mean of 0.171 and a standard deviation of 0.117, shows relative stability. The low within-panel deviation of 0.094169 indicates that interest rate spreads were consistent over time within each

country. The between-panel deviation of 0.076336 suggests some variation in interest rate spreads across the CEMAC zone, which may be due to differences in monetary policy or financial sector conditions.

Inflation, with a mean of 2.93% and a standard deviation of 3.12%, reflects relative stability in inflation rates. The low within-panel deviation of 2.985892 suggests consistent inflation rates within countries over time. The between-panel deviation of 0.974471 indicates moderate differences in inflation rates across the CEMAC countries, which could be influenced by varying economic conditions and monetary policies.

Central bank assets to GDP, with a mean of 5.84% and a standard deviation of 4.75%, shows stability in the ratio of central bank assets to GDP. The low within-panel deviation of 3.414372 indicates consistent central bank asset management within countries over time. The between-panel deviation of 3.606744 reflects some differences in central bank asset levels across the CEMAC countries, which could be attributed to varying monetary policies and central bank practices.

Thus, while many financial and economic indicators in the CEMAC zone demonstrate relative stability, there are notable differences within and between countries. This suggests that while regional policies and conditions provide a consistent framework, local factors contribute to significant variability in economic and financial indicators. These differences highlight the need for targeted policies to address the specific challenges and opportunities in each country to promote balanced growth across the CEMAC zone.

Estimation Method

Panel studies begin by making comparison among three models, pooled regression model, fixed effect model, and random effect model while estimating econometric models.

Therefore, the choice among pooled regression model, fixed effect model and random effect model is very important as it largely influences conclusions on the individual coefficients (Gujarati, 2003). Thus, specification tests and determination of appropriate panel data model will be conducted using F- test and the Hausman test to select the appropriate model.

RESULTS AND DISCUSSION

The result in Table 4.13 above pertains to the correlated panels corrected standard errors (PCSEs) regression on the effect of financial integration on financial performance of commercial banks in the CEMAC zone. Financial performance is proxied by two main variables which include bank deposits and return on assets. The results provide insights into how financial integration influences the performance of commercial banks in the CEMAC zone, using two performance metrics: bank deposits and return on assets (ROA).

The analysis employs Panel Correlated Panels Corrected Standard Errors (PCSEs) to account for potential panel-level heteroscedasticity and autocorrelation. According to Beck and Katz (1995), PCSE is a robust with respect to the possibility of non-spherical errors.

Therefore, it accounts for these deviations from spherical errors and further permit appropriate inference from linear models estimated from panel data.

Table 2: Regression Results on The Effect of Financial Integration on Commercial Banks Performance in the CEMAC zone

	Panel Correlated panels corrected standard errors (PCSEs)		Fixed Effect Estimation	
VARIABLES	Deposit	ROA	Deposit	ROA
Financial Integration	0.633**	4.619	-0.154	-0.959
	(0.262)	(4.742)	(0.120)	(4.718)
Lgdppc	-0.0221*	0.887***	-0.832***	-2.472
	(0.0127)	(0.316)	(0.0656)	(2.570)
Capital Asset	0.00625***	-0.111***	0.00482***	-0.0870***
	(0.00101)	(0.0221)	(0.000619)	(0.0243)
Inflation	8.71e-05	0.359**	0.00889**	0.287*
	(0.0118)	(0.157)	(0.00388)	(0.152)
Lerner Index	0.383***	1.483***	1.015***	6.128***
	(0.0224)	(0.403)	(0.0496)	(1.942)
Constant	-0.458**	-17.60***	1.163***	-25.22***
	(0.179)	(3.719)	(0.216)	(8.451)
Observations	119	119	119	119
R-squared	0.680	0.189	0.889	0.302
Number of id	6	6	6	6

Standard errors in parentheses | *** p<0.01, ** p<0.05, * p<0.1 | Source: Author's Computation, 2024

Effects on Bank Deposits

The positive coefficient of 0.633 for financial integration is statistically significant at the 5% level, indicating that an increase in financial integration is associated with a rise in bank deposits. This result confirms the prior expectation that enhanced financial integration would improve bank deposits. This outcome aligns with similar findings in the literature, such as those by Beck et al. (2016), who observed a beneficial impact of financial integration on bank performance. Consequently, we reject the null hypothesis and conclude that financial integration significantly affects bank deposits.

In contrast to expectations, the coefficient for GDP per capita is -0.0221, significant at the 10% level. This negative relationship implies that higher GDP per capita is linked to lower bank deposits in the CEMAC zone. This finding suggests that economic growth might be associated with reduced deposit levels, which could reflect changes in savings behavior. Mixed results in similar studies, such as those by Demirgüç-Kunt and Levine (2008), support this unexpected finding. Therefore, we reject the null hypothesis, indicating a significant but counterintuitive effect of GDP per capita on bank deposits.

The coefficient for capital asset is 0.00625 and is significant at the 1% level. This positive coefficient suggests that increased compliance with regulatory capital requirements is associated with higher bank deposits. This outcome is in line with the expectation that stronger capital regulations enhance bank stability and attract more deposits. Studies by Barth et al. (2013) support this view, highlighting the positive effect of regulatory capital on financial performance. Thus, we reject the null hypothesis and confirm the significant impact of capital asset on bank deposits.

The coefficient for inflation stands is statistically insignificantdespite its positive sign, implying that inflation has a negligible effect on bank deposits, which was not anticipated to be a major factor. Similar findings from Arora and Cernaian (2019) suggest that the impact of inflation on deposits may be limited. As a result, we fail to reject the null hypothesis, concluding that inflation does not significantly influence bank deposits.

The Lerner index coefficient is 0.383 and is significant at the 1% level. This positive coefficient indicates a beneficial relationship between market power and bank deposits. This result is consistent with expectations and is supported by Berger et al. (2009), who found that greater market power enhances financial performance. Consequently, we reject the null hypothesis and affirm that the Lerner index significantly affects bank deposits.

Effects on Return on Assets (ROA)

The coefficient for financial integration is 4.619 but lacks statistical significance. Although positive, this result indicates that financial integration does not have a significant impact on ROA. This finding deviates from expectations and echoes mixed results observed in studies like those by Claessens et al. (2010), where the effect of financial integration on profitability was variable. Thus, we fail to reject the null hypothesis, concluding that financial integration does not significantly affect ROA.

The coefficient for capital asset is -0.111 and significant at the 1% level. This negative coefficient implies that higher compliance with regulatory capital requirements is associated with lower ROA, contrary to expectations. This result might indicate that stringent capital regulations could constrain profitability, as observed by Pasiouras and Kosmidou (2007). Therefore, we reject the null hypothesis and conclude that capital asset significantly affects ROA, though in an unexpected direction.

The Lerner index coefficient is 1.483 and is significant at the 1% level. This positive effect indicates that greater market power improves ROA, consistent with prior expectations. The result supports findings from Goddard et al. (2011), which identified a positive relationship between market power and profitability. Consequently, we reject the null hypothesis and confirm the significant impact of the Lerner index on ROA.

The coefficient for GDP per capita is 0.887 and is highly significant at the 1% level. This positive effect shows that increased GDP per capita improves ROA, aligning with the expectation that economic growth enhances profitability. This result is consistent with findings by Levine et al. (2000), which reported a positive impact of economic development on bank performance. Hence, we reject the null hypothesis and confirm that GDP per capita significantly influences ROA.

The coefficient for inflation is 0.359 and statistically significant at the 5% level. This positive coefficient suggests that higher inflation is associated with improved ROA. This finding aligns with expectations and is supported by Wong et al. (2013), who noted a positive effect of inflation on bank profitability. As such, we reject the null hypothesis and conclude that inflation significantly impacts ROA.

For bank deposit, the model's R-squared value for bank deposits is 0.680, showing that 68% of the variation in bank deposits is explained by the included variables. This high R-squared value indicates a robust model fit, suggesting that the model effectively captures the factors influencing bank deposits. On its part, the R-squared value is 0.189 for the ROA model, revealing that only 18.9% of the variation in ROA is explained by the independent variables. This relatively low R-squared value suggests that additional factors not included in the model might influence ROA.

Therefore, while financial integration positively affects bank deposits, its impact on ROA is not significant. Other variables, such as GDP per capita, regulatory capital, and the Lerner index, exhibit varying effects on financial performance measures in the CEMAC zone.

V. CONCLUSION AND POLICY SUGGESTIONS

The positive and statistically significant coefficient for financial integration (0.633) on bank deposits suggests that increased financial integration is associated with a rise in bank deposits. This outcome can be attributed to the fact that financial integration facilitates cross-border capital flows and enhances access to a broader range of financial products and services.

These factors collectively boost public confidence in the banking sector, leading to increased deposits. The findings align with those of Beck et al. (2016), who observed a similar positive relationship between financial integration and bank performance. As financial integration progresses, it initially improves the accessibility and variety of financial products, which in turn attracts more deposits into the banking system, ultimately enhancing bank performance.

Although the coefficient for financial integration is positive, it is not statistically significant, indicating that financial integration does not have a significant impact on ROA in the CEMAC zone. This finding diverges from expectations and reflects the mixed results found in the literature, such as in the study by Claessens et al. (2010), where the effect of financial integration on profitability was variable. The lack of significance may be due to the complexity of the pathways through which financial integration affects profitability, potentially involving factors like operational efficiency and risk exposure that are not captured directly in ROA.

To significantly boost the influence of financial integration on the financial performance of commercial banks in the CEMAC zone, targeted policy actions and strategic investments are required. Banks should work on deepening regional integration by actively participating in the CEMAC's financial infrastructure projects, such as the establishment of a regional payments system that can facilitate smoother and more efficient cross-border transactions.

For instance, banks in Cameroon could collaborate with the Central African Banking Commission to enhance regional financial regulations and standards, ensuring better alignment with international norms. This might involve participating in regional forums and working groups aimed at harmonizing financial regulations and practices across member states. Moreover, banks should prioritize establishing correspondent banking relationships with international banks to facilitate global transactions and increase access to international capital markets.

Banks in Gabon and Equatorial Guinea should focus on building strong partnerships with major international financial institutions, which can provide them with new investment opportunities and financial products that cater to their regional needs. For example, by securing partnerships with global banks, they could gain access to syndicated loans and investment opportunities that support large-scale projects in the region.

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APPENDIX ONE

Table 0-1: Stationarity Test results

Variable	Levin–Lin–Chu	CIPS statistics	Observation
Roa	-3.1065**	-3.187	I(0)
Deposit	-1.8424**	-2.773	I(0)
Gdppc	-3.7650***	2.610	I(0)
cap1	-2.2702**	-4.598	I(0)
Infl	-4.6005***	-4.274	I(0)
Central Bank Assets	-6.3874		I(0)

H0 (homogeneous non-stationary): bi = 0 for all i

			10%	5%	1%
Critical	Values	At	-2.21	-2.33	-2.57

Source: Author, 2024

APPENDIX TWO

Table 0-4: Autocorrelation and Heteroscedasticity Test Results

Test	Variable	Test Statistic	Degrees of Freedom	p-value	Interpretation
Wooldridge Test for Autocorrelation	ROA	F(1, 5) = 19.848	5	0.0067	Reject H0: Presence of first-order autocorrelation in ROA model
	Deposits	F(1, 5) = 50.223	5	0.0009	Reject H0: Presence of first-order autocorrelation in Deposits model
Breusch-Pagan Lagrange Multiplier Panel Heteroscedasticity Test	ROA	LM = 737.68329	21	0.00000	Reject H0: Presence of panel heteroscedasticity in ROA model
	Deposits	LM = 87.98303	21	0.00000	Reject H0: Presence of panel heteroscedasticity in Deposits model