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The Mediating Role of Shareholding Structure in the Effect of Banking Liquidity on Bank Profitability: The Case of Ivorian Banks

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Abstract

The overall objective of this study is to examine the role of shareholder structure in the relationship between bank liquidity and bank profitability. The study was based on a sample of 20 individual banks in Côte d'Ivoire over a period from 2014 to 2020. The data were taken from the development indicators of BCEAO (2022) and the World Bank (2022). After applying the Generalized System of Moments Method developed by Blundell and Bond (1998), the results show that bank liquidity has a negative effect on bank profitability. However, the shareholding structure has a positive effect on bank profitability. The interaction between the shareholding structure and bank liquidity has both a positive and a negative effect on bank profitability in the case of banks in the sub-region and foreign banks, respectively. Monetary authorities should therefore put in place a mechanism to recycle excess bank liquidity.

Keywords: Bank liquidity; Shareholder structure; Bank profitability; S-GMM; Ivory Coast

JEL Classification: G21, G28, G32.

1. INTRODUCTION

The banking sector is an essential financial intermediary in the development of any economy. Banks mobilize funds in areas of the economy where there is a surplus relative to those who need them. The sector offers credit facilities to help finance productive activities (Kashyap et al., 2017). Thus, banking institutions provide liquidity and enhance risk diversification (Durand, 2019). Rahman et al. (2015) note that the efficiency of the banking sector can be observed through its profitability and liquidity. Profitability is indicative of a bank's management efficiency, as it ensures that investors receive a return on their investments and that creditors are repaid the funds they have lent (Yusuf et al., 2019).

However, in carrying out its functions, the bank is exposed to several risks, the most significant of which is liquidity risk. The latter is the risk of loss for a bank resulting from its inability to meet its cash requirements. Consequently, the liquidity of a commercial bank is its ability to finance all contractual obligations when they fall due (Amengor, 2010). The issue of bank liquidity has become a thorny one since the global financial crisis of 2008. Indeed, liquidity has a significant effect on depositors' rights (Wasiuzzaman and Tarmizi, 2010), the stability of the financial system, and in particular bank profitability. It is accepted that bank liquidity helps banks to withstand economic shocks, thereby strengthening their stability (Nguyen et al., 2020). However, banks with too much liquidity may miss out on certain business opportunities, leading to a decline in their performance (Nimer et al., 2015).

The relationship between shareholder structure and bank profitability has also been the subject of particular attention in the context of financial globalization. Indeed, the 2008 financial crisis raised many issues concerning the efficiency and stability of the banking industry, but above all, it led to changes in terms of management, shareholder structure, and governance, through the recapitalization of struggling banks, mergers, control by foreign shareholders, and the replacement of executives at underperforming banks.

It is widely accepted that a bank's shareholder structure influences the implementation of governance mechanisms (Demsetz and Lehn, 1985) and the bank's performance. However, the majority shareholder may also take advantage of their dominant position to appropriate part of the bank's wealth, to the detriment of the bank's performance (Fama and Jensen 1983; Shleifer and Vishny, 1997). Thus, the link between the shareholder structure and the bank's profitability is not obvious a priori. For example, a high degree of dispersion among bank shareholders could lead to moral hazard issues, monitoring costs, conflicts of interest between managers and shareholders, and a decline in efficiency (Jensen and Meckling, 1976).

Looking at BCEAO data (2022) for the period 2014-2020, in the case of Côte d'Ivoire, the bank liquidity ratio fell from -0.84 to -1.15, while over the same period, bank profitability appears to have declined slightly from -1.03 to -1.10. However, from 2016 to 2020, bank liquidity rose sharply from -1.15 to 1.09. As for bank profitability, it rose sharply from 2016 (-0.10) to 2018 (1.10), then fell slightly between 2018 and 2020 to 0.49.

According to data from the General Secretariat of the Banking Commission of the West African Monetary Union (WAMU) (2019; 2020), there were 14 sub-regional banks in Côte d'Ivoire in 2019 and 13 in 2021. As for international banks, there were 13 in 2019 and 15 in 2021.

It appears from the above that the relationship between bank liquidity, shareholding structure, and bank profitability seems ambiguous. Thus, the central question that emerges is: what role does shareholding structure play in the effects of bank liquidity on bank profitability?

To properly address this issue, it would be appropriate to follow up on the following secondary questions.

Specific question 1: What is the effect of bank liquidity on profitability?

Specific question 2: What is the effect of shareholder structure on bank profitability?

Specific question 3: What is the influence of shareholder structure on the effects of bank liquidity on bank profitability?

Thus, the general objective of this study is to analyze the effect of shareholder structure on the effects of bank liquidity on bank profitability in Côte d'Ivoire. This general objective is broken down into three specific objectives, namely:

Specific objective 1: Identify the effect of liquidity on bank profitability.

Specific objective 2: Determine the effect of shareholder structure on bank profitability.

Specific objective 3: Examine the influence of shareholder structure on the effects of bank liquidity on bank profitability.

For these specific objectives, we formulate the following hypotheses:

Hypothesis 1: Bank liquidity has a negative effect on bank profitability.

Hypothesis 2: Shareholder structure has a negative effect on bank profitability.

Hypothesis 3: Foreign banks have a negative effect on bank liquidity and bank profitability.

In terms of contribution, this study is both interesting and significant. Indeed, bank liquidity is a crucial factor for banking stability. Examining the effect of bank liquidity on bank profitability in relation to shareholding structure remains relevant for Côte d'Ivoire and the WAEMU zone, given the economic weight of this country. Indeed, Côte d'Ivoire accounts for 40% of the union's wealth and 40% of the zone's money supply. The study also contributes to both theoretical and empirical literature, as it is the first study in the WAEMU zone to link bank liquidity, shareholder structure, and bank profitability.

In terms of methodology, this study uses dynamic panel data, applying two-stage GMM. Dynamic panel GMM makes it possible to correct for the potential endogeneity of explanatory variables. In this way, this method overcomes the limitations of traditional instrumental variable techniques such as double least squares (2SLS) and triple least squares (3SLS). Furthermore, the two-stage system GMM we use is more effective than its single-stage counterpart (Xiao et al., 2007).

The rest of the article is structured as follows. Section 2 reviews the literature. Section 3 is devoted to the study methodology. Section 4 presents the results and discussions. Section 5 is dedicated to the conclusion.

2. LITERATURE REVIEW

There are a number of theoretical and empirical arguments relating to the analysis of the link between bank liquidity, shareholding structure, and bank profitability.

2.1. Review of theoretical literature on the relationship between shareholder structure, liquidity, and bank profitability

This review will be organized on three levels. First, we will address the link between shareholder structure and bank profitability. Second, we will examine the link between shareholder concentration and bank performance. Third, we will discuss the relationship between bank liquidity and bank profitability.

Regarding the relationship between shareholder structure and bank profitability, a bank that is majority-owned by the state may encourage the latter to invest in projects at low interest rates, which would limit their potential gains (Hossain, 2013). Furthermore, according to Banerjee (1997), the managers of state-owned banks exert less effort than those of other types of banks. Several factors are believed to be responsible for the relative inefficiency of public banks. According to Shleifer and Vishny (1986), managers of state-owned banks most often transfer resources to their supporters. Public banks are said to have poor-quality assets and a higher level of default risk compared to private banks (Iannotta et al., 2007). However, state-owned banks in developed countries manage the distortions resulting from state ownership of banks better than those in developing countries (La Porta et al., 2002).

Between domestic and foreign banks, it is generally accepted that foreign banks are better at-risk management and more efficient thanks to their informational advantage and technology (Staikouras et al., 2008).

Regarding the relationship between shareholder concentration and bank performance, concentrated ownership structures lead to stricter governance due to shareholder oversight. Indeed, they have more to lose in the event of poor results, which is why the largest shareholders are obliged to put in place mechanisms to encourage managers to improve performance (Shleifer and Vishny, 1986). However, majority shareholders may seek their own private benefit and thus expropriate other shareholders when voting rights differ from cash flow rights (Stulz, 1988; Claessens et al., 2006). At the same time, a high degree of shareholder dispersion in listed banks raises issues of moral hazard, monitoring costs, and conflicts of interest between managers and dominant shareholders, and could lead to a decline in banking efficiency (Jensen and Meckling, 1976).

Regarding the relationship between bank liquidity and bank profitability, it is widely accepted that efficient and effective liquidity management is crucial to ensuring the survival and prosperity of businesses (McMahon and Stanger, 1995; Drever, 2005). For Deloof (2003), liquidity management is important from the point of view of working capital and profitability. Poor management means that funds are unnecessarily tied up in unused assets.

2.2. Empirical literature review of the relationship between liquidity, shareholder structure, and bank profitability

The influence of shareholder structure on bank profitability and bank liquidity has been the subject of several studies.

Migliardo and Forgione (2018) studied the impact of ownership structure on bank performance in European Union (EU) countries. Based on a sample of 1,459 banks observed over the period from 2011 to 2015, the results show that bank returns are influenced by the type of shareholder. In addition, banks with concentrated shareholdings are more profitable and less risky. In China, Mamatzakis et al. (2017) used a panel of 132 banks over the period 2005-2015 to examine the effect of ownership type on bank performance. The results indicate that banks with high state ownership tend to have lower profitability compared to other types of banks. In addition, they find that banks with a larger number of domestic private shareholders are generally more profitable and that higher foreign ownership may have a negative impact on bank performance.

Using a sample of listed institutions from 2005 to 2015, Kouzez and Séjourné (2019) study the consequences of the growth of foreign shareholding on the Jordanian banking system. The results of this study show that foreign banks perform significantly better than domestic Jordanian banks.

In the context of the restructuring of the Vietnamese banking system, Son et al. (2015) analyzed the impact of ownership structure on bank performance. Using data from 44 banks over the period 2010-2012, they found that the privatization of Vietnamese commercial banks would facilitate their profitability.

Sbai and Meghouar (2017) assess the effect of governance mechanisms on the performance of Moroccan banks. Using a sample of six Moroccan commercial banks listed on the Casablanca Stock Exchange (CSE) over the period 2009-2015, the results show that the size of the board of directors, the presence of foreign directors, and dual management negatively influence the performance of these banks.

In the MENA (Middle East and North Africa) countries, Boussaada and Karmani (2015) studied the impact of shareholder concentration on bank performance over the period 2004-2011. The use of GMM estimators in a system showed that ownership concentration has a positive effect on bank performance. The higher the concentration, the more effective the monitoring, which should lead to better performance. In addition, banks with foreign shareholders appear to have a competitive advantage over domestic banks, which makes their performance better.

In Ghana, Bokpin (2013) studies the effect of ownership structure and corporate governance on the efficiency of the Ghanaian banking sector. Using data mainly from annual reports and financial statements of 25 banks for the period 1999-2007, the results show that foreign banks are more cost-effective than domestic banks. They are generally more profitable and better able to grant performing loans than domestic banks.

3. METHODOLOGY

This section presents the study model specification and variable descriptions, followed by the study model estimation approach.

3.1. Study model specification and variable descriptions

This study builds on the work of Nabalayo et al. (2014), who assess the effect of liquidity on the profitability of Kenyan banks. We adapt their specification to examine the relationship between bank liquidity, shareholding structure, and the profitability of Ivorian banks.

From the above, we can model the following equations in their econometric forms:

$$NIM_{it} = \alpha_{0i} + \alpha_{1i}NIM_{it-1} + \alpha_{2i}LIAR_{it} + \alpha_{3i}STRUCT_{it} + \alpha_{4i}NPAR_{it} + \alpha_{5i}NAR_{it} + \alpha_{6i}QAREG_{it} + \phi_{it} \quad (1)$$

$$NIM_{it} = \gamma_{0i} + \gamma_{1i}NIM_{it-1} + \gamma_{2i}LIAR_{it} \times STRUCT_{it} + \gamma_{3i}NPAR_{it} + \gamma_{4i}NAR_{it} + \gamma_{5i}QAREG_{it} + \eta_{it} \quad (2)$$

With NIM the net interest margin, LIAR and STRUCT respectively the bank liquidity ratio and the shareholder structure, LIARxSTRUCT the interaction variable between the bank liquidity ratio and the shareholder structure; NPAR, NAR and QAREG respectively refer to the non-performing loan ratio, the cost ratio and the quality of regulation.

In addition, α_0 and γ_0 represent constants, but $\alpha_1, \alpha_2, \dots, \alpha_6$ et $\gamma_1, \gamma_2, \dots, \gamma_6$ are the respective coefficients of the explanatory variables in (1) et (2) ; ϕ and η the error terms for the equations, respectively (1) and (2). Finally, i and t refer to the individual and time dimensions in each equation, respectively, according to the sample selected.

The models selected for our work include an endogenous variable and exogenous variables.

- The endogenous variable

In this study, the endogenous variable is bank profitability. This is measured by banks' net interest margins, which represent the ratio of the bank's net income to revenue during a fiscal year. Net interest margins are used to assess a bank's profitability.

- Exogenous variables

In terms of exogenous variables, there are variables of interest and control variables.

- Variables of interest

The variables of interest in the study are bank liquidity and shareholder structure.

- Bank liquidity (LIAR)

Bank liquidity refers to a bank's ability to meet its cash obligations at short notice. Here, LIAR measures a bank's overall liquidity position. LIAR is generally measured as the difference between cash resources and uses, adjusted for various stress scenarios. It is expressed as:

$$LIAR = E[\Delta L] - \alpha \sigma_{\Delta L}$$

Where: ΔL = the expected value of liquidity shortfalls over a given period,

$\sigma_{\Delta L}$ = standard deviation of liquidity shortfalls,

α = a coefficient corresponding to the chosen confidence level (e.g. 95% or 99% in a prudential framework).

According to Doan and Bui (2021), there is a negative relationship between bank liquidity and profitability. Therefore, a negative sign is expected for the coefficient of this variable.

- Shareholder structure (STRUCT)

The ownership structure is defined here by the origin of the banks. We measure it using a dummy variable that takes the value 0 if the bank is foreign and 1 if it is subregional. According to Kořak and Čok (2008), foreign banks perform better than subregional banks. As a result, the expected sign of the coefficient of this variable is ambiguous.

- Control variables

The control variables selected for our research are the ratio of non-performing loans, non-interest expenses, and regulatory quality.

- Non-performing loan ratio (NPAR)

This ratio refers to the ratio of non-performing loans to total loans or assets. It is used to measure credit risk. Noman et al. (2015) found a negative relationship between credit risk and profitability. The expected sign of the coefficient of this variable is therefore negative.

- Non-interest expenses on average total assets (NAR)

NAR refers to the ratio of non-interest expenses to average total assets. In other words, this ratio represents expenses in this model. Furthermore, this ratio provides a measure of the cost of banks' performance in relation to invested assets. The lower this ratio, the better the

banks' profitability. The expected sign of the coefficient of this variable is therefore negative. The expected sign of the coefficient of this variable is therefore negative.

- Regulatory quality (QAREG)

Regulatory quality represents the perception of the government's ability to formulate and implement sound policies and regulations that enable and promote private sector development. The country's score ranges from -2.5 to 2.5. According to Bouheni et al. (2014), strengthening regulation and oversight improves profitability. The expected sign of the coefficient for this variable is therefore positive. All of this data is sourced from the World Bank Development Indicators database (2022) and the BCEAO database (2022). The study covers 20 commercial banks operating in Côte d'Ivoire, observed over a period from 2014 to 2020, for a total of 140 observations. The microeconomic data comes from the financial statements published by each bank to the BCEAO. Micro-statistics on net interest margins, bank liquidity, credit risk, and expenses were obtained from calculations of items extracted from the various bank balance sheets on the BCEAO website. However, macroeconomic data on regulatory quality were obtained from WGI (2022). Table 1 provides information on the expected signs of the variable coefficients and the data sources.

Table 1: Summary table of Expected signs and Data sources for Variables

Exogenous variables	Abbreviation	Sources	Expected signs
Net Interest Margins	NIM	BCEAO (2022)	
Liquidity Ratio	LIAR	BCEAO (2022)	-
Shareholder Structure	STRUCT	BCEAO (2022)	+/-
Non-Performing Loan Ratio	NPAR	BCEAO (2022)	-
The Ratio of Expenses	NAR	BCEAO (2022)	-
Quality of Regulation	QAREG	WGI (2022)	+

Source: Author, based on economic literature

In the rest of the study, we will show the estimation process and the various econometric tests.

3.2. Approach to estimating the study models

The econometric tests and estimation technique will be presented in turn below. In a study such as this, using panel data, the various preliminary tests required are the homogeneity test and the inter-individual dependence test, the unit root test, and the cointegration test. When considering a sample of panel data, the very first thing to check before even thinking about estimating the model coefficients is the homogeneous or heterogeneous specification of the data-generating process. Econometrically, this amounts to testing the equality of the coefficients of the model studied in the individual dimension. In economic terms, this involves checking whether it is reasonable to assume that the theoretical model studied is identical for all countries (pooled model), or whether, on the contrary, there are specific characteristics for each country. In this study, given that the temporal dimension is smaller than the individual dimension, we will use Fisher's homogeneity test:

The assumptions of the homogeneity test are as follows:

- homogeneous panel
- heterogeneous panel

Next, we will perform an inter-individual dependence test in order to choose the unit root tests specific to our study model. To do this, we will first estimate the fixed effects model and the random effects model. The Hausman test (1978) will lead to the choice of a fixed effects model or a random effects model. The hypotheses of the Hausman test are as follows:

- The null hypothesis is that the model is random effects
- The alternative hypothesis is that the model is fixed effects

If the p-value associated with the test statistic is less than 5%, then the null hypothesis of a fixed-effect model is accepted.

Inter-individual dependence can arise from a variety of phenomena such as observed common effects, spatial spillover effects, and unobserved common effects. Furthermore, this may be due to general residual interdependence that could remain even when all observed and unobserved common effects are taken into account.

Regarding the dependence test, we rely on Pesaran (2004) given that the temporal dimension is smaller than the individual dimension ($N > T$). The test hypotheses are as follows:

- The null hypothesis is that there is interindividual independence.
- The alternative hypothesis is that there is interindividual dependence.

If the p-value associated with the test statistic is less than 5%, then the null hypothesis of independence is rejected. The hypothesis of interindividual dependence is therefore accepted. After testing for interindividual dependence, we will check for the presence of any unit roots. To this end, we distinguish between first-generation and second-generation unit root tests. If the test reveals interindividual dependence, then second-generation unit root tests will be appropriate. If not, we will use first-generation tests.

The estimation technique used in the study is based on the GMM estimators developed by Blundell and Bond (1998). Arellano and Bond (1991) developed the standard GMM estimator, also known as the first difference GMM. It involves taking the first difference of the equation to be estimated for each period in order to eliminate specific individual effects, and then instrumenting the lagged endogenous variable with its values from two or more periods ago. However, this method does not allow the effect of time-invariant factors to be identified. Furthermore, Blundell and Bond (1998) showed using Monte Carlo simulations that the system GMM estimator performs better than the first difference estimator, which gives biased results in finite samples when the instruments are weak.

The system GMM estimator developed by Blundell and Bond (1998) improves on the standard GMM by incorporating additional moment conditions that provide a more efficient and robust estimate in the presence of endogenous variables. The system GMM combines difference equations with level equations, thereby exploiting more information and potentially leading to more consistent and efficient estimates. The improvement of the standard model proposed by Blundell and Bond (1998) maximizes the use of information available in panel data. First-difference equations aim to eliminate unobserved fixed effects, thereby allowing the impact of period-to-period variations on the dependent variable to be analyzed. In contrast, level equations use the current values of the variables to enrich the estimation, taking advantage of the additional information provided by the level data. The

system GMM also allows the use of cross-sectional instruments. This strategy reduces endogeneity problems, as it provides reliable instruments that are not directly affected by measurement errors. The consistency of the GMM estimator in a system depends on two essential conditions: the validity of the instruments and the absence of autocorrelation in the error terms. To assess the validity of lagged variables as instruments, the work of Arellano and Bond (1991), Arellano and Bover (1995), and Blundell and Bond (1998) recommends the Hansen test, which checks for over-identification of moment restrictions.

The Sargan test assumes as its null hypothesis the absence of negative first-order correlation among the residuals. If this hypothesis is rejected, it indicates that the estimates are not efficient. The Arellano and Bond test assumes as its null hypothesis the absence of second-order autocorrelation among the residuals. Since this test is performed on the first difference transformation, there is necessarily first-order autocorrelation. However, the absence of autocorrelation between the level residuals is guaranteed if there is no second-order autocorrelation among the difference residuals. When the null hypotheses of these two tests are not rejected, the instruments can be considered valid.

4. RESULTS AND DISCUSSIONS

First, we present the results of the preliminary tests and second, the results of the estimates.

4.1. Results of preliminary tests

The descriptive statistics for all variables are shown in Table 2. This table calls for a few comments. The descriptive analysis shows that bank profitability, expressed in terms of net interest margins, averages 4.648%, with a standard deviation of 2.974. The latter indicates that bank profitability varies within the banking sector. In terms of bank liquidity, it has a rather low average of 0.072 with a dispersion around this average of 0.084, close to the average, thus reflecting a low disparity in bank liquidity observed in the Ivorian banking sector. All of this describes a certain heterogeneity among Ivorian banks.

Table 2: Descriptive Statistics for Study Variables

Variables	Observation	Mean	Standard deviation	Min	Max
NIM	140	4.648	2.974	-2.634	12.938
LIAR	140	0.072	0.084	0.002	0.543
STRUCT	140	0.7	0.459	0	1
NPAR	140	0.000	0.000	0.000	0.003
NAR	140	0.001	0.107	-0.716	0.441
QAREG	140	-0.363	0.132	-0.594	-0.202

Source: Author, based on BCEAO (2022) and WGI (2022) data

The Pearson correlation coefficient matrix is summarized in Table 3. This table shows that the correlations between the explanatory variables are weak to moderate. Of all these variables, the pair NAR and NIM has the highest correlation coefficient (-0.601). However, this correlation is not significant enough to create multicollinearity issues. According to Kennedy (2008), multicollinearity is an issue when the correlation coefficient between two explanatory variables is greater than 0.8. However, since not all variables are significant at the 5% threshold, the absence of multicollinearity should be confirmed by the VIF test. Table 4 presents the results of the VIF test for multicollinearity of the study variables.

Table 3: Correlation Matrix

	NIM	LIAR	STRUCT	NPAR	NAR	QAREG
NIM	1.000					
LIAR	0.173*	1.000				
STRUCT	0.144*	-0.165*	1.000			
NPAR	-0.255*	-0.057*	0.108*	1.000		
NAR	-0.601*	-0.267*	-0.025	0.548*	1.000	1.00

Note: (*) represents the significance level at the 5% threshold.

Source: Author, based on BCEAO (2022) and WGI (2022) data

The result of the multicollinearity test confirms the absence of multicollinearity between the variables in the study, as the average VIF is well below 5.

Table 4: Multicollinearity Tests (VIF)

Variable	VIF	1/VIF
NAR	1.89	0.528271
NPAR	1.52	0.658041
QAREG	1.44	0.694968
LIAR	1.25	0.797597
STRUCT	1.06	0.939123
Moyenne VIF	1.43	

Source: Author, based on BCEAO (2022) and WGI (2022) data

The results of the multicollinearity test confirm the absence of multicollinearity between the variables in the study, as the average VIF is well below 5. When working with data that groups several entities over a given period, it is crucial to determine whether the behaviors or relationships between variables are consistent across these units. Thus, the results of the various homogeneity tests presented in Table 5 indicate that the p-value of the homogeneity test is less than 5%. Consequently, the null hypothesis of a homogeneous panel is rejected, and we conclude that the panel is heterogeneous with the presence of specific effects.

Table 5: Presentation of the Results of Fisher's Homogeneity test

Statistics	P-value
26,80***	0.000

Note: (***) represents the level of significance at the 1% threshold.

Source: Author, based on BCEAO (2022) and WGI (2022) data.

The nature of the specific effects will be determined in the Hausman test (1978), the results of which are shown in Table 6.

Table 6: Presentation of the results of Hausman's tests (1978)

	Fixed effects	Random effects	Hausman test
Statistics	2.69***	144.87***	7.87**
P-value	(0.000)	(0.000)	(0.048)

Note: (***) and (**) represent the level of significance at the 1% and 5% thresholds, respectively.

Source: Author, based on BCEAO (2022) and WGI (2022) data.

Since the p-value of the Hausman test (1978) is less than 5%, we conclude that the model to be estimated is a fixed effects model. Having determined the type of model to be estimated, we can now verify whether there is independence or dependence between individuals. To do this, we perform the Pesaran test (2004), which is applicable when the time dimension is less than the individual dimension. The results shown in Table 7 indicate that the p-value of the inter-individual dependence test is less than 5%. Therefore, we reject the null hypothesis of independence and conclude that there is dependence between individuals in the panel. Consequently, it is appropriate to apply second-generation stationarity tests. With regard to stationarity, GMMs require that the variables be stationary in level. Furthermore, due to the short period of the study (7 years), the variables are intuitively stationary. Thus, it is not necessary to test the stationarity of the variables and therefore to perform cointegration tests.

Table 7: Results of Pesaran's (2004) Dependence Test

Statistics	P-value
15.196***	0.000

Note: *** represents the significance level at the 1% threshold.

Source: Author, based on BCEAO (2022) and WGI (2022) data.

The results of the econometric regression using the Generalized Method of Moments in Systems will be presented below.

4.2. Estimation Results

Two different econometric results are presented. These are the results of the model without interaction and the model with the interaction variable (the liquidity ratio and the shareholder structure). These results are recorded in Table 8.

Table 8: GMM Estimation Results in the System

Variables	Without interaction		With interaction	
	Coefficient	P-value	Coefficient	P-value
NIM (L1)	0.265***	0.000	0.324***	0.000
LIAR	-0.763*	0.078	-	-
STRUCT	1.191***	0.002	-	-
LIARxSTRUCT				
0	-	-	-2.029***	0.006
1	-	-	2.876*	0.064
NPAR	-566.775	0.185	-544.188	0.217
NAR	-10.863***	0.000	-10.992***	0.000
QAREG	5.627***	0.000	3.850***	0.000
Constante	4.764***	0.000	4.644***	0.000
AR(1)	-3.219***	0.001	-3.013***	0.002
AR(2)	0.283	0.776	0.096	0.923
Sargan	17.255	0.994	17.389	0.988
Hansen	20.000	0.980	20.000	0.963

Note: (***) and (*) represent the level of significance at the 1% and 10% thresholds, respectively.

Source: Author, based on BCEAO (2022) and WGI (2022) data.

Hansen's overidentification test for both models shows that the p-values are greater than 5%, which means that the null hypothesis of the validity of the overidentification restrictions (instrument validity) cannot be rejected. We can therefore conclude that the instruments used for these regressions are valid, thus implying the validity of the results. Similarly, the tests for the absence of first- and second-order autocorrelation of the disturbances for both models show first-order p-values below 5% and second-order p-values above 5% for both models.

This means that the hypothesis of no first-order autocorrelation of errors is rejected, but the hypothesis of no second-order autocorrelation cannot be rejected. Consequently, the empirical model was correctly specified because there is no serial correlation in the transformed residuals and the instruments used in the models are valid. It is therefore possible to interpret the results. Table 8 shows that the lagged values of net interest margins and regulatory quality have a positive effect on interest margins at the 1% threshold in both models.

This allows us to characterize the positive dynamic effect and the autoregressive nature of net interest margins. The positive effect of regulatory quality can be explained by the fact that regulatory quality reflects perceptions of the government's ability to formulate and effectively implement policies and regulations that promote private sector development.

Bank liquidity negatively affects net interest margins, meaning that an increase in bank liquidity leads to a decrease in banks' net margins. Holding too much liquidity represents a loss of earnings for banks in terms of lending opportunities. This result is similar to those of Holmstrom and Tirole (2000), who argue that high cash reserves can be costly due to opportunity costs and lost income from other alternative investments. This result can be explained in the WAEMU zone by the excessive caution shown by banks.

As for shareholder structure, it has a positive effect on net interest margins in the model without interaction at the 1% threshold. In addition, the interaction variable between shareholder structure and liquidity has a positive effect on bank profitability when the bank is sub-regional and a negative effect when the bank is foreign. Foreign banks are unable to lend the liquidity they have due to their lack of knowledge of African realities compared to sub-regional banks.

The transposition of foreign standards does not promote credit supply. Furthermore, as Jensen and Meckling (1976) noted, a high dispersion of share ownership in listed banks implies problems of moral hazard, monitoring costs, and conflicts of interest between managers and shareholders, making decision-making inflexible. Furthermore, sub-regional banks with concentrated share ownership are more profitable and less risky, as shown in the work of Migliardo and Forgione (2018).

As for the ratio of non-interest expenses, which has a negative effect on net interest margins, this seems intuitive. Indeed, the higher the overhead costs and loan loss provisions, the greater the losses banks incur on loans. Consequently, this loss is reflected in their net interest margins.

5. CONCLUDING REMARKS

The objective of this study was to analyze the role of shareholder structure in the effects of bank liquidity on profitability in the context of Ivorian banks. In other words, the aim was to analyze the effect of bank liquidity on profitability. We also wanted to examine the effect of shareholder structure on profitability.

Finally, the effect of the interaction between shareholder structure and liquidity on bank profitability was examined. To do this, the study was based on a sample of 20 banks operating in Côte d'Ivoire from 2014 to 2020. The data were taken from the BCEAO (2022) and World Bank (2022) Development Indicators, using the System Generalized Method of Moments developed by Blundell and Bond (1998). After applying the S-GMM, the main results can be generalized as follows.

First, bank liquidity has a negative effect on bank profitability. The increase in bank liquidity does not benefit the supply of bank credit. However, net interest margins depend on the loans granted.

In Côte d'Ivoire, banks prefer to hold higher-yielding and safer treasury bills, as individuals are considered risky. This configuration indicates that Ivorian banks are engaged in a transition towards market banks. Secondly, the shareholding structure has a positive impact on the net interest margins of Ivorian banks.

Specifically, sub-regional banks are recording banking profits. Thirdly, bank liquidity benefits sub-regional banks as it allows them to increase their net interest margins. However, bank liquidity does not allow foreign banks to increase their interest margins. Their lack of knowledge of the economic environment leads them to reduce their credit offerings.

The main findings of this study are as follows. Given that banks operating in Côte d'Ivoire do not take advantage of their banking liquidity for loans to increase their net interest margins, monetary authorities and the government can put in place mechanisms to recycle excess banking liquidity. The central bank could tax banks' excess reserves held in its accounts. The government could recycle excess bank liquidity by issuing treasury bills.

Subregional banks should be encouraged in their efforts to distribute credit, which is in their own interest. The government should continue to improve the quality of regulation, as this has a positive impact on bank profitability and, above all, enables banks to increase their lending.

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