

**Enhancing Financial Performance of Algerian Banks: The Contribution of Governance Mechanisms - A Quantitative Study for the Period 2012-2021**  
مساهمة آليات الحوكمة في تعزيز الأداء المالي للبنوك الجزائرية - دراسة قياسية للفترة 2012-2021

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**Abstract:**

This study aims to investigate the impact of governance mechanisms on improving the financial performance of Algerian banks. The study was conducted on a sample of 12 Algerian commercial banks, consisting of 6 public banks and 6 private banks, over a period of 10 years from 2012 to 2021. The study employed panel data models estimated using the Generalized Least Squares (GLS) method with fixed effects, using EViews12 software. The study found several significant results, including the observation that banks adhere to financial soundness rules, which contributes to enhancing their financial performance. Additionally, the duality in the roles of the board chairman and CEO, as well as the frequency of board meetings, negatively affect financial performance. The study's key recommendations include the need to establish an appropriate framework for the Algerian banking environment that promotes the development of financial performance in banks, as well as the importance of adhering to the principle of separation between the roles of the board chairman and CEO.

**Keywords:** governance mechanisms, banks, financial performance, board of directors, financial soundness.

**JEL Classification Codes :** C01 ,C52 ,G34

ملخص:

تهدف هذه الدراسة لدراسة أثر تطبيق آليات الحوكمة في تحسين الأداء المالي للبنوك الجزائرية، وقد تم تطبيق هذه الدراسة على عينة مكونة من 12 بنك تجاري جزائري "06 بنوك عمومية و06 بنوك خاصة" على مدار 10 سنوات 2012/2021، إذ استخدمت الدراسة نماذج بانل المتغيرة مقطعية المقدرة بطريقة المربعات الصغرى شبه المعممة (*Period sure*)، وقد توصلت الدراسة إلى نتائج أهمها أن البنوك تلتزم بقواعد الملاءة المالية مما ساهم في رفع الأداء المالي للبنوك، وأن الازدواجية في مدير مجلس الإدارة والمدير التنفيذي وكذلك اجتماعات مجلس الإدارة يؤثران سلبا على الأداء المالي، وكانت من أبرز التوصيات التي خرجت بها الدراسة ضرورة إيجاد حجم مناسب للبيئة المصرفية الجزائرية تساهم في تطوير الأداء المالي للبنك، وكذلك الالتزام بمبدأ الفصل في مهام مدير مجلس الإدارة ومدير الإدارة العليا للبنك.

كلمات مفتاحية: آليات الحوكمة، بنوك، الأداء المالي، مجلس الإدارة، الملاءة

تصنيفات JEL : C01 ،C52 ،G34

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## **INTRODUCTION:**

In the aftermath of financial crises that have plagued the global economies, it has become imperative for the affected nations to implement measures aimed at curbing the crises, which are largely rooted in administrative corruption and lack of accountability. This led to the emergence of the concept of corporate governance. Recognizing the positive outcomes, the Basel Committee on Banking Supervision adopted this concept, creating a framework tailored to the needs of banks. As time progressed, international bodies and organizations started mandating its implementation by countries and companies, with a particular focus on banks, in order to embrace governance practices.

Furthermore, Algeria has experienced its fair share of crises and instances of administrative and financial corruption, notably the cases of Banque Khalifa and Banque Commerciale et Industrielle d'Algérie (BCIA). In response, the Algerian authorities have undertaken significant reforms. In this context, Algeria has exerted intensive efforts to establish a robust legislative and institutional framework for bank governance as an initial step. This phase, known as the banking system reform, was embraced by Algeria upon its commitment to a market economy, aiming to ignite competitive advantage among banks to tackle the challenges of an open market. The reforms also aimed to prevent the recurrence of previous economic crises and shocks that had adversely impacted the national economy.

Despite the implementation of these reforms, the Algerian banking sector still faces certain obstacles that hinder its progression towards development and modernization, which are vital for a thriving market economy. It was not until the emergence of the "Charter of Good Governance" on March 11, 2009, that Algeria took a significant step towards addressing these challenges. However, researchers believe that the full implementation of the charter's principles has been hindered by the predominant presence of state ownership in the majority of public banks, making it difficult to fully embrace the ideals of a market economy.

As a result of these efforts, aimed at curbing administrative and financial corruption and leveraging the improved financial performance indicators, the primary goal has been to ensure the continuity of financial institutions.

However, amidst the transformations in the Algerian banking sector, the key question arises:

### **How does the implementation of governance mechanisms affect the financial system in Algeria?**

To address this question, the following hypotheses are formulated:

- The application of governance mechanisms positively influences financial performance, leading to enhanced overall stability and profitability.
- The adherence to effective governance practices enables early detection of potential crises in the studied banks, thereby mitigating risks and promoting resilience.
- Private banks exhibit a higher degree of commitment to implementing governance measures within their organizational structures compared to public banks. Private banks prioritize both prudential standards and financial efficiency, emphasizing the need for effective governance as a competitive advantage.

**Methodology:** This study employs a mixed-methods approach, combining descriptive and quantitative approaches, as well as analytical techniques. The objective is to measure and analyse the relationship between governance mechanisms in Algerian banks and financial performance indicators. In the theoretical aspect, the researchers delve into the fundamentals of bank governance and financial performance, exploring their interconnections. On the applied side, the study employed panel data models estimated using the Generalized Least Squares (GLS) method with fixed effects, using EViews12 software and includes five governance variables as independent variables, one dependent variable, and a control variable. The study encompasses a sample of 12 banks, comprising 6 public banks.

**Study Objectives:** This research paper aims to examine the significant contribution of governance in enhancing financial performance within Algerian banks. The study focuses on an active sample of banks operating in the Algerian banking system. Specifically, the sample includes 6 representative public banks (BEA, BNA, ALBARAKA, BDL, CPA, BADR) and 6 private banks (FranceBank, ABC bank, AGB, ALSALAM BANQU, BNP, Trust).

## **1- LITERATURE REVIEW**

**1-1 Corporate Governance:** The connections between management, the board of directors, shareholders, and other stakeholders of a firm are fundamentally what is meant by the term "corporate governance." These connections provide a framework for setting business objectives and assessing overall success. (Moges Mengstu, 2023, p. 2)

**1-2 Bank Governance:** described banking governance as the process through which a bank's operations are successfully supervised while acting responsibly and transparently in order to attain the intended goals. (Berrani & Hacini, 2021, p. 654)

**1-3 Financial Performance:** Financial performance refers to the assessment and measurement of a company's performance using various financial indicators. These indicators include metrics such as sales growth, profitability, and return on investment (ROI), return on sales (ROS), and return on equity (ROE). A company's financial performance is a crucial factor in determining its success, as it reflects its ability to generate profits and create value for its stakeholders (Rim & Amel, 2020, p. 420)

**1-4 The Relationship between Governance and Financial Performance:** The widely held view that corporate governance determines firm performance and protects the interests of shareholders has led to increasing global attention. However, the way in which corporate governance is organized differs between countries, depending on the economic, political and social contexts.

Extensive research has demonstrated a significant relationship between governance and financial performance in the banking sector. Effective governance practices have been found to positively impact a bank's financial performance. For instance, the presence of an independent board of directors with relevant expertise and qualifications enhances the board's effectiveness and decision-making. This, in turn, contributes to improved financial performance. Additionally, strong governance mechanisms promote transparency, accountability, and risk management, all of which have a direct influence on a bank's financial outcomes (Ben Issa, 2019, p. 49)

Various aspects of board size affect the financial performance of insurance to a great extent. From the regression analysis of (Wanyama & Olweny, 2013, pp. 96-121), there is a positive relationship between board composition and firm financial performance. However, the most critical aspect of board composition was the experience, skills and expertise of the board members as opposed to whether they were executive or non-executive directors. Similarly, leverage was found to positively affect financial performance of insurance firms listed at the NSE. On CEO duality, the study found that separation of the role of CEO and Chair positively influenced the financial performance of listed insurance firms.

A study by (Islami, Setiawan, & Mai, 2020, pp. 605-612) found that directors have an effect on financial performance, this means that the more directors, the more work and time required will be more efficient by dividing tasks among units under the directors, therefore the performance will be more effective. Directors have no effect on firm value, because directors still prioritize improving financial performance rather than company value, even though company value is very important to attract new investors, where the new paid-up capital will increase the income that will be obtained automatically improves financial performance. Independent commissioners have no effect on performance. The duality between the CEO and chair has a significant and negative impact on bank performance. Board of directors' size and gender diversity of the Board have no influence on bank performance but in the subprime crisis, woman CEO has a significant and positive impact on the bank's performance.

### **1-5 Presentation of Study Variables and Construction of Study Indicators**

In the context of this study, we will discuss the variables that will be employed in the empirical analysis, which aim to examine the relationship between governance mechanisms and financial performance. Additionally, a control variable will be included in the analysis:

- **Board Size Mechanism (BS):** Board size is defined as the total number of directors comprising the board, including both executive and non-executive directors. The presence of non-executive directors is essential for monitoring the actions of the CEO and executive management, ensuring the protection of shareholders' interests.
- **CEO Duality Mechanism (CDM):** CEO duality refers to the situation where the CEO simultaneously holds the position of the chairman of the board. Research suggests that separating these roles has a positive impact on the financial performance of banks, as it allows for independent oversight and effective governance. (IKBAL & HALIMI, 2021, pp. 15-16)
- **Independence of External Directors Mechanism (INDM):** This variable represents the proportion of non-executive "external" directors within the board, relative to the total number of board members. The inclusion of independent external directors is crucial for ensuring objectivity, expertise, and minimizing conflicts of interest. (Fares & Khaled, 2023, p. 48)
- **Frequency of Board Meetings per Year (FREQ):** The frequency of board meetings is an important governance aspect. Studies have presented mixed findings regarding its impact on financial performance. Some indicate that more frequent board meetings enhance oversight and improve bank performance, while others suggest no significant

relationship between the two. (Ikbal & Halimi, 2021, p. 68)

- **Bank Solvency Mechanism (SLOV):** Bank solvency is measured by the ratio of net equity to total risk-weighted assets. It serves as an external mechanism that contributes to bolstering governance practices and financial stability. (Fares & Khaled, 2023, p. 49)
- **Capital Adequacy Risk (RCAP):** Capital risk is a term used in business and the economy to refer to the risks to which banks a company may be exposed as a result of a loss of part or all of capital. This can be caused by several factors, including financial losses, market changes, industry competitiveness, poor regulation, global economic events, political events, technological changes, etc.

The function of central banks and supervisory bodies in countries is to monitor and control financial regulations and apply laws and regulations to reduce the risk of capital and protect banks. (GPT, 2023)

- **Return on Equity (ROE):** ROE is a widely used indicator to measure the financial performance of banks. It assesses the return generated on the shareholders' equity investment and can be calculated as the ratio of net profit to total equity. (Sahraoui, 2021, p. 5)

## **1-6 Literature Review**

1. **A research paper by Fares Talhaoui and Khaled Ezawi titled 2023: "Management and Banking Performance: What are the Relationships? A Study on the Algerian Banking Sector."** This study aimed to examine the relationship between governance mechanisms and their impact on banking performance in the studied banks. The study was conducted on 12 banks representing the Algerian banking system using panel models for analysis. The findings revealed that most governance mechanisms have a significant and statistical impact on banking performance.
2. **A study titled "The Impact of Corporate Governance on Bank Financial Performance" conducted by Moges Mengstu Kassaw 2023:** This study aimed to examine the influence of governance on the financial performance of Ethiopian banks over a period of 17 years, from 2005 to 2021. A quantitative methodology was employed to measure the impact of governance on financial performance. The study found that management efficiency and asset quality had a significant negative impact on bank performance. On the other hand, bank size, liquidity ratio, legal reserve, and loan-to-deposit ratio had a significant positive effect on bank performance.
3. **A study titled "The Impact of Corporate Governance on Financial Institutions' Performance" conducted by Gëzim Tosuni 2013:** This study aims to investigate corporate governance practices in companies, particularly financial institutions, and their impact on the performance of these institutions. The study sheds light on the differences between corporate governance in companies and banks and examines the nature of the relationship between corporate governance practices and bank performance in the United States (as an example of an advanced economy), Kosovo, and Montenegro (as examples of countries in Southeastern Europe undergoing a transitional phase). Panel models were used to analyse the relationships. The empirical study shows a positive relationship between the measure of good corporate governance and the market value of banks in the

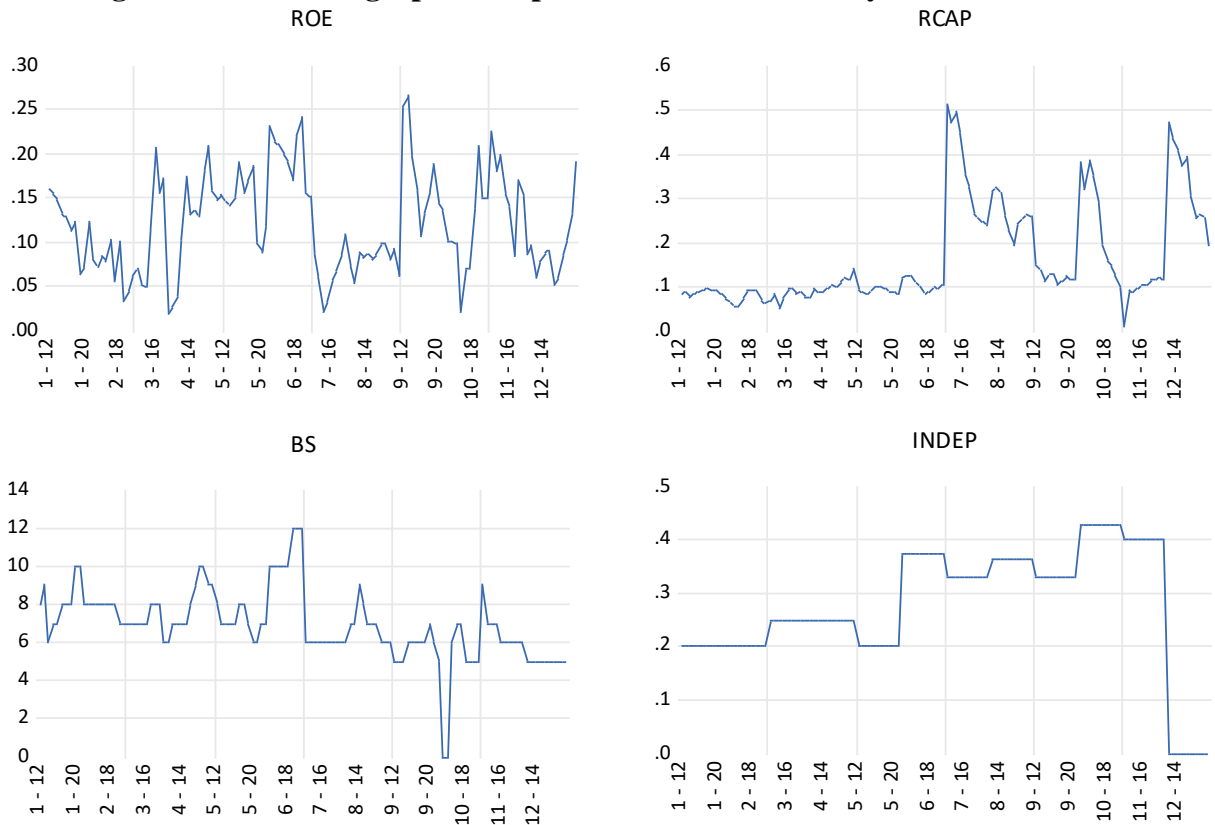
United States. A similar relationship is also observed between one dimension of corporate governance (shareholders' rights) and the performance of financial institutions in Kosovo and Montenegro. Therefore, this research contributes to the scarce empirical research on the relationship between corporate governance and financial institutions' performance in advanced economies, a relationship that has not been previously investigated in Southeastern European countries.

**2- Presentation of Results:**

**2-1 Descriptive and Graphical Analysis**

**2-1-1 Graphical Analysis**

**Figure 01 illustrates graphical representations of the study's variables.**



**Source: Prepared by researchers based on the outputs of EViews 12**

The above figures demonstrate the trends of the dependent variable, ROE, and the explanatory variables, RCAP, BS, and INDM, for the period from 2012 to 2021, including 12 banks. In all variables, there are some clustering patterns observed in certain banks, particularly France Bank, Alsalam Banque, and Trust in relation to the RCAP variable, and Alabaraka bank and Alsalam Banque in relation to the BS variable. However, the dependent variable, ROE, exhibits relative stability.

Due to these clustering patterns, the analysis of relationships among these variables should take into account this phenomenon, which we will attempt to address in the estimation stage using one of the preference methods.

### 2-1-2 Descriptive Analysis

Table 01 presents some descriptive statistics for the study variables.

Date: 07/01/23  
Time: 16:42  
Sample: 2012 2021

	ROE	RCAP	CDM	FREQ	INDM	SLOV	BS
Mean	0.121787	0.163729	0.841667	2.425000	0.277333	0.708333	6.941667
Median	0.114000	0.106306	1.000000	2.000000	0.290000	1.000000	7.000000
Maximum	0.266800	0.510345	1.000000	3.000000	0.429000	1.000000	12.00000
Minimum	0.018500	0.009747	0.000000	2.000000	0.000000	0.000000	0.000000
Std. Dev.	0.056049	0.115430	0.366584	0.496416	0.114861	0.456435	1.834752
Skewness	0.343269	1.362368	-1.871873	0.303433	-0.865922	-0.916698	-0.143285
Kurtosis	2.411472	3.795237	4.503908	1.092072	3.379986	1.840336	5.838976
Jarque-Bera Probability	4.088493 0.129478	40.28296 0.000000	81.38687 0.000000	20.04239 0.000044	15.71838 0.000386	23.53082 0.000008	40.70953 0.000000
Sum	14.61440	19.64752	101.0000	291.0000	33.28000	85.00000	833.0000
Sum Sq. Dev.	0.373835	1.585574	15.99167	29.32500	1.569967	24.79167	400.5917
Observations	120	120	120	120	120	120	120

**Source: Prepared by researchers based on the outputs of EViews 12.**

The table presents some descriptive statistics for the study variables. The average of the dependent variable, ROE, is 0.12%, which appears to be small compared to bank returns. However, the variables RCAP, FREQ, and SLOV have average values of 0.16%, 2.42%, and 0.70% respectively. These positive values indicate their significance. In terms of data dispersion, the most significant source of variability is the RCAP variable, along with the SLOV variable, as evidenced by their considerable standard deviations.

### 2-1-3 Correlation Matrix of Variables

The purpose of this test is to determine whether there is a linear relationship between the explanatory variables and the dependent variable in order to establish the hypothesis of a linear relationship, as required in linear regression models. This test relies on presenting the correlation matrix of the variables using the Pearson correlation coefficient, where a high correlation coefficient between two variables indicates a linear relationship between them.

The results of this test are presented in the following table:

**Table 02 shows the correlation matrix of the study variables.**

Covariance Analysis: Ordinary  
Date: 07/01/23 Time: 16:42  
Sample: 2012 2021  
Included observations: 120

Correlation Probability	ROE	RCAP	CDM	FREQ	INDM	SLOV	BS
ROE	1.000000 -----						
RCAP	-0.423822 0.0000	1.000000 -----					
CDM	0.012984 0.8881	-0.320094 0.0004	1.000000 -----				

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FREQ	-0.013506 0.8836	0.052231 0.5710	0.049641 0.5903	1.000000 -----			
INDM	0.203244 0.0260	-0.061085 0.5075	0.531138 0.0000	0.006779 0.9414	1.000000 -----		
SLOV	0.163232 0.0749	0.484139 0.0000	-0.027204 0.7680	0.143714 0.1174	0.261537 0.0039	1.000000 -----	
BS	0.256198 0.0047	-0.475298 0.0000	0.435937 0.0000	-0.018683 0.8395	0.044115 0.6323	-0.171005 0.0618	1.000000 -----

**.Source: Prepared by researchers based on the outputs of EViews 12**

The table and correlation coefficients reveal that there is a statistically significant moderate negative relationship between the independent variable RCAP and the dependent variable ROE, with a correlation coefficient of -0.42 and a significance level of 0.0001, which is below the accepted significance level of 0.05.

Furthermore, there is a statistically significant weak negative relationship between the independent variable INDM and the dependent variable ROE, with a correlation coefficient of approximately -0.20 and a significance level of 0.02, which is below the accepted significance level of 0.05.

Similarly, there is a statistically significant weak negative relationship between the independent variable BS and the dependent variable ROE, with a correlation coefficient of approximately -0.25 and a significance level of 0.004, which is below the accepted significance level of 0.05.

However, the remaining independent variables do not show a statistically significant relationship with the dependent variable ROE, as they lack acceptable statistical significance at the 0.05 significance level.

## 2-2 Standard Analysis

### 2-2-1 Homogeneity Tests

**Table 03 presents the homogeneity tests for the variable ROE with respect to the significance of all variables.**

Hypotheses	F-Stat	P-Value
H1	5.145563	6.83E-10
H2	2.185285	0.005790
H3	8.881299	5.11E-11

**Source: Prepared by researchers based on the outputs of EViews 12.**

The results of the homogeneity tests, according to Hasseu (1986) as shown in Table ....., were inconsistent. Focusing on the second hypothesis, which determines the homogeneity or differences among banks based on their inclinations, it can be concluded that for the variable ROE, the p-value of the Fisher statistic is 0.0057, which is lower than the 5% significance level. This suggests that there are differences in inclinations among banks for all the variables included in the study. However, after distinguishing between the variables, it becomes evident from the table below that the RCAP variable is the cause of the heterogeneity.



**Table 04 Homogeneity Tests for Variable ROE with respect to RCAP Significance**

Hypotheses	F-Stat	P-Value
H1	7.241846	2.16E-12
H2	3.355330	0.000602
H3	8.959048	3.89E-11

**Source: Prepared by researchers based on the outputs of EViews 12.**

As a result, it is evident that the model to be estimated exhibits heterogeneity. Therefore, the appropriate model in this case is the Fixed Effects (FE) model, without the need to compare with other traditional models (POLS, FE, RE).

### 2-2-2 Estimation of the Suitable Model

After selecting the appropriate model for our study data, which corresponds to the Fixed Effects model, allowing the heterogeneous variable RCAP to vary across each bank, we proceed with the presentation and discussion of the results. Prior to that, we conduct important diagnostic tests.

**Table 05 presents the results of estimating the Fixed Effects model.**

Dependent Variable: ROE  
 Method: Panel Least Squares  
 Date: 07/09/23 Time: 22:07  
 Sample: 2012 2021  
 Periods included: 10  
 Cross-sections included: 12  
 Total panel (balanced) observations: 120

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.120959	0.050315	2.404048	0.0180
BS	0.000817	0.004078	0.200320	0.8416
CDM	-0.024510	0.021348	-1.148099	0.2536
INDM	0.148477	0.134308	1.105502	0.2715
FREQ	-0.002939	0.007511	-0.391251	0.6964
SLOV	0.020761	0.012443	1.668573	0.0983
RCAP	-0.145351	0.128214	-1.133665	0.2596
RCAP*(CROSSID=1)	-0.007530	0.231761	-0.032489	0.9741
RCAP*(CROSSID=2)	-0.590373	0.298816	-1.975710	0.0509
RCAP*(CROSSID=3)	-0.356559	0.240457	-1.482840	0.1412
RCAP*(CROSSID=4)	0.176043	0.178895	0.984054	0.3274
RCAP*(CROSSID=5)	0.159904	0.213873	0.747659	0.4564
RCAP*(CROSSID=6)	0.353651	0.289142	1.223105	0.2241
RCAP*(CROSSID=7)	-0.115121	0.125464	-0.917561	0.3610
RCAP*(CROSSID=8)	-0.165520	0.144734	-1.143614	0.2555
RCAP*(CROSSID=9)	0.256360	0.192696	1.330388	0.1864
RCAP*(CROSSID=10)	-0.154937	0.175208	-0.884303	0.3786
RCAP*(CROSSID=11)	-0.176673	0.273117	-0.646877	0.5192
Root MSE	0.036378	R-squared	0.575201	
Mean dependent var	0.121787	Adjusted R-squared	0.504401	
S.D. dependent var	0.056049	S.E. of regression	0.039458	
Akaike info criterion	-3.489693	Sum squared resid	0.158805	
Schwarz criterion	-3.071570	Log likelihood	227.3816	
Hannan-Quinn criter.	-3.319891	F-statistic	8.124324	
Durbin-Watson stat	1.159006	Prob(F-statistic)	0.000000	

**Source: Prepared by researchers based on the outputs of EViews 12.**

The table below reveals the presence of the contemporaneous correlation problem among the estimation residuals, as indicated by the p-value of the Pesaran CD test, which is 0.0003, exceeding the 5% significance level. Therefore, we need to re-estimate the model using the Generalized Least Squares (GLS) method to address this issue.

**Table 06 presents the results of the independence test.**

ResiCDM Cross-Section Dependence Test  
 Null hypothesis: No cross-section dependence (correlation) in resiCDMs  
 Equation: EQ02  
 Periods included: 10  
 Cross-sections included: 12  
 Total panel observations: 120  
 Note: non-zero cross-section means detected in data  
 Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	117.2187	66	0.0001
Pesaran scaled LM	4.458013		0.0000
Pesaran CD	3.586253		0.0003

**Source: Prepared by researchers based on the outputs of EViews 12.**

**2-2-3 Model Re-estimation after Improvement**

To address the issue of contemporaneous correlation among the estimation residuals, we re-estimate the same model using one of the generalized least squares methods, specifically the Period SUR (Seemingly Unrelated Regression) method.

**Table 07 presents the results of estimating the Fixed Effects model after improvement.**

Dependent Variable: ROE  
 Method: Panel EGLS (Period SUR)  
 Date: 07/01/23 Time: 17:05  
 Sample: 2012 2021  
 Periods included: 10  
 Cross-sections included: 12  
 Total panel (balanced) observations: 120  
 Linear estimation after one-step weighting matrix

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.120762	0.024252	4.979522	0.0000
BS	0.001468	0.002307	0.636174	0.5261
CDM	-0.015964	0.009140	-1.746633	0.0837
INDM	0.101228	0.064582	1.567443	0.1201
FREQ	-0.003046	0.001780	-1.711384	0.0900
SLOV	0.019755	0.004517	4.373745	0.0000
RCAP	-0.150584	0.058552	-2.571802	0.0116
RCAP*(CROSSID=1)	-0.057728	0.071983	-0.801963	0.4244
RCAP*(CROSSID=2)	-0.635577	0.090309	-7.037841	0.0000
RCAP*(CROSSID=3)	-0.359972	0.071404	-5.041369	0.0000
RCAP*(CROSSID=4)	0.177446	0.063208	2.807330	0.0060
RCAP*(CROSSID=5)	0.178609	0.063243	2.824163	0.0057
RCAP*(CROSSID=6)	0.398897	0.136520	2.921885	0.0043
RCAP*(CROSSID=7)	-0.094195	0.059100	-1.593823	0.1141
RCAP*(CROSSID=8)	-0.142898	0.068479	-2.086755	0.0394
RCAP*(CROSSID=9)	0.294210	0.089307	3.294380	0.0014
RCAP*(CROSSID=10)	-0.103475	0.092106	-1.123426	0.2639

RCAP*(CROSSID=11)	-0.068542	0.142224	-0.481932	0.6309
Weighted Statistics				
Root MSE	0.939667	R-squared	0.992912	
Mean dependent var	20.11224	Adjusted R-squared	0.991731	
S.D. dependent var	30.11033	S.E. of regression	1.019212	
Sum squared resid	105.9568	F-statistic	840.5002	
Durbin-Watson stat	2.186038	Prob(F-statistic)	0.000000	

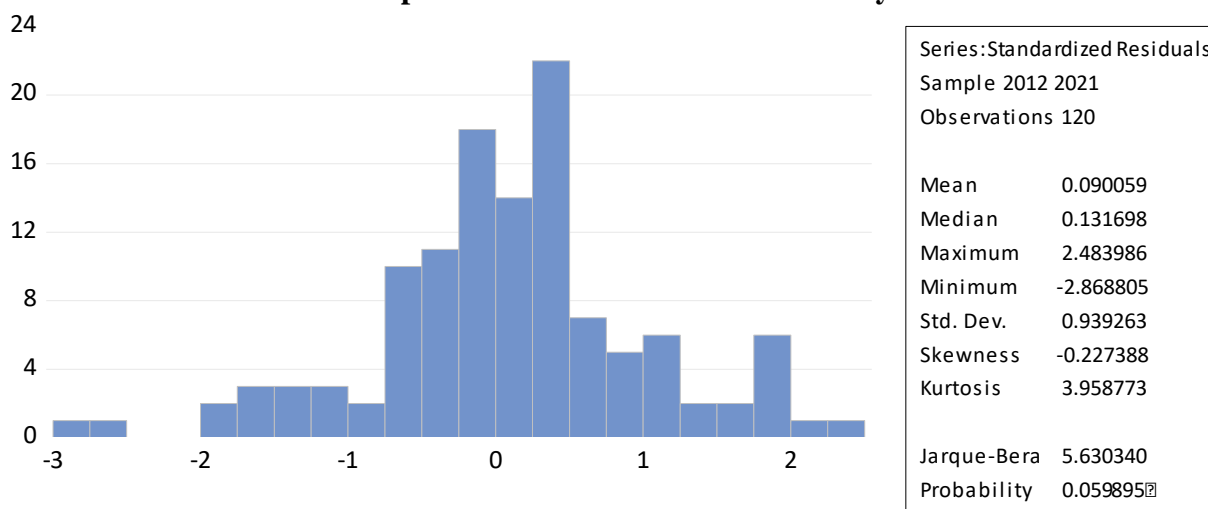
**Source: Prepared by researchers based on the outputs of EViews 12.**

The results shown in the table above are overall satisfactory, indicating the model's suitability for analysis. The adjusted coefficient of determination exceeds 99%, indicating the strong explanatory power of the independent variables for the dependent variable. The same applies to the Fisher statistic, as the model exhibited statistical significance with a p-value of 0.0001, which is less than the 5% significance level adopted in our study. This means that the model is accepted as a whole. The results of the remaining tests are as follows:

**2-2-3-1 Normality Test of Residuals**

The Jack-Bera test determines whether the residuals follow a normal distribution or not. From the p-value of the test statistic, which is 0.0598 and is lower than the 5% significance level, we can conclude that the residuals are normally distributed, ensuring the assumption of normality for the estimations.

**Table 08 presents the results of the normality test.**



**Source: Prepared by researchers based on the outputs of EViews 12.**

**2-2-3-2 Independence Test**

The Breusch-Pagan test examines the independence of errors across cross-sections. The p-value of the test statistic is 0.487, which is less than the 5% significance level. Therefore, we accept the null hypothesis of error independence across cross-sections. Hence, the problem has been addressed compared to the unimproved model.

**Table 09 presents the results of the independence test for the improved model.**

ResiCDM Cross-Section Dependence Test  
 Null hypothesis: No cross-section dependence (correlation) in weighted  
 resiCDMs  
 Equation: EQ01  
 Periods included: 10  
 Cross-sections included: 12  
 Total panel observations: 120  
 Note: non-zero cross-section means detected in data  
 Cross-section means were removed during computation of correlations

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	26.87026	66	1.0000
Pesaran scaled LM	-3.405806		0.0007
Pesaran CD	0.693762		0.4878

**Source: Prepared by researchers based on the outputs of EViews 12.**

### 2-2-3-3 Autocorrelation Test of Errors

To test for autocorrelation of errors, we conduct the Durbin-Watson test, which indicates, based on the Q-statistic, that there is no issue of autocorrelation among the estimation residuals. This is supported by the p-value of 0.497, which is greater than the 5% significance level adopted in our study.

**Table 10 presents the results of the Q test for autocorrelation.**

Date: 07/10/23 Time: 08:50

Sample (adjusted): 2013 2021

Included observations: 108 after adjustments

Autocorrelation	Partial Correlation	AC	PAC	Q-Stat	Prob
		1 -0.177	-0.177	3.4753	0.062
		2 -0.053	-0.087	3.7931	0.150
		3 -0.157	-0.190	6.5806	0.087
		4 -0.044	-0.126	6.8020	0.147
		5 0.035	-0.034	6.9429	0.225
		6 -0.029	-0.083	7.0440	0.317
		7 0.053	0.000	7.3733	0.391
		8 0.002	-0.001	7.3737	0.497

**Source: Prepared by researchers based on the outputs of EViews 12.**

### 2-2-3-4 Heteroscedasticity Test of Errors

The Breusch-Pagan test indicates that the errors exhibit homoscedasticity across cross-sections, as supported by the p-value of the test statistic, which is 0.0617 and exceeds the 5% significance level. This suggests that the model is free from heteroscedasticity issues.

**Table 11 presents the results of estimating the Fixed Effects model after improvement.**

Test for Equality of Variances of RESID01

Categorized by values of CROSSID

Date: 07/10/23 Time: 08:54

Sample: 2012 2021

Included observations: 120

Method	df	Value	Probability
Bartlett	11	28.74280	0.0025
Levene	(11, 108)	3.228863	0.0008
Brown-Forsythe	(11, 108)	1.804887	0.0617

**Source: Prepared by researchers based on the outputs of EViews 12**

### **2-3 Discussion of Results**

As indicated by the above results, the estimated model takes the following form:

$$\text{ROE} = 0.12076 + 0.00146\text{BS} - 0.01596\text{CDM} + 0.10122\text{INDM} - 0.00304\text{FREQ} + 0.01975\text{SLOV} - 0.15058\text{RCAP}$$

The estimated model demonstrates a high degree of goodness of fit, with 99% of the variations in the dependent variable ROE explained by the six explanatory variables. This is supported by the statistical significance of the Fisher statistic, which has a p-value of 0.0001, well below the 5% significance level. Thus, the model has a high level of statistical significance.

Regarding the partial significance, the intercept parameter indicates that if all explanatory variables are non-influential, the ROE is expected to be 0.12076%. This expectation is statistically significant, with a p-value of 0.0001, which is lower than the 5% significance level.

For the explanatory variables, an increase in CDM by one unit leads to a decrease in ROE by 0.01596%, assuming the other variables remain constant. This effect is statistically significant at a 10% significance level, with a p-value of 0.0837. Similarly, an increase in FREQ by one unit results in a decrease in ROE by 0.00304%, and this effect is statistically significant at a 10% significance level with a p-value of 0.0900.

On the other hand, an increase in SLOV by one unit leads to an increase in ROE by 0.01975%. This positive effect is statistically significant at a 5% significance level, with a p-value of 0.0001.

Regarding the variable RCAP, which was found to be heteroscedastic according to the Hausman test, its impact on ROE can be divided into two parts. The first part includes banks in which RCAP is not influential on ROE at a 5% significance level. These banks are BNA, Fransabank, Alsalam banqu, and BNP. The second part includes other banks where the influence of RCAP on ROE is statistically significant but varies from bank to bank. Some banks, such as Albaraka Bank, exhibit a significant and positive impact, exceeding 0.39889%. The bank AGB has the next highest impact with 0.29421%. On the other hand, banks like BEA and CPA have a relatively lower positive impact of 0.17% each. In contrast, banks such as BADR, BDL, ABC BANK, and Trust have a negative impact on ROE. Among them, BADR has the largest negative impact, exceeding 0.63557%. It is followed by BDL with a negative impact of 0.35997%. Finally, Trust and ABC BANK have negative impacts of 0.15058% and 0.14289% respectively.

The variables INDM and BS do not have statistically significant effects on ROE.

### **3- Discussion and Conclusion**

Based on this comprehensive study of the impact of governance on the financial performance of Algerian banks, the following conclusions can be drawn:

- The duality mechanism in executive management has a negative impact on the financial performance of Algerian banks, possibly due to the formal independence of the board of directors' chairman, which does not grant full autonomy in decision-making, It is not consistent with the study of (Ikbali & Halimi, 2021)
- The study reveals that the mechanism of board of directors' meetings has a negative effect on financial performance. This can be attributed to the banks' reliance on periodic meetings stipulated by Algerian legislation, which typically consist of two or three meetings per fiscal year, This is consistent with the study of (Sahraoui, 2021)

- The mechanism of compliance with financial solvency positively influences the financial performance of banks. This indicates the extent to which the studied banks comply with the financial efficiency standards set by the Basel Committee, estimated at 8% and 10.5% starting from 2019. This is consistent with the study of (Fares & Khaled, 2023)
- The impact of capital risk is divided into two categories. The first category includes banks that are not influential on financial performance, namely BNA, Fransabank, Alsalambanqu, and BNP. This is largely due to the lack of alignment between ROA and ROE, meaning that if ROA decreases, ROE increases, and vice versa. The second category includes banks where capital risk has either a positive or negative impact. Banks such as Albaraka Bank, AGB, BEA, and CPA have a positive impact on financial performance. This is because ROA and ROE increase or decrease together. On the other hand, banks like BADR, BDL, ABC BANK, and Trust have a negative impact on financial performance due to the decrease in ROA compared to ROE during the study period.
- The number of board of directors' members and the independence of the board do not have a significant impact on financial performance. This can be Lead to several reasons, including the lack of an appropriate and compatible size for the board of directors in the banking environment or the absence of the necessary qualifications to lead the board of directors.

**Some of the key recommendations we suggest in this study are as follows:**

- Algerian banks should establish the optimal size for their board of directors in line with the Algerian banking environment.
- It is crucial to adhere to the principle of separating the roles of the board chairman and the top management.
- There is a need to increase the frequency of regular board meetings to address weaknesses and strengthen the bank's areas of strength, aiming to improve its financial performance.
- The mechanisms should be reformulated in accordance with the Algerian banking system.
- Regulatory authorities, particularly the central bank, should monitor and oversee the actual implementation of governance principles within banks.

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