The Determinants of Islamic Banking Competition within the Traditional Banking Finance Environment in Algeria: A Case Study of Bank Al Baraka Algeria from 2003 to 2023

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Abstract:

Competition in the Islamic banking sector plays a critical role in shaping both its growth and long-term stability. The unique characteristics of Islamic finance, particularly its commitment to Shariah principles, introduce specific challenges that differ from those faced by conventional banks. At the same time, Islamic banks must also meet the evolving demands of modern financial markets. In light of this, examining the key drivers of competition becomes essential for understanding the performance dynamics of Islamic financial institutions, especially in an environment marked by economic shifts and growing rivalry with traditional banks.

This study aims to explore the main factors influencing banking competition in Al Baraka Bank Algeria over the period from 2003 to 2023. By applying the ARDL model, the results indicate that for every one-unit increase in profitability and liquidity, the bank's competitive position improves by approximately 0.033 and 0.081 units, respectively. Conversely, a one-unit rise in financial safety levels leads to a decline in competitiveness by 0.041 units. Based on these findings, it is crucial for Al Baraka Bank to carefully balance its pursuit of financial security with strategic competitive positioning to ensure its sustainability within the Algerian banking market.

Keywords: Bank competition, bank liquidity, bank safety, ARDL model

JEL Classification:**C 32**, **G20**, **G28**

ملخص :

تعد المنافسة في القطاع المصرفي الإسلامي أحد العوامل الأساسية التي تؤثر على نموه واستقراره، حيث تفرض طبيعة الصيرفة الإسلامية تحديات تتعلق بالامتثال لأحكام الشريعة الإسلامية ومتطلبات السوق المالية الحديثة، وفي هذا السياق تكتسب دراسة محددات المنافسة أهمية بالغة لفهم العوامل التي تؤثر على أداء المصارف الإسلامية، لا سيما في ظل بيئة اقتصادية متغيرة وتزايد المنافسة مع البنوك التقليدية.

لذا نهدف ضمن حيثيات هذه الدراسة في البحث عن محددات المنافسة في بنك البركة الجزائري خلال الفترة 2003-2023، وبالإستعانة بنموذج ARDL توصلنا إلى أن كلما زادت مستويات الربحية والسيولة المصرفية في بنك البركة الجزائري بوحدة واحدة تزداد درجة المنافسة لبنك البركة الجزائري بـ 0.033 و 0.081 على التوالي، في حين كلما ازدادت مستويات السلامة المصرفية في مصرف البركة الجزائري بوحدة واحدة تنخفض مستويات المنافسة بـ 0.041 وحدة، لذا يجب على بنك البركة الجزائري أن يأخذ في الحسبان درجة المنافسة عند تبني ساسة تحقيق السلامة المصرفية، حتى يضمن بقائه في السوق المصرفي الجزائري.

الكلمات المفتاحية :المنافسة المصرفية، السيولة المصرفية، نموذج ARDL

تصنيف JEL: **G28** ،**C 32**, **G20**

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1.Introduction

The global banking industry is undergoing significant transformations driven by ongoing economic and financial developments. These changes have intensified competition among banking institutions, both conventional and Islamic. Within this evolving landscape, banking competition has emerged as a crucial element in enhancing the quality of financial services, particularly as most advanced financial institutions increasingly adopt digital technologies and integrate into the digital economy to deliver modern banking solutions.

However, the nature of competition in Islamic banks differs fundamentally from that in conventional banks. Islamic financial institutions operate under a distinct regulatory framework shaped by Shariah principles, which prohibit interest-based transactions and promote profit-and-loss sharing mechanisms. As a result, the dynamics of competition in Islamic banking are influenced by a range of key factors, including liquidity levels, profitability indicators, financial stability, the regulatory environment, and the extent of innovation in finance and technology.

In Algeria, Al Baraka Bank stands out as one of the leading institutions in the Islamic banking sector, striving to strengthen its competitive edge in a market primarily dominated by conventional banking models. Nonetheless, the bank's ability to compete is shaped by a range of internal and external constraints, including regulatory challenges and market-specific dynamics. This leads us to the following central research question: **What are the main determinants of banking competition in Al Baraka Bank Algeria during the period 2003–2023?**

Sub-questions: In light of the main research question, the following secondary questions can be formulated:

-How can banking competition be defined, and what are the key indicators used to measure it?

-What are the potential advantages and disadvantages associated with competition in the banking sector?

- How do liquidity and profitability levels influence the degree of banking competition?

Hypotheses: The level of competition in Islamic banking within the Algerian financial environment is shaped by internal factors specific to Islamic banks. Based on this central hypothesis, the following sub-hypotheses are proposed:

-The competitiveness of Al Baraka Bank Algeria is influenced by its profitability performance.

-An increase in the bank's liquidity levels contributes to strengthening its competitive position.

-Enhanced financial safety within Al Baraka Bank supports a higher degree of banking competition.

Significance of the Study: Exploring banking competition is valuable for understanding the dynamics of the financial system and improving the overall efficiency of the banking sector. It provides insights into market concentration and its impact on interest rates and service quality. Moreover, it encourages a culture of innovation and promotes transparency, both of which enhancefinancial institutions' overall performance. At the regulatory level, a deeper understanding of competitive behavior equips policymakers with the tools to implement strategies that foster the stability and resilience of the banking system.

Objective: The primary aim of this study is to gain a comprehensive understanding of the determinants of Islamic banks' competitive dynamics, particularly in comparison with conventional banks. This involves analyzing internal and external factors that either support or hinder Islamic banks' ability to compete effectively in an increasingly complex and

evolving financial environment. By examining these variables, the study seeks to provide actionable insights that can help Islamic banks formulate more effective strategies to improve operational efficiency, strengthen their presence in the financial market, and expand their customer base. Ultimately, this research aspires to contribute to the broader discourse on enhancing the sustainability and competitiveness of Islamic banking within both local and global contexts.

Research Methodology: To explore the subject matter of this study, a descriptive analysis is applied, using selected statistical indicators to guide the interpretation and evaluation of the data. Furthermore, econometric techniques are integrated to identify and assess the connections between the key variables examined, providing deeper insight into the underlying relationships within the research framework.

Study Boundaries: The investigation covers 20 years, from 2003 to 2023. The spatial focus of the research is confined solely to Al Baraka Bank operating within Algeria.

2.1. Conceptual Framework of Banking Competition

Banking competition is a vital component that directly influences both the effectiveness and stability of the financial system. It reflects how banks interact with and compete against one another in delivering various financial services and in attracting a loyal customer base. This rivalry encourages banks to improve service quality, innovate their product offerings, and optimize operational efficiencies. Understanding the core concepts of banking competition is essential, as it provides insight into how market dynamics operate, the behavior of financial institutions, and the overall health of the banking sector. This section delves into these fundamental aspects to lay the groundwork for comprehending the competitive forces shaping the banking industry.

1.1. Definition of Banking Competition

Before delving into the concept of banking competition, it is essential first to clarify the general notion of competition. Adam Smith described competition as the process of allocating and utilizing available resources most efficiently through price mechanisms, aiming to achieve desired objectives (Battal & Faisal Ghazi, 2021, p. 36). Accordingly, banking competition is defined as the presence of multiple marketers for the same product who compete to attract customers by relying on various methods such as pricing, quality, specifications, timing of sale, distribution methods, after-sales service, gaining customer loyalty, and others (Al-Nasari & Faisal, 2024, p. 11), Banking competition can be described as the condition that allows a bank to operate effectively across diverse banking markets and interact optimally with its surrounding factors to maintain a competitive edge. In other words, it refers to a bank's ability to compete by possessing a unique competitive advantage that demonstrates its strength and preparedness to carry out its functions in ways that its rivals cannot match (Mukhrebesh & Beliman, 2021, p. 564) , Banking competition can be seen as a strategic behavior adopted by multiple organizations offering banking services or alternative financial products. Their primary goal is to capture the largest share of the banking market by attracting as many clients as possible. This rivalry is demonstrated through various strategies, including enhancing product quality, reducing costs, implementing cutting-edge technologies, and delivering superior customer care, among others(Boukhalala, 2017, p. 14).

Based on the previously mentioned definitions, banking competition can be understood as a framework within which banking institutions aim to attract the highest possible number of clients in the financial market. This objective is pursued through various methods, such as cost reduction, the integration of advanced technologies into service delivery, enhanced product quality, and excellent customer care.

1.2. Implications of Banking Competition

From the above discussion, the advantages and disadvantages of banking competition can be outlined as follows(Bikker, Spierdijk, & Finnie, 2007, p. 1)(Al-Nasari & Faisal, 2024, p. 24):

A. Positive Effects

-Banking competition helps facilitate access to financial services and external financing for individuals and companies, thereby stimulating economic activity.

- It motivates banks to finance projects with high productivity and profitability.
- It improves the efficiency of interest rate transmission within the banking system.
- It offers customers a wider range of banking service options.
- It encourages banks to develop innovative services that meet market needs.
- It enhances operational efficiency within banking institutions.
- It contributes to lowering the cost of banking services provided to the public.

-It helps improve service quality and increase effectiveness in the banking sector.

B. Negative Effects

- Intense competition imposes additional financial burdens on banks due to higher interest rates on deposits aimed at attracting customers, along with increased promotional and advertising expenses.
- Some banks may finance projects that appear profitable but carry high risks in an attempt to offset competition losses.

-It negatively affects bank revenues by reducing lending interest rates and lowering fees and commissions.

1.3. Instruments of Banking Competition

The primary objective driving competition among commercial banks is to attract as many clients as possible, whether depositors or borrowers (investors). To achieve this goal, banks employ a variety of strategies and tools, which can be summarized as follows(Naba' Sayel & Ibrahim Fadl, 2020, pp. 7-8):

- Capital:In the banking sector, capital is viewed as a critical indicator of a bank's financial strength and resilience. It serves as a protective shield for depositors against potential risks arising from poor management or inefficient fund use. Generally, the larger a bank's capital base, the greater the trust it inspires among clients, which in turn increases their willingness to engage with the bank and use its services.

As a result, financial institutions—huge and well-established onesactively compete to strengthen their capital positions. They aim to enhance their reputation and attract a broader customer base by demonstrating financial soundness and stability. This competitive effort to increase capital levels is often undertaken with close attention to the minimum capital requirements established by regulatory bodies, such as those outlined by the Basel Committee on Banking Supervision.

-Pricing Strategy: One of the key manifestations of banking competition lies in pricing, which can be observed in two main areas:

-Interest rates on deposits: Banks often compete by offering higher interest rates to attract savers and encourage them to deposit their funds. This upward adjustment in rates is used to appeal to a broader base of depositors.

-Interest rates on loans: On the lending side, banks engage in competitive practices by reducing interest rates on loans to the lowest possible levels. The objective is to stimulate borrowing activity and attract investors seeking affordable financing options.

Service Fees and Commissions:

Another area where banking competition is evident is in the reduction of service fees and commissions. Banks often lower these charges to attract new clients, retain existing ones, and strengthen customer loyalty to their services.

-Technology Utilization: Technology has become one of the most critical tools through which banks compete and expand their market share. The integration of advanced technological systems into banking operations allows institutions to deliver services more efficiently and with greater ease. This, in turn, enhances customer experience and attracts a larger client base.

The more a bank adopts cutting-edge technologies and modern digital solutions, the faster and more convenient its services become. Additionally, technology enables banks to design and introduce innovative financial products, giving them a competitive edge in the market. As such, technological advancement represents a key dimension in the ongoing competition among banks.

Banking Service Marketing:

Effective marketing of banking services plays a crucial role in capturing customers' attention and stimulating their interest in the products offered. It involves presenting the services in a compelling way that highlights their features, benefits, and the ability to meet clients' needs and preferences. To achieve this, banks rely on a wide range of promotional and communication tools, including advertising campaigns and public relations efforts.

Bank marketing also extends to the distribution of services, which is strongly influenced by the geographical spread and accessibility of bank branches. In this context, competition arises as banks strive to open as many branches as possible in strategic locations convenient for customers. Furthermore, banks compete by selecting operating hours that suit client schedules and by ensuring that services are delivered with maximum efficiency and quality during those times.

Quality Customer Service:

Banks actively compete to enhance their treatment of both current and potential clients, recognizing that customer experience plays a vital role in securing loyalty and satisfaction. Institutions strive to ensure a welcoming environment, attentively listen to clients, respond effectively to inquiries, and seriously consider customer feedback and suggestions—all to improve service quality and maintain long-term relationships.

To achieve this, banks invest in both human and material resources to elevate client service. Positive interactions between bank employees and customers significantly influence clients' willingness to continue dealing with the bank, as such treatment fosters a sense of comfort, trust, and security. Consequently, banks aim to deliver an exceptional in-branch experience by focusing on every detail that benefits customers. Examples of these efforts include:

-Providing courteous, respectful, and friendly service from the moment a client enters the branch.

-Equipping customer service areas with modern and comfortable facilities.

-Building and maintaining strong, personalized relationships with clients.

-Supporting customers during challenging financial times with understanding and flexibility.

-Offering special benefits, such as giving depositors priority access to loans and other financial services.

1.4. Types of Banking Competition

There are several forms of competition among banks, and these vary according to the method or tool used. Accordingly, these types can be categorized into such(Boukhalala, 2017, pp. 19-20):

1.4.1. banking competition based on the method of competition: In this case, competition is divided into two categories: price competition and non-price competition.

-Price-based competition: This form of competition revolves around adjusting prices, where banks strive to gain a larger share of the market by reducing fees or loan interest rates, or by increasing the interest rates offered on deposits. However, such competition is often limited by government regulation, particularly through central banks, which set interest rate caps on both loans and deposits. In some countries, offering interest on current accounts is even prohibited

-Non-price competition: This approach involves using strategies other than altering prices, such as enhancing service quality through advertising and promotions. Banks focus on improving customer convenience, aiming to make their services as accessible as possible—quickly, easily, and at minimal cost.

Non-price competition is viewed as a more powerful approach, serving as a prime tactic for banks in attracting new customers. Research indicates that clients prioritize the bank's ability to provide services efficiently and effectively.

1.4.2. banking competition based on their impact on the institution:Banking competition types based on their impact on the institution: This category includes the following types:

-Direct competition: occurs when an institution faces pressure from other organizations offering similar or substitute products. This competition influences its market share, especially when the number of potential customers is limited. In the banking sector, such competition occurs between banks themselves or between banks and other financial institutions, such as insurance companies.

-Indirect competition: refers to the competition that all institutions in the economy face. It involves competing for resources such as labor, raw materials, and capital. However, these institutions generally pay little attention to it, as it doesn't directly affect their operations.

1.4.2.Banking competition based on geographical scope: This type can be categorized into

-Local competition: occurs between institutions operating within a specific country. This type of competition is seen across the banking sector, including both financial and non-financial institutions. Typically, this competition takes place among smaller banks operating within a single geographical area in a particular country.

-International competition: occurs when a business organization expands its activities beyond its home country's borders in search of customers, regardless of their nationality. This type of competition is more complex and interconnected, requiring specialized skills and substantial financial resources.

1.5. Indicators for Measuring Banking Competition

Banking competition is measured in economic literature through two main approaches: the traditional industrial organization theory and the modern industrial organization theory. The first approach relies on structural measures, while the second focuses on non-structural indicators. Below is an explanation of the ratios and indicators used to assess banking competition according to these two approaches(Mortada & Bitar, 2022, p. 26)(Hamdouche & Soudani, 2023)

1.5.1. Structural measures: This approach to measuring banking competition relies on market concentration ratios, according to the SCP (structure-conduct-performance) model. Key indicators used to assess banking competition within the structural approach include the concentration ratio (CR_K) and the Herfindahl-Hirschman index (HHI).

-The concentration ratio CR_K in banking refers to the combined market shares, represented by total assets, deposits, or credit facilities, held by the top three banks in each country. The CR_K ratio indicates the extent to which an industry is dominated by a few large firms or

made up of numerous smaller banks. This ratio is expressed by the following formula(Iveta, 2012, p. 145)$CR_K = \sum_i^k -1\ S_i$Where i denotes the market share of bank i, and k represents the total number of banks. The value of CR_K ranges from 0 to 1; the closer it is to 0, the greater the number of banks, indicating a more competitive environment. Conversely, a value near one suggests fewer banks, implying limited competition among them

-Herfindahl–Hirschman Index (HHI):This index is defined as the sum of the squared market shares of all banks, based on the total assets within the banking sector. It is one of the most widely used tools for assessing market concentration because it uses more detailed data than the CR_K ratio. The HHI is often treated as a benchmark for evaluating other concentration metrics. It can be calculated using the following formula:

$$HHI = \sum_{i=1}^{n} -1\ S_i^{\ 2}$$

Where (S_i) represents the market share of bank (i), and (n) is the total number of banks. The Herfindahl-Hirschman Index (HHI) ranges from 0 to 10,000 and is interpreted as follows:

A value below 1,000 indicates a highly competitive market with no significant concentration (perfect competition).

Values between 1,000 and 1,800 suggest moderate concentration, often associated with monopolistic competition.

If the index exceeds 1,800, it signals a high level of market concentration, suggesting an environment closer to a monopoly.

1.5.2. Non-structural measures: This approach evaluates the level of competition in the banking sector by focusing on banks' actual behavior rather than on data about market structure. It aims to capture how banks operate in practice, reflecting the true nature of competitive dynamics. Among the most prominent indicators used within this framework to assess banking competition are the following (Hamdouche & Soudani, 2023, pp. 70-71):

-The Panzar-Rosse Index: Developed in 1977 and refined in 1987 by Panzar and Rosse, this index is a tool for assessing the intensity of competition in the banking industry. Unlike structural approaches, it focuses on banks' actual behavior to evaluate their true competitiveness. The index is designed to differentiate among market structures—such as perfect competition, monopoly, or monopolistic competition — by analyzing how changes in input prices (i.e., production factor costs) affect a bank's total revenue.

-The Lerner Index: A key tool for assessing competition in the banking sector. It measures market power by calculating the gap between a bank's price and its marginal cost relative to the price. The Lerner Index is widely used because it provides a more precise measure of competitive behavior than structural indicators. When the index value is zero, it indicates a perfectly competitive market in which price equals marginal cost. As the index rises, it signals weaker competition, since prices diverge further from marginal costs. In other words, a lower Lerner Index value indicates a more competitive market environment.

-The Boone Indicator:A relatively modern tool used to assess competition levels in the banking sector. It is built on the premise that stronger competition drives greater efficiency, meaning that more efficient banks tend to perform better, which is reflected in higher profits and expanded market share. This index highlights that banks differ in the quality of services they offer, the delivery methods, and the appeal of innovation. These variations significantly shape the intensity of competition in the banking market.

2. Literature Review

The body of research on competition in the banking sector identifies several key internal factors that shape a bank's competitive standing, whether in conventional or Islamic

banking systems. Some of the most influential of these factors include liquidity, capital strength, Banking safety, ineffective management, and low administrative efficiency. These elements can either enhance or constrain a bank's capacity to compete effectively within the financial industry.Therefore, the determinants of banking competition can be divided into two types:

2.1.Internal determinants: These determinants are represented by:

-Liquidity in banking refers to a bank's ability to fulfill its financial obligations promptly. Sufficient liquidity helps prevent a bank from incurring losses by allowing it to liquidate non-liquid assets under unfavorable conditions. In essence, liquidity acts as a safeguard for the bank, ensuring its operational stability while enabling it to continue providing credit facilities to customers(Badiaf, Mashakhi, & Bakhalid, 2018, p. 552).

-Banking safety refers to the awareness and precautions taken to manage the various risks faced by commercial banks in their day-to-day operations. These risks include liquidity risk, capital risk, credit risk, and interest rate risk, all of which can threaten the bank's(Khayroosh, Al-Zoubi, & Al-Abbad, 2004, p. 61) , As banking safety levels increase, a bank's ability to absorb unforeseen losses improves, which in turn boosts customer confidence in the institution. This enhanced trust increases the bank's financial resources, ultimately strengthening its competitive position in the market.

-Poor Management and Low Administrative Efficiency: The absence of effective management characteristics leads to banks facing numerous challenges due to weak credit and investment policies, along with the inability to assess the risks they are exposed to. The presence of these factors negatively affects competition.

-Qualitative Factors: The qualitative factors include the quality of banking services, the bank's marketing performance, and the efficiency of its human resources. These are among the key elements influencing the level of competition, especially as competition intensifies between banks. This is because the quality of service, staff competence, and marketing performance directly affect customer perception. According to most customers, offering a variety of continuously updated banking services that align with the bank's promises and promotional activities strengthens customer loyalty. This, in turn, leads to increased bank returns, which ultimately raises the level of banking competition.

2.2. External Determinants: These refer to factors originating in the broader external environment that are beyond the bank's control. The most significant of these factors include(belghalem, 2019, pp. 38-40):

-Inappropriate Economic and Financial Reforms: In particular, excessive measures can create normal pressures on the system, which in turn affect the level of competition. The strict regulations imposed on the banking sector as part of rapid financial liberalization policies were among the main factors that reduced the banking industry's competitiveness.

-Legislative Reasons: These are related to the inadequacies of the laws governing banking operations, as they fail to address many gaps that emerge in banking activities.

-Organizational Factors: The lack of adequate banking supervision and oversight, an inefficient accounting system, and weak banking governance all contribute negatively to the level of competition among banks.

3.Measuring the Determinants of Banking Competition

This section focuses on identifying the determinants of banking competition at Al Baraka Bank Algeria from 2003 to 2023. To highlight this, we will attempt to conduct an empirical study through the following steps:

3.1.Study Variables and the Model Used

The use of economic measurement methods requires constructing and testing the optimal model. Since we are investigating the determinants of the debt crisis, the study variables are as follows:

Table (1): Standardized Study Variables

symbol	index	Explanation
dependent variable		
y	Banking Competition:It was measured using the following ratio: Total assets of Al Baraka Bank Algeria / Total assets of the entire banking system.	It is an essential indicator of a bank's level of competition relative to other financial institutions. A high ratio indicates a strong competitive position for the bank, reflecting its ability to attract deposits, provide financing, and expand its banking activities. Conversely, a low ratio suggests weak competition levels.
independent variables		
$\mathbf{x_1}$	Profitability, measured by the following ratio: Net income / Equity.dex	It refers to the returns earned by investors from their capital invested in various projects. Banks invest funds through multiple methods and approaches, aiming to balance the ability to generate the highest profits while managing and controlling the risks surrounding the bank's investments(Ali Al-Qurashi & Al-Maqdashi, 2019, p. 13),Achieving elevated profit levels allows the bank to invest in fintech and create innovative distribution methods, providing it with a more potent competitive edge in the market.
$\mathbf{x_2}$	The liquidity of a bank is measured by the following ratio: cash in hand divided by total assets.	Liquidity is a flexible concept that refers to the ability to secure the funds needed to meet contractual obligations and non-contractual customer demands at suitable prices and at all times.Higher levels enhance the efficiency of banking operations and reduce financing costs, thereby positively impacting banks' market share expansion.
$\mathbf{x_3}$	Banking security was measured using the following ratio: Core equity capital / Total risk-weighted assets.	It refers to the awareness and caution regarding the risks that a commercial bank faces from its operational activities. If this indicator exceeds the required threshold, it could affect the level of banking competition.

Source: Prepared by researchers

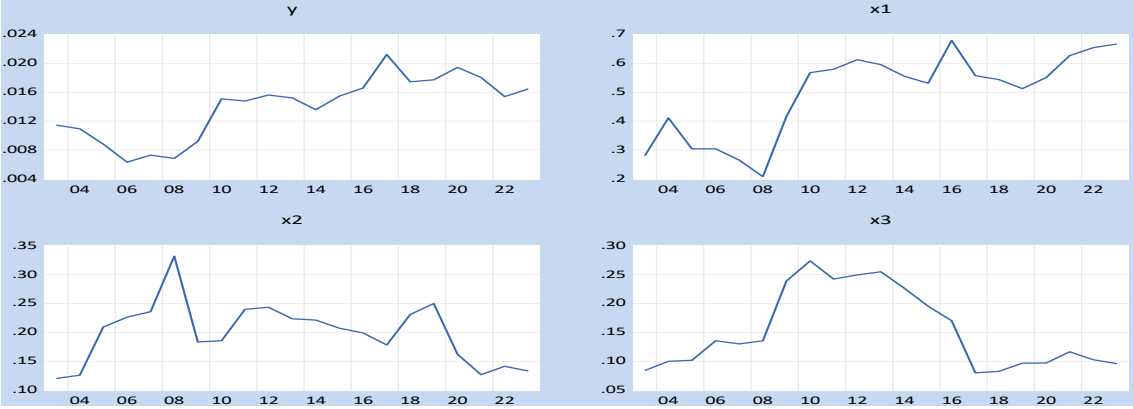
3.2 Model estimation

Many studies that use the ordinary least squares method face issues related to economic measurement, particularly incorrect parameter estimates. This is mainly due to the presence of non-random components in time series data, which affect their progression and, consequently, may distort the dynamic relationships between different economic variables. Therefore, rather than relying on the initial model, we reformulate it using time-series methods.

3.2.2. Time Series Stationarity Analysis

The analysis of time-series stationarity is essential for identifying underlying components that may lead to inaccurate estimates. Among the methods employed for this purpose are the ADF and PP tests. Before applying these tests, however, we will first visualize the time series to gain an initial insight into their properties. The graphical representation of the time series for the study variables shows that their behavior over time does not exhibit a stable pattern. As a result, we assume that these series are non-stationary.

Figure (1): Graphical Representation of Time Series



Source: Prepared by the researchers based on the outputs of Eviews 12 software.

Based on the observations from the previous figure, we will use the ADF and PP tests to verify that the time series are non-stationary, as shown in the following table:

Table (2): Results of the Unit Root Test for Time Series

time series	At level									
	ADF test					PP test				
	With Constant & Trend		With Constant		Without Constant & Trend	With Constant & Trend		With Constant		Without Constant & Trend
	b=0	λ=0	c=0	λ=0	λ=0	b=0	λ=0	c=0	λ=0	λ=0
y	0.09	0.47	0.21	0.64	0.70	0.09	0.47	0.21	0.64	0.70
x_1	0.13	0.45	0.09	0.49	0.82	0.13	0.45	0.09	0.49	0.84
x_2	0.02	0.05	0.01	0.08	0.47	0.11	0.08	0.01	0.09	0.54
x_3	0.11	0.78	0.24	0.62	0.51	0.11	0.76	0.24	0.55	0.49
At First Difference										
y	0.90	0.02	0.61	0.00	0.00	0.90	0.02	0.61	0.00	0.00
x_1	0.77	0.01	0.48	0.00	0.00	0.77	0.01	0.48	0.00	0.00
x_2	0.08	0.00	0.52	0.08	0.00	0.18	0.00	0.96	0.00	0.00
x_3	0.32	0.08	0.95	0.03	0.00	0.32	0.08	0.95	0.03	0.00

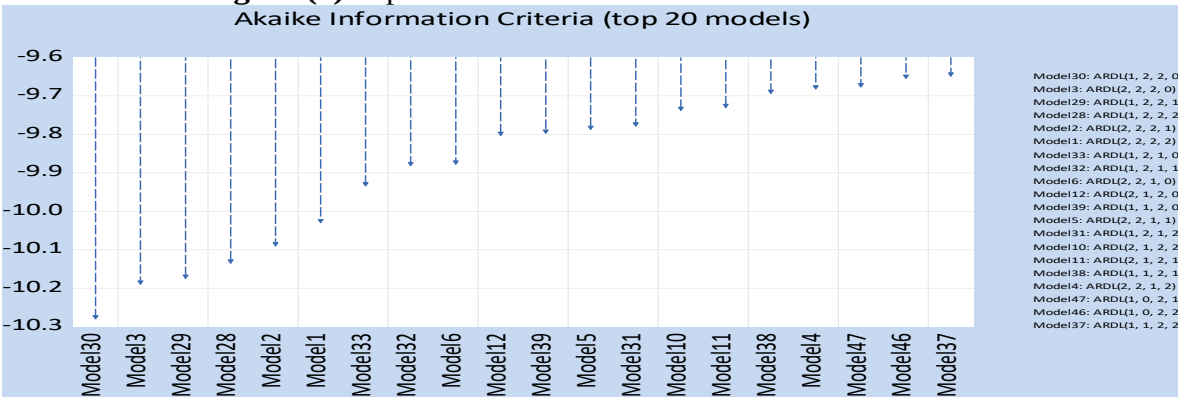
Source: Prepared by the researchers based on the outputs of Eviews 12 software.

Based on the results in the table above and using the Dickey-Fuller and Phillips-Perron methodologies to test for unit roots in the time series, it can be concluded that all the time series are stationary at the first difference.

3.2.3. Cointegration Testing

Given that the time series are not stationary at the same level, we cannot use the Johansen test to check for cointegration. Instead, we turn to the Bound Testing approach. However, before conducting this test, we first estimate the optimal ARDL model.

Figure (2): Optimal ARDL Model within 20 Selected Models



Source: Prepared by the researchers based on the outputs of Eviews 12 software.

From the figure, it is evident that the lowest value of the Akaike criterion corresponds to the longest bar (since the values are negative), which intersects with the ARDL(1,2,2,0) model. After estimating the model and performing the previously mentioned bounds test, we obtained the following results:

Table (3): Results of the Wald Test for Cointegration Relationship Verification

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	5.701798	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Prepared by the researchers based on the outputs of Eviews 12 software.

By comparing the calculated test value with the critical value from the table, we observe from the table that the calculated F-statistic (F-statistic = 5.70) is greater than the upper bound critical value at a 5% significance level. Therefore, we conclude that there is a long-term relationship between the time series, which allows us to proceed with estimating the error correction model using the ARDL technique.

3.2.2. Model Parameter Estimation and Validity Testing

Once a long-term equilibrium relationship between the time series under investigation has been established, we proceed to estimate the model parameters for both the long- and short-term components. This is done to provide an economic interpretation of the model and to conduct the necessary diagnostic tests to verify its validity.

A-Estimation of Long-Term Parameters

Table (4): Results of Long-Term Parameter Estimation

Levels Equation Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
X1	0.033104	0.004020	8.234261	0.0000
X2	0.081581	0.024469	3.334107	0.0076
X3	-0.041148	0.010651	-3.863417	0.0031
C	-0.013119	0.005290	-2.480142	0.0325
EC = Y - (0.0331*X1 + 0.0816*X2 -0.0411*X3 - 0.0131)				

Source: Prepared by the researchers based on the outputs of Eviews 12 software.

B- Estimation of Short-Term Parameters and Error Correction Model

Table (5): Short-term parameter results

ARDL Error Correction Regression
Dependent Variable: D(Y)
Selected Model: ARDL(1, 2, 2, 0)
Case 2: Restricted Constant and No Trend
Date: 03/09/25 Time: 11:46
Sample: 2003 2023
Included observations: 19

ECM Regression
Case 2: Restricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(X1)	0.015836	0.004340	3.649062	0.0045
D(X1(-1))	0.014181	0.003185	4.451845	0.0012
D(X2)	0.005772	0.007249	0.796303	0.4443
D(X2(-1))	-0.018434	0.006240	-2.954098	0.0144
CointEq(-1)*	-0.699580	0.110734	-6.317641	0.0001

Source: Prepared by the researchers based on the outputs of Eviews 12 software.

Source: Prepared by the researchers based on the outputs of Eviews 12 software.

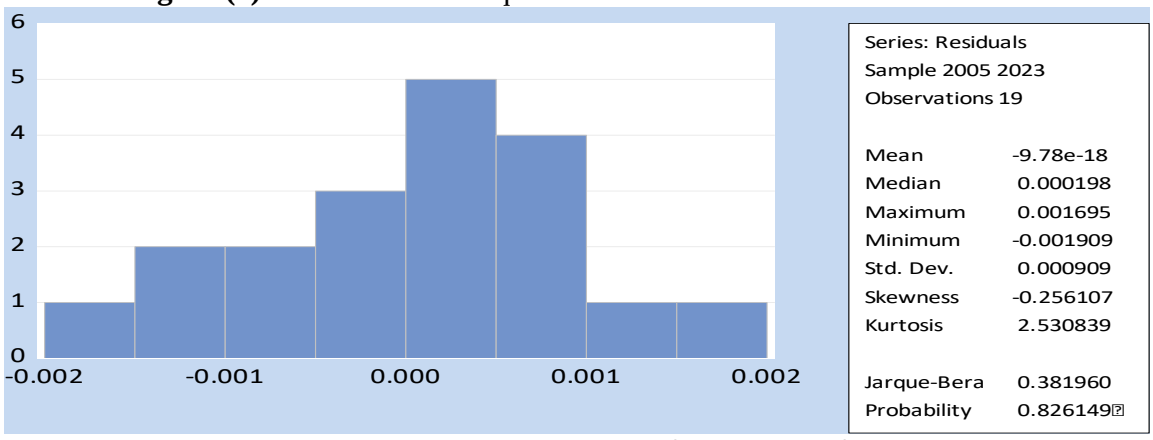
The table shows that the error correction coefficient is economically valid because of its negative sign, and statistically significant as the p-value is below 5%. With a value of (-0.699580), it suggests that short-term discrepancies are corrected in the long run within a period not exceeding two months (roughly 9 months).

3 .2.3. Diagnostic Tests for the Estimated Model

Diagnostic tests are used to assess the reliability of the estimated ARDL model and to ensure it is free of economic measurement problems. Several diagnostic tests are available to determine whether the estimated model should be accepted or rejected, which are summarized below:

-Residual Normality Test: The Jarque-Bera test is used to verify whether the residuals from the model's estimation follow a normal distribution. This test examines both skewness and kurtosis to assess the distribution of the residuals.

Figure (3): Results of the Jarque-Bera Test on the Estimation Residuals



Source: Prepared by the researchers based on the outputs of Eviews 12 software.

The following figure shows that the model does not exhibit any issues with normality.

-Test for Autocorrelation of Errors: Autocorrelation of errors is one of the most significant issues in economic measurement that impacts the quality of econometric models. In line with the Bound Testing methodology, the Breusch-Godfrey test is among the most commonly used tests for this issue.

Table (6): Results of the Test for Autocorrelation Issues in the Estimation of Residuals

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	0.806741	Prob. F(2,8)	0.4796
Obs*R-squared	3.188871	Prob. Chi-Square(2)	0.2030

Source: Prepared by the researchers based on the outputs of Eviews 12 software.

From the table's results, the computed F-statistic (0.80) is below the critical value at the 5% significance level. As a result, we accept the null hypothesis that there is no autocorrelation in the estimation residuals.

-Test for Homoscedasticity: Econometric models require the assumption of constant variance of errors. To test this assumption, the pagan-Godfrey test is employed to verify the presence of homoscedasticity.

Table (7): Pagan-Godfrey Test Results (Variance Error Stability)

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	0.608204	Prob. F(8,10)	0.7536
Obs*R-squared	6.218838	Prob. Chi-Square(8)	0.6227
Scaled explained SS	1.318565	Prob. Chi-Square(8)	0.9953

Source: Prepared by the researchers based on the outputs of Eviews 12 software.

Given that the calculated F-statistic is below the 5% critical value, we fail to reject the null hypothesis, indicating that the error term's variance in the estimated model is homoscedastic.

-Ramsey Reset Test: This test is employed to evaluate whether the functional form of the model appropriately reflects the relationship between the economic variables. It assesses how well the proposed model specification captures the interrelationships among the variables.

Table (8): Ramsey Reset Test Results

Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: Y Y(-1) X1 X1(-1) X1(-2) X2 X2(-1) X2(-2) X3 C

	Value	df	Probability
t-statistic	0.001098	9	0.9991
F-statistic	1.21E-06	(1, 9)	0.9991
Likelihood ratio	2.55E-06	1	0.9987

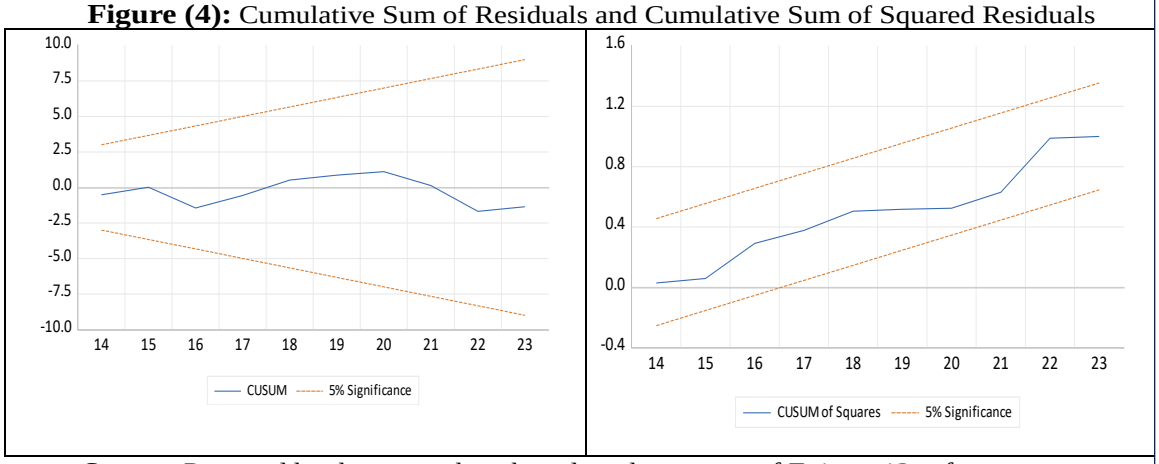
Source: Prepared by the researchers based on the outputs of Eviews 12 software.

From the table, the p-value for the Fisher test exceeds 0.05, suggesting that the linear model used to represent the relationship between the variables is suitable.

4. Structural Stability Test for the Estimated ARDL Model

This test is used to ensure that the data used does not exhibit any structural changes over time that could affect the model's reliability. Two primary tests are employed: the cumulative sum of residuals (Cusum) test and the cumulative sum of squared residuals (Cusum of Squares) test. After conducting both tests, Figure 4 shows that the ARDL model's estimated parameters remain structurally stable throughout the study period. This indicates stability among the study variables and coherence in the model's error correction results in both the short and long terms. The test statistics for both tests fall within the critical bounds at a 5% significance level, confirming the absence of structural breaks and supporting the validity of the model.

Figure (4): Cumulative Sum of Residuals and Cumulative Sum of Squared Residuals



Source: Prepared by the researchers based on the outputs of Eviews 12 software.

5. Results and Discussion

Based on the findings in Table 4, the estimated model equation can be written as:

$$y = -0.013119 + 0.033104_{x1} + 0.081581_{x2} - 0.041148_{x3}$$

-The regression results confirm the acceptance of the first hypothesis, which states that the level of competition in Bank Al-Baraka Algeria is influenced by its profitability levels. Specifically, for every unit increase in profitability, the bank's competition level rises by 0.331 units. This can be explained by the fact that higher profitability strengthens the bank's competitive position by improving the quality of its services, broadening its financial product offerings, and enhancing its ability to attract customers in a highly competitive market. Furthermore, achieving higher profitability enables the bank to invest in financial technologies and to innovate in distribution channels, thereby gaining a competitive advantage over traditional banks.

-According to the estimation results, the second hypothesis is supported, which states that an increase in liquidity levels at Bank Al-Baraka Algeria enhances banking competition. Specifically, for every unit increase in liquidity, the competition level increases by 0.08151 units. This is because higher liquidity allows the bank to offer loans at lower interest rates, attracting new customers and intensifying price competition.

-The regression equation estimation results lead to the rejection of the third hypothesis, which suggests that higher banking security levels at Bank Al-Baraka Algeria contribute to increasing banking competition. Specifically, when banking security levels rise by 1 unit, competition decreases by 0.011148 units. This is because when banks focus on enhancing security through more conservative lending policies, they reduce competition by limiting the expansion of loans to the economy.

6 .Conclusion

The competitive landscape at Bank Al-Baraka Algeria is influenced by a variety of financial and regulatory factors that directly affect its position in the banking market. From 2003 to 2023, a detailed analysis examined these factors, providing a comprehensive understanding of the determinants shaping the bank's competitive landscape. This analysis, which accounted for both theoretical and practical aspects, led to several key conclusions about how they interact and influence the bank's competitive standing in the local market. These factors include banking liquidity, profitability levels, banking security, and other factors that shape the competitive environment. The results can be summarized in the following points:

-The liquidity levels at Bank Al-Baraka Algeria play a significant role in increasing its market share, which in turn enhances its level of competition in the banking sector. This is because higher liquidity gives the bank greater flexibility to offer competitive financial products, thereby improving its competitive position.
-Furthermore, the degree of competition at Bank Al-Baraka Algeria is positively influenced by its banking profitability levels. As profitability rises, the bank can reinvest in its services, expand its product offerings, and attract more customers, thereby strengthening its competitive position in the market.
-On the other hand, the competition at Bank Al-Baraka Algeria is negatively affected by the levels of banking security. While maintaining high security standards is crucial for protecting customers and reducing risks, an overemphasis on cautious lending policies and stringent security measures may limit the bank's ability to compete aggressively, particularly by offering more accessible financial products or expanding its customer base.
Based on the findings from this study presented above, the following recommendations can be made:
-Bank Al-Baraka Algeria should adopt flexible pricing policies that align with market competition while ensuring that banking services comply with Islamic Sharia principles. This will enable the bank to remain competitive without compromising on its core values.
-It is crucial for Bank Al-Baraka Algeria to enhance its operational efficiency by embracing digital transformation and strengthening its online services. This move will improve operational performance, enabling the bank to achieve sustainable profitability and further increase its competitive position in the market.
-In the context of strengthening regulatory mechanisms, both at the macro level by the Bank of Algeria and at the micro level by Bank Al-Baraka Algeria, it is essential to strike a balance between banking competition and security measures to ensure a secure yet competitive banking environment.
-Bank Al-Baraka Algeria should focus on developing Islamic banking products by investing in financial innovation. Offering new products that meet customers' evolving needs will not only enhance the bank's competitiveness but also position it as a leading player in the Algerian banking market.

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