# Comparative analysis of the profitability of the Algerian banking sector : (2011-2024)

**Zourdani Safia** [(1)]
[1] Lecturer –A-, Laboratory : Development, Economy, Finance, and Institution (DEFI), University of Mouloud MAMMERI of Tizi-Ouzou, Algeria,
Email : safia.zourdani@ummto.dz

**ARTICLE INFORMATION**
Original Research Paper
Received: 01/8/2026
Accepted: 10/9/2026
Published: 25/9/2026

**Keywords :**
Keyword.1 : Bank profitability
Keyword.2 : public Banks
Keyword.3 : private Banks
Keyword.4 : Financial Institutions
Keyword.5 : Financial Performance

**JEL Classification Codes :**
**G21, G28, G23, G32.**

**Abstract :**

This article examine and analyze financial performance in the Algerian banking sector over the period from 2011 to 2024. It uses a comparative analytical framework, complemented by an event-based reading connecting changes in profitability to major macroeconomic and regulatory shocks that have affected the Algerian banking sector. We assess the return on assets (ROA) and return on equity (ROE) of public banks, private banks, and financial institutions. The results highlight persistent asymmetries in financial performance between public and private institutions.

**Mots clés :**
Mot clé.1 : Rentabilité bancaire
Mot clé.2 : Banques publiques
Mot clé.3 : Banques privées
Mot clé.4 : Etablissements financiers
Mot clé.5 : Performance financière

Codes de classification JEL :
**G21, G28, G23, G32.**

**Résumé :**

Cet article examine et analyse la performance financière dans le secteur bancaire algérien sur la période de 2011 à 2024. Il utilise un cadre analytique comparatif, complété par une lecture basée sur les événements reliant les variations de rentabilité aux principaux chocs macroéconomiques et réglementaires qui ont affecté le secteur bancaire algérien. Nous évaluons le retour sur actifs (ROA) et le retour sur fonds propres (ROE) des banques publiques, des banques privées et des institutions financières. Les résultats mettent en évidence des asymétries persistantes dans la performance financière entre les institutions publiques et privées.

Corresponding Author : **Zourdani Safia**
Email : safia.zourdani@ummto.dz

## 1. Introduction

The Algerian banking system holds a major place in the country's financial structure. It's centered around six public Banks, namely : the External Bank of Algeria (EBA), the National Bank of Algeria (NBA), the Bank of Agriculture and Rural Development (ABRD), the Algerian People's Credit (APC), the Local Development Bank (LDB), and the National Savings and Provident Fund (NSPF-Bank) (Bouyakoub, 2020).

Since the mid-1990s, it has experienced the gradual opening of the market to private banks, mainly with foreign capital. In 2024, the Algerian banking landscape had 20 licensed banks, including 6 public and 14 private, the latter still holding a significantly smaller share of market assets (around 13 to 15% depending on the year), with public Banks continuing to dominate the financing of the national economy. As for financial institutions, there are about 8 of them, and they contribute to financing the economy through leasing.

The question of the comparative profitability of public and private banks, as well as financial institutions, is particularly important in the Algerian context, where public banks have historically been used as tools of national economic policy (financing public companies, supporting strategic sectors, carrying out public investment support programs), which can create trade-offs between commercial profitability goals and economic policy objectives. On the other hand, private banks, focused on wealthy individual clients and private businesses, operate purely on a commercial basis (Athanasoglou, Brissimis, & Delis, 2008).

The period from 2011 to 2024 is particularly rich in events that may have affected the profitability of these banking and non-banking institutions in different ways. These include the drop in oil prices from 2014 to 2016 and its impact on public finances and bank liquidity, the non-conventional financing policy reform of 2017-2018, the COVID-19 health crisis and its economic support measures (debt rescheduling, moratoriums), inflationary pressures and the depreciation of the dinar since 2021, as well as the acceleration of digitalization in banking services since 2020. These events provide a prime ground for analyzing the cyclical determinants of Algerian banking profitability.

The issue this article addresses is the following :

***How has the financial profitability of public, private, and Algerian financial institutions evolved, measured by the ROA and ROE ratios between 2011 and 2024, and what are the main macroeconomic and regulatory events that have influenced this trajectory ?***

To answer this, the article is structured as follows. First, a review of the literature on the determinants of banking profitability and the Public/Private debate is presented. Then, the institutional context of the Algerian banking system is described, followed by an explanation of the methodology and the Data used. Finally, the results of the comparative ROA/ROE analysis and the mapping of impacting events are presented, followed by a discussion of the results.

## 2. Literature review

### 2.1. Determinants of bank profitability : theoretical framework

The literature on bank profitability traditionally distinguishes internal determinants (specific to the bank) from external determinants (macroeconomic and sectoral). Internal determinants include bank size, capital adequacy, credit portfolio quality (non-performing loan ratio), operational efficiency (cost-to-income ratio), and funding structure. External determinants include GDP growth, inflation, interest rates, banking market concentration, and the regulatory framework.

ROA (Return on Assets) and ROE (Return on Equity) are the two most widely used profitability indicators in banking research. ROA measures how efficiently assets are used to generate profit, regardless of the financing structure, while ROE measures the return for shareholders and takes into account financial leverage.

### 2.2. Comparison of the performance of public and private banks

The literature comparing the performance of public and private banks is extensive, and the results vary depending on the institutional context. Political agency theory suggests that public banks, which are subject to political objectives (financing loss-making public enterprises, supporting employment, funding unprofitable projects), generally have lower profitability than private banks. This hypothesis is empirically confirmed in many emerging contexts, particularly in India, where public banks have significantly lower ROA and ROE compared to private banks, linked to higher non-performing loan rates.

However, some of the literature nuances this observation. (Berger, Hasan, Zhou, & Allen, 2009), in a study on the Chinese banking sector, show that the performance gap between public and private banks narrows significantly after governance and recapitalization reforms (Lin & Zhang, 2009). In the context of oil-exporting countries, it is noted that public banks, because of their countercyclical financing role, can show relatively resilient profitability during growth fueled by resource rents, but increased vulnerability during periods of budget contraction.

(Brei & Schclarek, 2013) confirm, based on a large international sample, that public banks tend to maintain a more stable credit supply during crises,

which can weigh on their short-term profitability while playing a stabilizing role for the real economy. (Cull & Verrier, 2017), also note that the market share of public banks remains significant in many emerging economies, with performance trajectories that vary greatly depending on the quality of governance in place. (Iannotta, Nocera, & Sironi, 2007), looking at a sample of European banks, show that public banks have lower credit portfolio quality compared to private banks, which is also supported by (Ghosh, 2019) in a broader perspective on the determinants of bank loan delinquency.

**2.3. Research on Bank profitability in Algeria**

Research specifically focused on the profitability of the Algerian banking sector is still relatively limited but growing. (Derrardja & Zaid, 2022), analyze the determinants of Bank Liquidity and Profitability : The case of Algerian Banks. This paper examine both internal and external factors that could explain the liquidity and profitability of Algerian banks. Using the Generalized Method of Moments (GMM) on a panel of nineteen (19) Algerian banks, over a period from 2010 to 2020.

As a result, the bank-specific determinants and those of a macroeconomic nature, the existence of a two-way impact of two dependent variables, as well as the effects of the socio-political crisis and the Covid-19 crisis on the financial system.

(Benslimane & Bensahla Tani, 2017), the goal of the study is to measure and analyze bank profitability in a public and a private bank over three years, using a comparative study between the two banks. The results of this study show that the public bank makes bigger results or profits than the private bank, which means that the public bank is more profitable compared to the private bank.

The increase in credit risk costs and the temporary drop in Algerian banks'profitability in 2020, followed by a rebound in 2021-2022, a pattern similar to what (Fadzlan & Muzafar, 2010) observed during the Asian financial crisis in the case of Indonesia.

Some of the literature also compares the performance of conventional and Islamic banks in the MENA region (Dietrich & Wanzenried, 2014), which is relevant for Algeria given the recent growth of Islamic finance (Bank of Algeria, 2023). (Ben Khediri, Charfeddine, & Ben Youssef, 2015) show, based on a sample of Gulf countries'banks, that Islamic banks have profitability that is comparable to, or even higher than, conventional banks during stable periods, but better resilience during crises a result partially confirmed by (Trabelsi & Trad, 2017) as well as (Rashid & Jabeen, 2016) in the Pakistani case. A report, for a panel of hydrocarbon-exporting countries in the MENA region including Algeria, a strong sensitivity of bank profitability to oil price fluctuations, with an amplified effect for publicly-

owned banks, a finding that directly relates to the issue discussed in this article.

Finally, on the macroeconomic side, the World Bank report (World Bank, 2023) highlights the structural challenges of Algeria's energy transition and their implications for the stability of the national financial sector, while (Micco, Panizza, & Yañez, 2007) show, using a large international sample, that the performance gap between public and private banks tends to be more pronounced in developing countries than in advanced economies, due to a stronger politicization of credit allocation.

### 2.4. Purpose of the study

This article stands out from the existing literature in three main ways :

- first, it covers an extended period (2011-2024) that includes the entire recent oil cycle (boom 2011-2014, drop 2014-2016, low-level stabilization 2017-2020, COVID shock 2020, recovery and inflationary pressures 2021-2024) ;
- second, it combines a rigorous statistical analysis of ROA and ROE ratios with a systematic event-based approach, explicitly linking series inflections to dated macro-financial and regulatory events ;
- third, it updates the available data up to fiscal year 2024, a period not covered by previous studies.

## 3. Institutional context of the Algerian banking system

### 3.1. Structure and segmentation of the banking market

The Algerian banking system is governed by Ordinance No. 03-11 of August 26, 2003, concerning money and credit, amended and supplemented notably by Law No. 23-09 of 2023, which deeply reformed the banking supervision framework. As of December 31, 2024, it includes 19 licensed banks : six Public Banks (EBA, NBA, ABRD, APC, LDB, NSPF-Bank), and thirteen Private Banks, most of which are subsidiaries of foreign banking groups. These include Société Générale Algérie, BNP Paribas El Djazaïr, Natixis Algérie, Citibank, Arab Banking Corporation Algeria, Trust Bank Algeria, Al Salam Bank Algeria, Al Baraka Bank Algeria, Housing Bank for Trade and Finance Algeria, Fransabank El Djazair, AGB-Algeria Gulf Bank, ARAB Bank PLC & HSBC (Bank of Algeria, 2024).

Market segmentation is still very uneven : public banks hold about 85 to 87% of total banking assets and over 90% of state and public company deposits, while private banks focus on financing foreign trade, large private companies, and high-income individual clients (Bank of Algeria, 2023).

**Table 1. Institutional composition of the Algerian banking sector, establishment, and share capital**

| Instituions | | Creation | Social Capital |
|---|---|---|---|
| Public Banks | EBA | 1967 | 230.000.000.000,00 |
| | NBA | 1966 | 150.000.000.000,00 |
| | ABRD | 1982 | 54.000.000.000,00 |
| | LDB | 1982 | 73.000.000.000,00 |
| | APC | 1966 | 48.000.000.000,00 |
| | NSPF-BANK | 1964 | 46.000.000.000,00 |
| Private Banks | ARAB BANK PLC | 2001 | / |
| | ABC | 1998 | 20.000.000.000,00 |
| | AL SALAM | 2008 | 20.000.000.000,00 |
| | AL BARAKA | 1991 | 20.000.000.000,00 |
| | BNP | 2002 | 20.000.000.000,00 |
| | CITI BANK | 1992 | / |
| | FRANSABANK | 2010 | 20.000.000.000,00 |
| | GULF BANK | 2004 | 20.000.000.000,00 |
| | HOUSING BANK | 2003 | 20.000.000.000,00 |
| | HSBC | 2008 | / |
| | NATEXIS | 2000 | 20.000.000.000,00 |
| | SGA | 2000 | 20.000.000.000,00 |
| | TRUST | 2002 | 20.000.000.000,00 |
| financial institutions | EDI | 2012 | 6.500.000.000,00 |
| | ILA | 2012 | 6.500.000.000,00 |
| | SNL | 2010 | 10.000.000.000,00 |
| | SOFINANCE | 2001 | 6.500.000.000,00 |
| | SRH | 1997 | 6.500.000.000,00 |
| | ALC | 2001 | 6.500.000.000,00 |
| | CNMA | 1972 | 8.000.000.000,00 |
| | MLA | 2006 | 6.500.000.000,00 |

Source : author, based on checking the websites of various banks.

## 1.1. Regulatory and prudential framework

Bank supervision in Algeria is handled by the Bank of Algeria through the Banking Commission, which implements a set of prudential regulations partially aligned with the Basel standards (minimum solvency ratio of 9.5%, liquidity ratio, risk-sharing rules). Regulation No. 14-01 of February 16, 2014, concerning the minimum capital of banks and financial institutions operating in Algeria, set the minimum share capital for banks at 10 billion dinars, increasing the requirements for financial soundness (Bank of Algeria, 2014).

More recently, Law No. 23-09 of June 21, 2023, on money and credit introduced new rules for banking governance, fighting money laundering, and paved the way for the creation of Islamic banks and financial institutions.

### 1.2. Differentiated economic role of public and private Banks

Algerian public banks play a key role in financing the national economy, especially by funding large public groups (Sonatrach, Sonelgaz, public industrial groups), public investment programs, and youth employment support schemes (ANADE, CNAC, ANGEM), with much of the credit distributed by Public Banks, particularly ABRD and APC. This quasi-budgetary role structurally exposes Public Banks to higher credit risk and potentially lower commercial profitability. Private Banks, on the other hand, focus more on private businesses that perform well and high-income individuals, with generally stricter lending criteria.

## 4. Methodology and Data

### 4.1. Sample selection and study period

The study sample includes 19 banks licensed by the Bank of Algeria and 8 financial institutions, divided into three groups : 6 public banks and 13 private banks, as well as the 8 financial institutions. The analysis period spans from 2011 to 2024, covering fourteen (14) annual accounting periods, which allows for encompassing the entire recent oil cycle and the COVID-19 health crisis.

### 4.2. Definition of variables

The economic profitability ratio (ROA) is calculated as the ratio of net income for the year to the average total assets of the bank over the period considered : ROA = Net Income / Average Total Assets.

The financial profitability ratio (ROE) is calculated as the ratio of net income to average equity : ROE = Net Income / Average Equity.

These two ratios are the standard indicators of financial performance in banking literature (Rose & Hudgins, 2013) ; (Saunders, Cornett, & Erhemjamts, 2021).

### 4.3. Data sources

The individual financial data of Public Banks were collected from the annual reports of the Bank of Algeria, reports from the Banking Commission, and the financial statements published by the banks themselves. Data on private banks, which are generally published less systematically, were supplemented by the annual reports of the parent banking group (for subsidiaries of foreign banks) and by aggregated statistics from the Bank of Algeria on the profitability of the private banking sector. Macroeconomic aggregates (GDP, inflation, oil prices, exchange

rates) come from the National Statistics Office (ONS, 2024), the Bank of Algeria, and the International Monetary Fund (IMF, 2024).

### 4.4. Analysis method

The statistical analysis includes three parts. First, a descriptive analysis of the chronological data of average ROA and ROE for each group (public and private banks, and then financial institutions) over the 2011-2024 period. Second, a qualitative event analysis, which involves dating and characterizing the main macroeconomic and regulatory shocks of the period, and relating them to the changes observed in the profitability series.

### 4.5. Methodological limitations

Several limitations need to be highlighted. First, the availability and quality of financial data from Algerian banks, particularly public ones, remain inconsistent from one institution to another and from year to year. Second, analysis at the group level (public/private) hides significant internal heterogeneity, especially within the group of public banks (NSPF-Bank, focused on housing savings, has a different profile from EBA, which is more oriented toward financing foreign trade and hydrocarbons).

## 5. Presentation of the results

**Table 2. Comparison of the profitability (ROA) of Public Banks**

| Instituions/years | | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| Public Banks | EBA | 1,21 | 1,51 | 1,33 | 1,60 | 1,49 | 1,37 | 2,32 |
| | NBA | 2,25 | 1,37 | 2,73 | 1,86 | 1,93 | 0,97 | 1,37 |
| | ABRD | 1,29 | 0,84 | 1,61 | 0,55 | 0,77 | 1,35 | 1,11 |
| | LDB | 0,47 | 1,05 | 1,34 | 0,56 | 1,39 | 2,22 | 1,35 |
| | APC | 1,47 | 1,61 | 1,97 | 1,78 | 2,21 | 2,23 | 2,23 |
| | NSPF-BANK | 0,20 | 0,24 | 0,11 | 0,44 | 0,20 | 0,42 | 0,75 |
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| | EBA | 0,41 | 1,89 | 1,12 | 1,74 | 0,94 | 0,50 | 0,83 |
| | NBA | 1,42 | 0,91 | 0,60 | 0,28 | 1,16 | 0,99 | 0,82 |
| | ABRD | 1,13 | 0,03 | 0,60 | 0,72 | 0,75 | 1,70 | 1,32 |
| | LDB | 0,72 | 0,34 | 0,01 | 0,26 | 0,40 | 1,17 | 1,36 |
| | APC | 2,25 | 0,83 | 0,92 | 0,65 | 1,13 | 1,04 | 1,02 |
| | NSPF-BANK | 0,84 | 0,31 | 0,33 | 0,12 | 0,49 | 1,04 | 1,13 |

Source : author, calculated based on the activity reports of various banks 2011-2024.

Table 2 shows that ROA is constantly fluctuating but remains positive. For EBA, it experienced a drop in 2015 due to the fall in oil prices in mid-2014, going from $110 per barrel to $35 per barrel. Also, it should be noted that EBA's main activity is foreign trade, particularly the export of hydrocarbons. The second key point is the lockdown imposed following the COVID-19 health crisis in 2020, which explains the drop in ROA.

This is the result of the halt of economic processes worldwide due to health priority reasons. As for the other public banks, they follow the same economic and health context. The impacts vary depending on the banks' performance. The most vulnerable banks are LDB and NSPF/Bank due to the nature of their activities.

**Table 3. Comparison of the profitability (ROA) of Private Banks**

| Instituions/years | | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| Private Banks | ARAB BANK PLC | 3,82 | 6,27 | 6,17 | 4,39 | 2,23 | 3,72 | 2,72 |
| | ABC | 2,41 | 2,97 | 2,94 | 2,69 | 0,09 | 1,00 | 2,19 |
| | AL SALAM | 4,76 | 4,65 | 3,80 | 2,93 | 2,15 | 2,42 | 2,06 |
| | AL BARAKA | 3,46 | 2,93 | 2,53 | 2,76 | 1,90 | 2,15 | 1,92 |
| | BNP | 3,20 | 2,28 | 2,04 | 1,84 | 0,29 | 1,59 | 1,16 |
| | CITI BANK | 3,35 | 2,87 | 2,55 | 2,07 | 2,41 | 2,00 | 2,62 |
| | FRANSABANK | 4,55 | 7,73 | 5,24 | 1,59 | -0,05 | 2,83 | 2,50 |
| | GULF BANK | 4,10 | 5,02 | 4,02 | 2,59 | 2,30 | 1,59 | 2,41 |
| | HOUSING BANK | 5,07 | 4,71 | 4,04 | 2,75 | 2,54 | 2,79 | 2,85 |
| | HSBC | 4,22 | 3,34 | 2,13 | 1,67 | 2,46 | 1,65 | -0,58 |
| | NATEXIS | 2,53 | 3,15 | 3,12 | 2,55 | 1,13 | 0,55 | 0,59 |
| | SGA | 2,65 | 2,60 | 1,82 | 1,75 | 0,52 | 2,52 | 1,93 |
| | TRUST | 3,27 | 3,48 | 1,51 | 5,16 | 3,76 | 2,02 | 2,55 |
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| | ARAB BANK PLC | 2,75 | 3,08 | 2,83 | 1,51 | 2,52 | 2,17 | 2,44 |
| | ABC | 2,41 | 1,92 | 2,56 | 1,99 | 2,37 | 1,69 | 2,18 |
| | AL SALAM | 2,85 | 0,31 | 0,14 | 1,83 | 1,74 | 0,06 | 0,06 |
| | AL BARAKA | 2,17 | 2,50 | 1,60 | 1,44 | 1,35 | 1,38 | 0,87 |
| | BNP | 2,02 | 1,89 | 0,92 | 1,10 | 0,61 | 1,75 | 1,68 |
| | CITI BANK | 3,30 | 3,17 | 3,72 | 4,05 | 3,50 | 4,09 | 4,00 |
| | FRANSABANK | 2,85 | 3,11 | 1,90 | 1,31 | 0,11 | 1,70 | 2,05 |
| | GULF BANK | 2,74 | 2,72 | 0,87 | 1,48 | 1,71 | 1,59 | 1,59 |
| | HOUSING BANK | 3,77 | -0,74 | 1,81 | 4,95 | 5,43 | 2,57 | 2,84 |
| | HSBC | -0,79 | 1,75 | 1,94 | 1,95 | 1,70 | 2,05 | 2,19 |
| | NATEXIS | 2,09 | 1,54 | 1,74 | 1,48 | 1,51 | 1,75 | 1,20 |
| | SGA | 2,72 | 4,72 | 1,13 | 1,85 | 2,35 | 2,72 | 2,29 |
| | TRUST | 1,01 | 2,50 | 3,88 | 3,96 | 3,96 | 3,69 | 2,89 |

Source : author, calculated based on the activity reports of various banks 2011-2024

Looking at the numbers in the table above, it shows that the ROA of private banks is clearly better than that of public banks. Due to the economic and health context, all of these banks were directly impacted, and the consequences are clear in the decrease of ROA for these private banks.

On the other hand, we notice negative results in some banks over certain years. This situation is explained by customer segmentation as well as the fragility of these banks' equity. Nevertheless, the tough competition among the thirteen private banks gives hope for them and calls for a return to normal soon, as we observed when analyzing the results of FRANSABANK, for example : (-0.05 in 2015 and 3.11 in 2019). This does not rule out the fact that these banks are performing well but they remain more fragile compared to public banks.

**Table 4. Comparison of the profitability (ROA) of Financial Institutions**

| Instituions/ years | | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| Financial Institutions | EDI | 0,00 | -0,18 | 0,01 | 2,76 | 1,69 | 2,27 | 3,17 |
| | ILA | 0,00 | 0,00 | -1,44 | 2,04 | 3,90 | 0,14 | -0,32 |
| | SNL | 0,00 | 0,39 | 1,90 | 3,32 | 3,63 | 4,36 | 2,00 |
| | SOFINANCE | 0,00 | 2,72 | 4,40 | 3,08 | -0,46 | 4,60 | 2,92 |
| | SRH | 0,00 | 1,75 | 2,24 | 3,17 | 0,40 | 2,21 | 1,28 |
| | ALC | 0,00 | 4,55 | 4,33 | 4,13 | 5,36 | 6,66 | 3,54 |
| | CNMA | 0,00 | 0,00 | 3,76 | 12,38 | 4,22 | 0,40 | 3,78 |
| | MLA | 0,00 | 9,61 | 8,60 | 6,79 | 5,23 | 4,33 | 3,19 |
| | | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |
| | EDI | 1,43 | 1,93 | 0,78 | 1,50 | 0,92 | 0,26 | -0,83 |
| | ILA | -1,86 | -1,86 | 0,84 | 2,82 | 0,35 | 0,65 | 0,10 |
| | SNL | 1,82 | 2,99 | 2,65 | 2,88 | 3,86 | 4,11 | 0,00 |
| | SOFINANCE | 3,72 | 5,55 | 5,77 | 3,47 | 3,97 | 4,21 | 3,11 |
| | SRH | -0,13 | -1,45 | 0,96 | 1,28 | 3,09 | 3,61 | -0,02 |
| | ALC | 2,38 | 3,47 | 4,58 | 5,57 | 5,56 | 4,50 | 5,10 |
| | CNMA | 0,38 | 1,09 | -0,78 | 0,31 | 1,27 | 0,00 | -3,96 |
| | MLA | 4,34 | 3,77 | 2,27 | 2,79 | 2,14 | 2,33 | -1,06 |

Source : author, calculated based on the activity reports of various banks 2011-2024.

Algerian financial institutions complement public and private banks in financing large investment projects, usually through leasing. Due to their specialization and given the events that have occurred, the ROA results of these financial institutions remain unstable and sometimes unsatisfactory.

For reference, CRMA experienced an apparent drop from 12.38 in 2014 to 0.40 in 2016, then -3.96 in 2024. This situation is explained by the fact that most of CRMA's activity is carried out with the agricultural sector. This sector has faced unfavorable situations such as the bovine/ovine disease in 2014, which forced this institution to compensate farmers over several years, so the result was not in its favor.

**Table 5. Comparison of profitability (ROE) of Public Banks**

| Instituions/Years | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Public Banks | **EBA** | 20,44 | 21,97 | 13,77 | 20,87 | 26,74 | 14,72 | 22,98 |
| | **NBA** | 22,54 | 14,30 | 31,02 | 21,69 | 19,54 | 8,47 | 12,14 |
| | **ABRD** | 32,18 | 16,58 | 31,61 | 11,31 | 15,05 | 22,47 | 13,36 |
| | **LDB** | 9,77 | 20,29 | 25,43 | 12,37 | 20,78 | 27,02 | 14,45 |
| | **APC** | 16,41 | 19,65 | 25,99 | 25,31 | 27,09 | 24,44 | 21,84 |
| | **NSPF-BANK** | 6,07 | 7,77 | 3,58 | 14,75 | 5,26 | 7,13 | 12,07 |
| | | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **EBA** | 4,13 | 15,60 | 8,59 | 14,35 | 9,28 | 4,97 | 8,27 |
| | **NBA** | 11,55 | 7,94 | 5,17 | 2,63 | 13,91 | 13,39 | 10,51 |
| | **ABRD** | 13,18 | 0,36 | 10,07 | 8,85 | 9,99 | 103,90 | 75,79 |
| | **LDB** | 7,74 | 3,59 | 0,10 | 3,27 | 5,39 | 15,61 | 17,50 |
| | **APC** | 21,68 | 9,15 | 9,86 | 7,27 | 13,67 | 11,87 | 11,52 |
| | **NSPF-BANK** | 12,79 | 4,58 | 4,65 | 1,81 | 7,93 | 11,87 | 17,38 |

Source : author, calculated based on the activity reports of various banks 2011-2024.

The analysis of Table 5 shows that the ROE of NSPF/Bank has been low over several years. Indeed, it reached 6.07 in 2011, then 3.58 in 2014, and 1.81 in 2021. This bank is very sensitive to different economic and financial events. From 2023, the data changed and profitability improved, reaching 11.87 and then 17.38 in 2024. The second bank that is relatively weak compared to other public banks is LDB. Just like NSPF-Bank, LDB fully invested in boosting its profitability. The truly alarming result is that of ABDR Bank in 2023, which reached 103.90. This indicates that this bank is heavily in debt. We notice that the situation was quickly identified, and the ROE dropped to 75.79 in 2024. However, a lot of effort still needs to be made by this bank to restore balance.

**Table 6. Comparison of profitability (ROE) of Private Banks**

| Instituions/years | | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|---|---|
| Private Banks | **ARAB BANK PLC** | 11,57 | 17,48 | 20,53 | 16,31 | 8,59 | 13,09 | 10,68 |
| | **ABC** | 8,01 | 10,08 | 9,39 | 8,72 | 0,35 | 4,45 | 10,76 |
| | **AL SALAM** | 10,61 | 12,08 | 11,83 | 7,79 | 5,71 | 7,70 | 8,36 |
| | **AL BARAKA** | 23,71 | 24,43 | 20,49 | 22,77 | 16,14 | 21,85 | 19,25 |
| | **BNP** | 25,78 | 19,13 | 21,49 | 21,13 | 2,61 | 14,17 | 9,47 |
| | **CITI BANK** | 18,82 | 19,35 | 17,81 | 13,52 | 11,30 | 11,05 | 15,11 |
| | **FRANSABANK** | 9,56 | 14,19 | 9,81 | 14,64 | -0,10 | 6,51 | 7,63 |
| | **GULF BANK** | 23,85 | 34,02 | 28,88 | 22,34 | 16,48 | 11,75 | 19,44 |
| | **HOUSING BANK** | 11,82 | 14,50 | 12,27 | 9,99 | 10,06 | 10,10 | 10,25 |
| | **HSBC** | 21,01 | 25,47 | 14,74 | 10,38 | 10,07 | 5,50 | -2,17 |
| | **NATEXIS** | 11,26 | 16,11 | 16,71 | 18,57 | 7,54 | 3,38 | 4,12 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **SGA** | 22,67 | 21,90 | 15,80 | 15,85 | 3,63 | 18,20 | 14,87 |
| | **TRUST** | 6,43 | 6,55 | 4,25 | 11,95 | 9,58 | 5,05 | 7,13 |
| | | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **ARAB BANK PLC** | 10,78 | 13,32 | 100,67 | 6,38 | 9,46 | 9,41 | 11,98 |
| | **ABC** | 10,82 | 8,05 | 10,75 | 6,70 | 6,06 | 5,72 | 7,42 |
| | **AL SALAM** | 16,89 | 2,07 | 0,94 | 15,24 | 15,85 | 0,60 | 0,60 |
| | **AL BARAKA** | 23,37 | 26,96 | 15,90 | 14,21 | 12,94 | 13,83 | 8,86 |
| | **BNP** | 16,26 | 14,63 | 7,05 | 8,65 | 5,40 | 15,00 | 13,60 |
| | **CITI BANK** | 21,92 | 21,19 | 24,04 | 26,08 | 24,39 | 25,35 | 25,99 |
| | **FRANSABANK** | 10,62 | 12,17 | 7,08 | 5,44 | 0,47 | 10,21 | 13,63 |
| | **GULF BANK** | 21,79 | 19,34 | 6,52 | 12,09 | 13,69 | 12,83 | 13,15 |
| | **HOUSING BANK** | 15,74 | -3,58 | 8,44 | 20,07 | 17,72 | 9,51 | 11,41 |
| | **HSBC** | -2,61 | 6,44 | 9,20 | 8,67 | 7,47 | 10,34 | 11,78 |
| | **NATEXIS** | 13,56 | 10,32 | 12,33 | 11,48 | 11,33 | 12,88 | 1,55 |
| | **SGA** | 21,44 | 34,09 | 9,09 | 15,41 | 18,00 | 20,34 | 17,58 |
| | **TRUST** | 3,88 | 9,67 | 14,44 | 20,71 | 29,06 | 25,21 | 19,19 |

Source : author, calculated based on the activity reports of various banks 2011-2024.

The observation at the level of private banks is that the ROE of all banks is unstable but at different levels. For reference, TRUST BANK only experienced satisfactory profitability in 2020, which then continued to grow positively until 2024.

As for other banks like FRANSABANK, HSBC, and HOUSING BANK, they had negative results in 2015, 2017, 2018, and 2019 of -0.10, -2.17, -2.61, and -3.58, respectively. These results confirm that these banks not only failed to generate good results but also incurred net losses during the periods considered. In other words, instead of generating profits for shareholders, they destroyed value. However, these situations were quickly corrected according to each bank's performance.

ARAB BANK PLC, on the other hand, posted a ROE of 100.67 in 2020. This excessive profitability indicates that this bank was overleveraged during this period. A year later, we notice a reversal of the situation and the result went up to 6.38 in 2021. Both results weren't satisfactory, but the situation improved in 2024 to reach the lower limit of a good result with a value of 11.98.

**Table 7. Comparison of the profitability (ROE) of Financial Institutions**

| **Instituions/years** | | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** |
|---|---|---|---|---|---|---|---|---|
| | **EDI** | 0,00 | -0,18 | 0,01 | 22,77 | 1,72 | 2,36 | 3,36 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **ILA** | 0,00 | 0,00 | -1,49 | 2,20 | 4,14 | 0,15 | -0,35 |
| | **SNL** | 0,00 | 0,40 | 1,98 | 3,79 | 5,62 | 8,32 | 3,85 |
| | **SOFINANCE** | 0,00 | 4,33 | 4,99 | 3,96 | -0,66 | 6,45 | 3,74 |
| | **SRH** | 0,00 | 1,99 | 4,05 | 6,46 | 1,06 | 6,65 | 4,07 |
| | **ALC** | 0,00 | 0,00 | 30,70 | 63,91 | 10,79 | 0,97 | 8,45 |
| | **CNMA** | 0,00 | 18,87 | 18,31 | 15,08 | 12,76 | 12,58 | 11,95 |
| | **MLA** | 0,00 | -0,18 | 0,01 | 22,77 | 1,72 | 2,36 | 3,36 |
| | | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **EDI** | 1,48 | 2,09 | 0,83 | 1,55 | 0,94 | 0,28 | -0,90 |
| | **ILA** | -2,01 | -2,01 | 0,88 | 2,90 | 0,36 | 0,68 | 0,11 |
| | **SNL** | 3,53 | 6,39 | 3,83 | 3,75 | 4,41 | 4,64 | 0,00 |
| | **SOFINANCE** | 4,33 | 6,65 | 7,23 | 4,32 | 4,82 | 5,85 | 4,10 |
| | **SRH** | -0,43 | -4,61 | 3,16 | 4,97 | 8,58 | 8,63 | -0,06 |
| | **ALC** | 0,80 | 4,86 | -3,51 | 0,81 | 2,88 | 0,00 | -7,02 |
| | **CNMA** | 18,69 | 15,31 | 8,49 | 9,22 | 6,30 | 7,85 | -2,28 |
| | **MLA** | 1,48 | 2,09 | 0,83 | 1,55 | 0,94 | 0,28 | -0,90 |

Source : author, calculated based on the activity reports of various banks 2011-2024.

Reading the table above shows that during 2011, the ROE was zero everywhere. Starting in 2012, some institutions experienced significant fluctuations. In fact, some institutions, after incurring a loss, managed to achieve excellent results, but unfortunately only for a short period.

For example, EDI and MLA went from zero to -0.18 in 2012, then up to 22.77 in 2014, only to drop back to -0.90 in 2024. This situation shows that the financial policy of these institutions is not based on capital investment from the different shareholders. This observation applies to all the institutions for 2024, where five institutions suffered net losses, two had almost zero results (zero for SNL and 0.11 for ILA). Only SOFINANCE recorded a positive result, but it remains low relative to the lower standard.

### 5.1. Summary of ROA & ROE profitability of Algerian public banks, private banks & financial institutions (2011-2024)

**Table 8. Summary of ROA & ROE of public banks, private banks, and financial institutions**

| **Indicators / years** | | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** |
|---|---|---|---|---|---|---|---|---|
| **ROA (%)** | **Public Banks** | **1,15** | **1,1** | **1,51** | **1,13** | **1,33** | **1,43** | **1,52** |
| | **Private Banks** | **3,64** | **4** | **3,22** | **2,67** | **1,67** | **2,06** | **1,91** |
| | **Financial institutions** | **0** | **2,35** | **2,97** | **4,71** | **3** | **3,12** | **2,44** |
| | | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **Public Banks** | **1,13** | **0,72** | **0,6** | **0,63** | **0,81** | **1,07** | **1,08** |

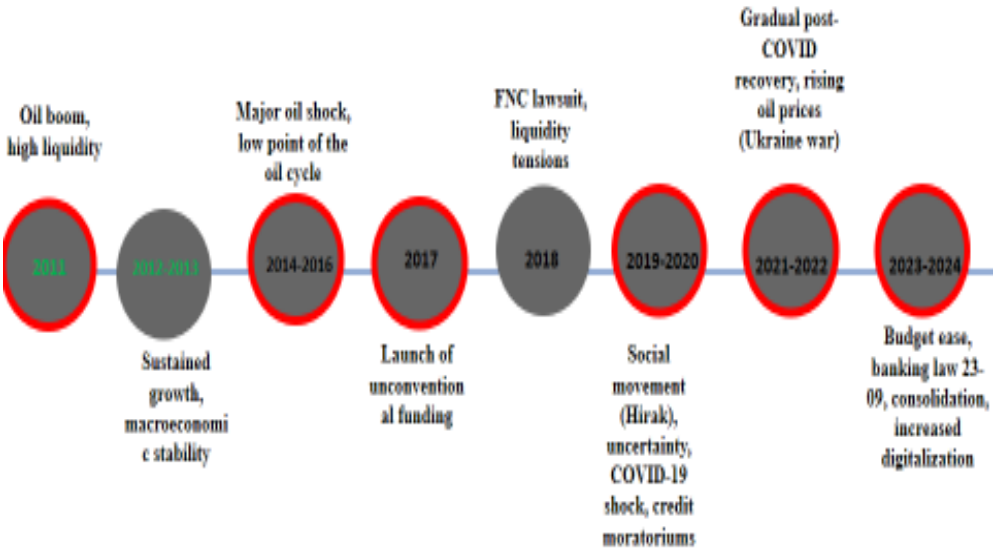
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Private Banks** | **2,3** | **2,19** | **1,93** | **2,22** | **2,22** | **2,09** | **2,02** |
| | **Financial Institutions** | **1,51** | **1,93** | **2,13** | **2,58** | **2,64** | **2,46** | **0,31** |
| **ROE (%)** | | **2011** | **2012** | **2013** | **2014** | **2015** | **2016** | **2017** |
| | **Public Banks** | **17,9** | **16,76** | **21,9** | **19,71** | **19,07** | **17,37** | **16,14** |
| | **Private Banks** | **15,78** | **18,1** | **15,69** | **14,92** | **7,84** | **10,21** | **10,37** |
| | **Financial Institutions** | **0** | **3,15** | **7,32** | **17,61** | **4,64** | **4,98** | **4,8** |
| | | **2018** | **2019** | **2020** | **2021** | **2022** | **2023** | **2024** |
| | **Public Banks** | **11,84** | **6,87** | **6,4** | **6,36** | **10,03** | **26,93** | **23,49** |
| | **Private Banks** | **14,19** | **13,43** | **17,42** | **13,16** | **13,22** | **13,17** | **12,06** |
| | **Financial Institutions** | **3,48** | **3,84** | **2,72** | **3,63** | **3,65** | **3,53** | **-0,87** |

Source : author, calculated based on table 02, 03, 04, 05, 06 & 07.

Table 8 presents a summary of all the results reported by public and private banks as well as financial institutions over the period from 2011 to 2024.
The analysis of the average ROA series shows a mixed trajectory between public and private banks as well as for financial institutions during the period studied. The average ROA of public banks stands at 1.09% over the entire period, compared to 2.44% for private banks and 2.30% for financial institutions.

The ROE analysis confirms and amplifies the observations related to ROA, due to a more pronounced financial leverage effect for public banks (higher assets/equity ratio). The average ROE of public banks is 15.77% over the period, compared to 13.54% for private banks and 4.46% for financial institutions. The volatility of the ROE of financial institutions and public banks is significantly higher than that of private banks, reflecting an increased sensitivity to economic shocks.

**Figure 1. Summary of the macro-financial context**




Source : author, compilation of the main events 2011-2024.

### 5.2. Sequence of events affecting banking profitability

Event analysis makes it possible to identify seven major episodes that shaped the trajectory of profitability in the Algerian banking sector over the period 2011-2024:

#### 5.2.1. The oil shock of 2014-2016

The drop in oil prices, from over 110 dollars per barrel in mid-2014 to less than 30 dollars at the beginning of 2016, led to a severe contraction in budget revenues and public sector deposits in public banks, which are the main holders of cash surpluses from state-owned companies and the Treasury. This liquidity squeeze, combined with a deterioration in the quality of the loan portfolio to state-owned enterprises affected by the drop in their revenues, explains the sharp decline in the ROE of public banks during this period.

#### 5.2.2. Unconventional financing 2017-2019

Faced with the exhaustion of the Revenue Regulation Fund, the Algerian authorities resorted, starting in November 2017, to the unconventional financing mechanism, which involves money creation by the Bank of Algeria to finance the public treasury and certain major projects through public banks. While this mechanism temporarily stabilized banking liquidity, it also kept public banks in a quasi-budgetary financing logic that was low-yielding, contributing to the persistence of degraded profitability during this period.

#### 5.2.3. The 2019 Hirak social movement

The popular protest movement that began in February 2019 created an atmosphere of economic and political uncertainty, which resulted in a slowdown of credit activity and investor caution, moderately affecting the profitability of both categories of banks in 2019 with a slightly stronger impact on private banks due to their exposure to trade finance and private investment.

**5.2.4. The COVID-19 pandemic**

The 2020 health crisis was the harshest shock of the period for Algerian banking profitability, with an average ROA dropping to 0.6% for public banks and 1.93% for private banks, then 2.13% for financial institutions, and an ROE falling respectively to 6.4%, 17.42%, and 5.72%. Support measures for the economy (moratoriums on loan repayments, debt rescheduling decided by the Bank of Algeria in March 2020) limited the risk cost increase but also temporarily reduced interest income. The rebound seen from 2021 reflects the gradual absorption of these effects.

**5.2.5. The reform of the Monetary and Banking Law in 2023**

The adoption of Law No. 23-09 on June 21, 2023, relating to currency and credit, introduced significant reforms in banking governance, prudential supervision, and opening up to Islamic finance. This reform, combined with the restored budget flexibility thanks to the rise in oil prices following the war in Ukraine, helped noticeably improve the profitability of both types of banks observed in 2022-2024.

**5.2.6. The depreciation of the dinar and inflationary pressures 2021-2024**

The continued depreciation of the Algerian dinar against the main international currencies and the resurgence of inflation (reaching peaks above 9% in 2022) have had mixed effects on bank profitability. On one hand, there is an erosion of household purchasing power that could affect the quality of consumer loans; on the other hand, there are favorable exchange gains for banks holding assets or liabilities in foreign currencies, which particularly benefited some private banks active in external trade financing.

**5.2.7. The acceleration of banking digitalization 2020-2024**

The development of electronic payment services (widespread use of the CIB card, rollout of BaridiMob, implementation of the interbank mobile payment system) since 2020 has allowed banks to gradually reduce operational costs having invested heavily in these technologies, contributing to improved efficiency and therefore the profitability seen at the end of the period, with a comparative advantage for private banks, which are generally more agile in adopting these technological innovations (GIE Monetique, 2024).

**6. Analysis & discussion of results**

- **a structural profitability Gap confirming political agency theory**

The results of this study confirm, in the Algerian case, the predictions of political agency theory (La Porta, Lopez-De-Silanes, & Shleifer, 2002) : public banks, due to their role as quasi-budgetary financiers of the national economy and public enterprises, show structurally lower profitability than private banks. This gap, although it narrows during periods of budgetary ease (2011-2013, 2022-2024), remains persistent over the entire cycle studied, suggesting that it reflects structural differences in business models rather than just cyclical effects ;

- **differentiated vulnerability to macro-financial shocks**

The most striking result of this study concerns the different sensitivity of the two categories of banks to cyclical shocks : the volatility of public banks' ROE is nearly three times higher than that of private banks. This increase is mainly due to public banks' exposure to public sector deposits, which fluctuate significantly with oil revenues, creating a procyclical effect that private banks, funded by a more diversified deposit base, do not experience to the same extent (Ben Naceur & Omran, 2011) ;

- **the paradox of the countercyclical stability of unconventional financing**

The use of unconventional financing (2017-2019) illustrates an interesting paradox : this mechanism, by stabilizing the overall liquidity of the banking system, helped prevent an acute liquidity crisis for public banks, but without restoring their profitability, which remained below its pre-crisis level until 2021. This observation suggests that liquidity support policies, while necessary during periods of stress, are not enough on their own to restore banking profitability if they are not accompanied by structural reforms affecting the quality of the credit portfolio and operational efficiency ;

- **regional comparison and perspective**

Comparing with other hydrocarbon-exporting countries in the MENA region confirms the relevance of the Algerian case as an illustration of a more general phenomenon. In Nigeria, (Adesina, 2021) observes a comparable profitability gap between public and private banks, with the former being more vulnerable to the oil shocks of 2014-2016 and 2020. In Saudi Arabia, where the banking sector is less dominated by public institutions, (Al-Homaidi, Tabash, Farhan, Almaqtari, & McMillan, 2018) nonetheless show a similar effect of oil procyclicality on the profitability of banks most exposed to financing the public sector. These comparisons suggest that the phenomenon observed in Algeria is not specific to this country but stems from a structural dynamic typical of rentier economies, where the distinction between the public sphere and the public banking sector remains imperfect.

## 8. Conclusion

This article offered a thorough comparative analysis of the financial profitability of public, private banks, and Algerian financial institutions over the period 2011-2024, through the study of ROA and ROE ratios and their relation to the main macroeconomic and regulatory events that affected the sector. The results confirm a structural profitability gap favoring private banks (average ROA of 2.44% versus 1.09%; average ROE of 13.54% versus 15.77%), as well as significantly higher volatility in the profitability of public banks, nearly three times more unstable than that of private banks.

Seven major events were identified as shaping this trajectory : the 2014-2016 oil shock, unconventional financing from 2017-2019, the Hirak social movement in 2019, the COVID-19 pandemic from 2020-2021, the 2023 banking reform, the depreciation of the dinar and inflation since 2021, and the acceleration of banking digitalization since 2020.

The analysis shows that public banks, due to their structural exposure to public sector deposits and their quasi-budgetary financing role, have consistently been more affected by these shocks than private banks. These findings argue for a structural reform of the governance and risk management model of Algerian public banks, without questioning their strategic role in financing the national economy.

## 9. References

Adesina, K. S. (2021). How diversification affects bank performance: The role of human capital. *Economic Modelling, 94*, 303-319. doi:https://doi.org/10.1016/j.econmod.2020.10.016

Al-Homaidi, E. A., Tabash, M. I., Farhan, N. H., Almaqtari, F. A., & McMillan, D. (2018). Bank-specific and macro-economic determinants of profitability of Indian commercial banks: A panel data approach. *Cogent Economics & Finance, 6*(1), 1-18. doi:https://doi.org/10.1080/23322039.2018.1548072

Athanasoglou, P. P., Brissimis, S. N., & Delis, M. D. (2008). Bank-specific, industry-specific and macroeconomic determinants of bank profitability. *Journal of International Financial Markets, Institutions and Money, 18*(2), 121-136. doi:https://doi.org/10.1016/j.intfin.2006.07.001.

Bank of Algeria. (2014). Algeries: Regulation No. 14-01 of February 16, 2014, concerning the minimum capital of banks and financial institutions operating in Algeria.

Bank of Algeria. (2023). *Annual report on the economic and monetary developments in Algeria 2022.* Algeries.

Bank of Algeria. (2024). Algeries: Annual report on the economic and monetary development of Algeria 2023.

Ben Khediri, K., Charfeddine, L., & Ben Youssef, S. (2015). Islamic versus conventional banks in the GCC countries: A comparative study using classification techniques. *Research in International Business and Finance, 33*, 75-98. doi:https://doi.org/10.1016/j.ribaf.2014.07.002.

Ben Naceur, S., & Omran, M. (2011). The effects of bank regulations, competition, and financial reforms on banks' performance. *Emerging Markets Review, 12*(1), 1-20. doi:https://doi.org/10.1016/j.ememar.2010.08.002.

Berger, N., Hasan, I., Zhou, M., & Allen. (2009). Bank ownership and efficiency in China: What will happen in the world's largest nation? *Journal of Banking & Finance, 33*(01), 113-130. doi:https://doi.org/10.1016/j.jbankfin.2007.05.016.

Bouyakoub, F. (2020). The evolution of the Algerian banking system since independence: continuities and breaks. *CREAD Notebooks, 36*(3), 55-79.

Brei, M., & Schclarek, A. (2013). Public bank lending in times of crisis. *Journal of Financial Stability, 9*(4), 820-830. doi:https://doi.org/10.1016/j.jfs.2013.01.002

Cull, R., & Verrier, J. (2017). "Bank Ownership: Trends and Implications". *IMF Working Papers, 60*. doi:https://doi.org/10.5089/9781475588125.001

Dietrich, A., & Wanzenried, G. (2014). The determinants of commercial banking profitability in low-, middle-, and high-income countries. *The Quarterly Review of Economics and Finance, 54*(3), 337–354. doi: https://doi.org/10.1016/j.qref.2014.03.001

Fadzlan, S., & Muzafar, S. H. (2010). Assessing the impact of financial crisis on bank performance: Empirical evidence from Indonesia. *ASEAN Economic Bulletin, 27*(3), 245–262. doi:https://doi.org/10.1355/ae27-3a

Ghosh, S. (2019). Loan delinquency in banking systems: How effective are credit reporting systems? *Research in International Business and Finance, 47*, 220-236. doi:https://doi.org/10.1016/j.ribaf.2018.07.011.

GIE Monetique. (2024). *GIE Monétique. (2024). Annual report on the development of electronic payments in Algeria 2023. Monétique Economic Interest Group.* Algiers.

Iannotta, G., Nocera, G., & Sironi, A. (2007). Ownership structure, risk and performance in the European banking industry. *Journal of Banking & Finance, 31*(7), 2127-2149. doi:https://doi.org/10.1016/j.jbankfin.2006.07.013.

IMF. (2024). *Article IV consultation-Staff report. International Monetary Fund.* . Washington, D.C.

La Porta, R., Lopez-De-Silanes, F., & Shleifer, A. (2002). Government Ownership of Banks. *The Journal of Finance, 57*(1), 265-301. doi: https://doi.org/10.1111/1540-6261.00422

Lin, X., & Zhang, Y. (2009). Bank ownership reform and bank performance in China. *Journal of Banking & Finance, 33*(1), 20-29. doi:https://doi.org/10.1016/j.jbankfin.2006.11.022.

Micco, A., Panizza, U., & Yañez, M. (2007). Bank ownership and performance. Does politics matter? *Journal of Banking & Finance, 31*(1), 219-241. doi:https://doi.org/10.1016/j.jbankfin.2006.02.007.

NOS. (2024). *Consumer price indices and macroeconomic indicators* . Algiers.

Rashid, A., & Jabeen, S. (2016). Analyzing performance determinants: Conventional versus Islamic Banks in Pakistan. *Borsa Istanbul Review, 16*(2), 92-107. doi:https://doi.org/10.1016/j.bir.2016.03.002.

Rose, P. S., & Hudgins, S. C. (2013). *Bank Management and Financial Services.* (9. Edition, Éd.) ISBN10: 0078034671 | ISBN13: 9780078034671. Récupéré sur

https://www.mheducation.com/highered/product/bank-management-and-financial-services-rose.html?viewOption=student

Saunders, A., Cornett, M. M., & Erhemjamts, O. (2021). *Financial Institutions Management: A Risk Management Approach.* (I. 1. 9781265755492, Éd.) McGraw-Hill Education. New York, https://www.mheducation.com/highered/product/financial-institutions-management-a-risk-management-approach-saunders.html?viewOption=student

Trabelsi, M. A., & Trad, N. (2017). Profitability and risk in interest-free banking industries: a dynamic panel data analysis. *International Journal of Islamic and Middle Eastern Finance and Management, 10*(4), 454-469. doi:10.1108/IMEFM-05-2016-0070

World Bank. (2023). *Algeria economic update : Navigating the energy transition. World Bank Group.* . Washington, D.C.