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Banking Concentration and Financial Intermediation in Algeria: Evidence from the Four-Bank Concentration Ratio

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Abstract
This study examines market concentration and financial intermediation in the Algerian banking sector over the period 2018–2023. Market structure is assessed using the four-bank concentration ratio (CR4) based on total assets, while financial intermediation is measured through bank-level lending activity, including loan growth and the loans-to-assets ratio. Using data from the four largest Algerian banks and aggregate banking sector statistics from the Bank of Algeria, the analysis documents a persistently high level of concentration, with CR4 values exceeding 60 percent throughout the sample period. Despite this structural concentration, lending dynamics exhibit considerable heterogeneity across banks, reflecting differences in balance-sheet conditions and strategic orientation. At the aggregate level, financial intermediation remains moderate and relatively stable, even during periods of heightened economic uncertainty. Overall, the findings suggest that high banking concentration in Algeria does not necessarily impede financial intermediation, which appears to depend more on bank-specific behavior than on market structure alone. The results provide policy-relevant insights for banking sector reforms and competition policy in highly concentrated, state-dominated financial systems.
Keywords: Banking concentration; Financial intermediation; CR4; Algerian banking sector; Public banks.

1. **Introduction**
The structure of the banking sector plays a central role in shaping financial intermediation and credit allocation, particularly in bank-based financial systems. Market concentration may influence banks' behavior through its effects on competition, efficiency, and risk-taking, with potential implications for economic activity. While some theoretical perspectives suggest that higher concentration may weaken competitive pressures and reduce lending, others argue that dominant banks may benefit from economies of scale and enhanced stability, allowing them to sustain credit provision [Beck, Demirgüç-Kunt, & Levine, 2006]; [Claessens & Laeven, 2004].

As a result, the relationship between banking concentration and financial intermediation remains an open empirical question.

The Algerian banking sector provides a particularly relevant context for examining this relationship. The system is characterized by the dominance of a small number of large public banks, limited entry of private and foreign institutions, and a regulatory framework that has evolved gradually since the early 1990s. Despite successive reforms aimed at strengthening financial intermediation and modernizing the banking system, market structure has remained highly concentrated [Bank of Algeria, 2019; 2023]. Understanding whether this concentration constrains or coexists with lending activity is therefore of direct relevance for policymakers concerned with financial development and credit growth.

Existing empirical studies on banking concentration and intermediation have largely focused on developed economies or cross-country samples, often yielding mixed results [Beck, Demirgüç-Kunt, & Levine, 2006]; [Demirgüç-Kunt, Martinez Peria, & Tressel, 2015]. Evidence for North African countries, and Algeria in particular, remains scarce and fragmented. Moreover, recent developments in the Algerian banking sector following the COVID-19 shock and subsequent macroeconomic adjustments have not been sufficiently examined in the literature. This creates a gap for updated, country-specific analysis that links market structure to lending behavior using recent data.

Against this background, the present study examines banking concentration and financial intermediation in Algeria over the period 2018–2023. Market concentration is measured using the four-bank concentration ratio (CR4) based on total assets, capturing the dominant role of the largest banks in the system. Financial intermediation is assessed through bank lending activity, measured by loan growth and the loans-to-assets ratio. Rather than pursuing causal identification, the study adopts a descriptive and empirical approach that is consistent with data availability and the institutional characteristics of the Algerian banking sector.

The paper contributes to the literature in three ways. First, it provides updated evidence on the degree of banking concentration in Algeria using recent data. Second, it offers new insights into lending dynamics among the largest banks in a highly concentrated, state-dominated system. Third, it contributes to the policy debate by assessing whether persistent concentration necessarily translates into weak financial intermediation. The findings are expected to inform discussions on banking sector reforms, competition policy, and credit allocation in Algeria and similar emerging economies.

The remainder of the paper is organized as follows. Section 2 presents the institutional background of the Algerian banking sector. Section 3 reviews the relevant literature. Section 4 describes the data and methodology. Section 5 reports the empirical results, and Section 6 concludes and discusses policy implications.

2. Institutional Background of the Algerian Banking Sector

The Algerian banking system has evolved through several distinct phases, closely linked to the country's economic and political history. Following independence in 1962, Algeria adopted a state-led development model based on central planning and public ownership. During this period, the banking sector was nationalized and placed under strict state control, with banks primarily serving as instruments for financing public enterprises and government investment programs rather than operating as profit-oriented intermediaries [Hacini & Dahou, 2018].

Under this model, credit allocation was largely administratively determined, and banks faced limited incentives to assess risk or improve efficiency. The central bank played a dominant role in directing credit, and financial intermediation was closely aligned with state development objectives rather than market signals. While this system supported large public investment projects, it also contributed to inefficiencies and financial imbalances, particularly as oil revenues fluctuated.

The first major shift toward liberalization occurred in the late 1980s and early 1990s, following a period of macroeconomic instability and declining hydrocarbon revenues. The Law on Money and Credit (Law 90-10) enacted in 1990 marked a turning point by redefining the role of the central bank and granting greater autonomy to commercial banks. The reform aimed to introduce market-based principles, reduce direct state intervention, and improve the efficiency of financial intermediation [Hacini & Dahou, 2018].

Further reforms were introduced with the 2003 ordinance on money and credit (Ordinance 03-11), which sought to strengthen prudential regulation, enhance supervisory frameworks, and modernize the banking system in line with international standards. These reforms also facilitated the entry of private and foreign banks, with the objective of increasing competition and improving service quality [Bank of Algeria, 2017].

Despite these reform efforts, the structural features of the Algerian banking sector have remained largely unchanged. Public banks continue to dominate the system in terms of assets, deposits, and credit, accounting for the majority of financial intermediation. Private and foreign banks operate on a much smaller scale and are often concentrated in specific market segments, limiting their ability to challenge the dominant position of public institutions [Hacini & Dahou, 2018]; [Bank of Algeria, 2018; 2019; 2023].

As a result, the Algerian banking sector is characterized by a high degree of concentration, strong state ownership, and limited competitive pressure. These characteristics make Algeria a suitable case for analyzing the relationship between banking concentration and financial intermediation, particularly in the context of emerging and resource-dependent economies where banks play a central role in financing economic activity.

Table 1: List of Banks and Finance Companies in Algeria (Bank of Algeria, 2024)

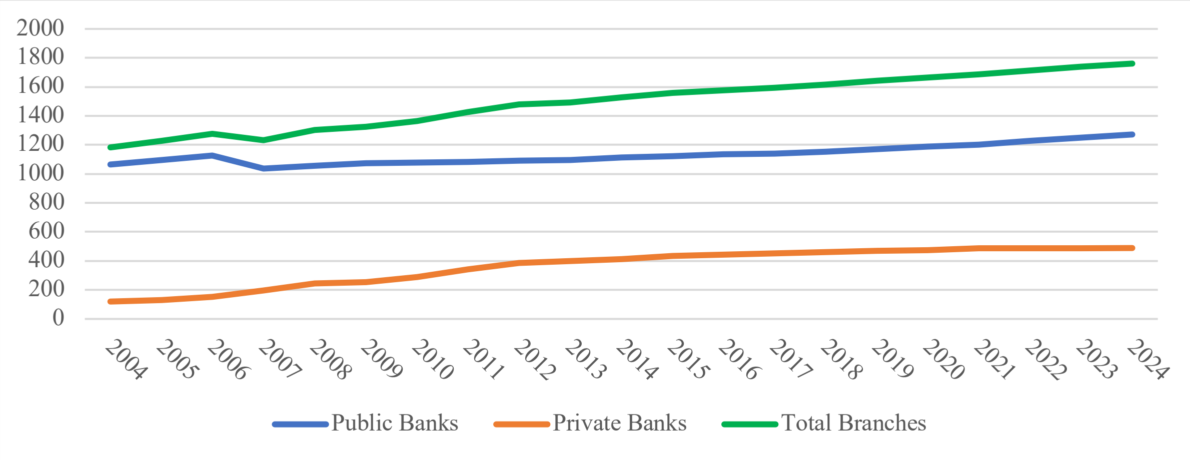
Commercial Banks		
No	**Name of banks**	**Ownership**
1	Banque Nationale d'Algérie (BNA)	public
2	Caisse Nationale d'Epargne et de prévoyance (CNEP)	Public
3	Crédit Populaire d'Algérie (CPA)	Public
4	Banque de Développement Local (BDL)	Public
5	Banque Extérieur d'Algérie (BEA)	Public

6	Banque de l'Agriculture et du Développement Rural (BADR)	Public
7	Banque Nationale De L'habitat	Public
8	Banque Al Baraka Algérie	Private
9	Arab Banking Corporation Algerie	Private (Foreign)
10	Natixis Banque	Private (Foreign)
11	Société Générale Algérie	Private (Foreign)
12	City Bank Algeria	Private (Foreign)
13	Arab Bank	Private (Foreign)
14	B.N.P Paribas El Djazair	Private (Foreign)
15	Trust Bank Algeria	Private (Foreign)
16	Gulf Bank Algeria	Private (Foreign)
17	The Housing Bank For Trade And Finance-Algeria	Private (Foreign)
18	Fransabank El Djazaïr	Private (Foreign)
19	Al Salam Bank-Algeria	Private (Foreign)
20	H.S.B.C Algeria	Private (Foreign)
21	T.C. Ziraat Bankasi-Algeria	Private (Foreign)
Financial Companies		
No	**Name of banks**	**Ownership**
1	Societe Financiere D'investissment, De Participation Et De Placement – SPA – (SOFINANCE – SPA)	Public
2	Société de Refinancement Hypothécaire (SRH)	Public
3	Société Nationale de Leasing	Public
4	Caisse nationale de mutualité agricole (CNMA),	Public
5	Maghreb Leasing Algerie	Private (Foreign)
6	Arab Leasing Corporation	Mixed private and public
7	IJAR Leasing Algerie	Mixed private and public
8	El Djazair Ijar	Mixed private and public

Source: Bank of Algeria, 2024

Table 1 lists banks and financial companies operating in Algeria as of 2024, based on data from the Bank of Algeria. The table outlines the composition of the banking system and highlights the predominance of public banks alongside a smaller number of private banks and financial institutions. This structure underscores the state-centered nature of the Algerian banking sector and provides important institutional context for the analysis of market concentration presented in the subsequent sections.

Figure 1: Number of Bank Branches (2004-2024)



Source: Bank of Algeria, 2024

Figure 1 presents the evolution of the number of bank branches in Algeria over the period 2004–2024, distinguishing between public banks, private banks, and total branches. The figure shows a steady expansion of the banking network throughout the period, largely driven by public banks, which consistently maintain the largest share of branches. Although private banks exhibit gradual growth in branch numbers, their overall presence remains limited compared to public banks, reflecting the dominant role of public institutions in the territorial coverage of banking services.

3. Literature Review

The relationship between banking market structure and financial intermediation has long been debated in the literature, with competing theoretical and empirical perspectives offering mixed conclusions. Traditional industrial organization theory suggests that higher market concentration may reduce competitive pressure, potentially leading to higher lending rates, lower credit availability, and inefficiencies in financial intermediation [Claessens & Laeven, 2004]. From this perspective, increased concentration is often associated with weaker competition and reduced incentives for banks to expand lending.

In contrast, an alternative strand of the literature emphasizes the potential benefits of concentration. According to the concentration–stability hypothesis, larger and more dominant banks may benefit from economies of scale, diversified portfolios, and stronger capitalization, enabling them to maintain stable lending activity even during periods of economic stress [Beck, Demirgüç-Kunt, & Levine, 2006]. This view argues that concentration does not necessarily imply a lack of competition, particularly in banking systems where regulatory oversight and institutional frameworks play a significant role.

Empirical evidence on the relationship between banking concentration and intermediation remains inconclusive. Cross-country studies often find that the impact of concentration depends on broader institutional conditions, including regulatory quality, entry barriers, and financial development. Beck, Demirgüç-Kunt, & Levine [2006]; using data from both developed and developing economies, show that more concentrated banking systems are not inherently less stable and may, under certain conditions, support credit provision. Similarly, Demirgüç-Kunt, Martinez Peria, & Tressel [2015]. highlight that bank lending behavior is shaped by a combination of market structure and bank-specific characteristics, rather than concentration alone.

In emerging and developing economies, banking sectors are frequently characterized by a small number of dominant institutions, often with significant public ownership. In such contexts, market concentration may reflect structural and historical factors rather than competitive distortions. Studies focusing on developing countries suggest that dominant banks can play a central role in sustaining credit flows, particularly where alternative financing channels are limited [Allen, Demirgüç-Kunt, Martinez Peria, & Mody, 2014]. However, the effectiveness of financial intermediation in these systems often varies across banks, depending on governance structures, risk management practices, and policy mandates.

Evidence specific to North Africa and Algeria remains limited. Existing studies on the Algerian banking sector primarily focus on financial reforms, efficiency, or stability, with relatively little attention paid to the interaction between market concentration and lending behavior. Institutional analyses document the persistent dominance of public banks and the gradual pace of liberalization since the 1990s, suggesting a structurally concentrated system [Bank of Algeria, 2019; 2023]. However, empirical assessments linking concentration measures to financial intermediation outcomes using recent data are scarce.

This study contributes to the literature by providing updated, country-specific evidence on banking concentration and financial intermediation in Algeria over the period 2018–2023. By focusing on the four largest banks and combining concentration measures with lending-based indicators, the analysis complements existing cross-country studies and offers insights into how market structure and bank-level behavior interact in a highly concentrated, state-dominated banking system.

4. Data and Methodology

4.1. Data Sources

This study relies on bank-level and sector-level data covering the period 2018–2023. Bank-level data on total assets and loans to customers (prêts et créances sur la clientèle) are collected from the annual financial statements of the four largest Algerian banks: Banque Nationale d'Algérie (BNA), Banque Extérieure d'Algérie (BEA), Crédit Populaire d'Algérie (CPA), and Banque de Développement Local (BDL). These institutions consistently dominate the Algerian banking system in terms of balance-sheet size. Aggregate data on total assets of the banking sector are obtained from the annual reports of the Bank of Algeria.

4.2. Measurement of Market Concentration

Market concentration in the Algerian banking sector is measured using the four-bank concentration ratio (CR4). The CR4 captures the share of total banking assets held by the four largest banks and provides a transparent indicator of market dominance in systems characterized by a limited number of major institutions.

The CR4 is calculated as follows:

$$CR4_t = \frac{\sum_{i=1}^{4} Asset\ s_{i,t}}{TotalAssets_t} \times 100$$

where $Assets_{i,t}$ denotes total assets of bank i in year t;

$TotalAssets_t$ represents total assets of the banking sector. Total assets are used as the measure of bank size, as they reflect overall market power and are widely employed in studies of banking concentration.

The analysis focuses exclusively on CR4. Alternative concentration indicators, such as the Herfindahl–Hirschman Index, are not employed due to data availability constraints and the highly concentrated structure of the Algerian banking system, where CR4 adequately captures market dominance.

4.3. Measurement of Financial Intermediation

Financial intermediation is proxied by bank lending activity, measured using two complementary indicators. First, annual loan growth rates are computed to capture changes in banks' credit provision over time. Second, the loans-to-assets ratio is used to assess the share of banks' balance sheets allocated to lending activities.

(i)Annual loan growth is calculated as:

$$LoanGrowth_{i,t} = \frac{Loans_{i,t} - Loans_{i,t-1}}{Loans_{i,t-1}} \times 100$$

Where:

$Loans_{i,t}$denotes total loans of bank iin year t. As loan growth requires a lagged observation, the year 2018 serves as the base year, and growth rates are reported for 2019–2023.

(ii) The loans-to-assets ratio is defined as:

$$Intermediation_{i,t} = \frac{Loans_{i,t}}{TotalAssets_{i,t}} \times 100$$

Together, these indicators provide a comprehensive view of lending dynamics and intermediation intensity among the dominant banks.

Given the short time dimension of the dataset and the institutional characteristics of the Algerian banking system, the analysis adopts a descriptive and empirical approach. Market concentration trends are examined using CR4, while financial intermediation is analyzed through bank-level lending indicators. The relationship between concentration and intermediation is assessed by comparing CR4 dynamics with lending behavior over time, without pursuing causal identification.

5. Empirical Results

5.1. Evolution of Banking Concentration

Market concentration in the Algerian banking sector is assessed using the four-bank concentration ratio (CR4), which measures the share of total banking assets held by the four largest banks: BNA, BEA, CPA, and BDL. This indicator is particularly appropriate for the Algerian context, where a small number of large public banks dominate the financial system and account for the majority of banking activity.

Table 2. Four-Bank Concentration Ratio (CR4) in the Algerian Banking Sector (2018–2023)

Year	Total banking assets	Assets of top 4 banks	CR4 (%)
2018	13,800	8,922	64.65
2019	14,800	9,750	65.88
2020	14,900	10,381	69.67
2021	17,800	10,495	58.96
2022	20,200	13,111	64.90
2023	21,500	15,140	70.41

Source: Authors' calculations based on bank-level annual reports and Bank of Algeria annual reports.

As shown in Table 2, CR4 increases from approximately 64.6% in 2018 to 70.4% in 2023, despite some fluctuations during the period. Concentration rises notably in 2020, coinciding with heightened economic uncertainty, before declining temporarily in 2021 as total banking assets expanded more rapidly than the balance sheets of the largest banks. The subsequent increase in 2022 and 2023 reflects renewed growth in the assets of dominant banks, reinforcing their leading position within the system. These dynamics suggest that banking concentration in Algeria is structural rather than transitory. Short-term macroeconomic shocks and policy responses appear to influence the level of concentration only marginally, without altering the underlying dominance of the largest institutions.

The persistently high CR4 values observed during the period reflect the limited competitive pressure faced by major banks in the Algerian market. Entry barriers, the prominent role of public ownership, and the gradual pace of financial sector reforms contribute to maintaining a concentrated market structure. While such concentration may provide stability through scale advantages and strong capitalization of large banks, it may also limit competitive incentives for efficiency and innovation.

5.2. Financial Intermediation and Lending Dynamics

Financial intermediation is proxied by bank lending activity, measured using loans to the private sector (prêts et créances sur la clientèle) as reported in the annual financial statements of the four largest banks. To capture lending dynamics over time, annual loan growth rates are computed.

Table 3. Annual Loan Growth % of Major Algerian Banks (2019–2023)

Bank	2019–2020	2020–2021	2021–2022	2022–2023
BNA	17.2	3.5	13.0	11.2
BEA	−3.4	−0.2	9.3	−0.9
CPA	5.4	−13.0	−1.5	−0.6
BDL	9.1	11.1	12.3	7.5

Source: Authors' calculations based on banks' annual financial statements.

Table 4. Average loan growth (top 4 banks)

Period	Average growth (%)
2019–2020	**7.1**
2020–2021	**0.4**
2021–2022	**8.3**
2022–2023	**4.3**

Source: Authors' calculations based on banks' annual financial statements

Table 3 shows the annual loan growth; the results reveal heterogeneous lending dynamics among the largest Algerian banks. BNA and BDL display consistently positive loan growth, indicating a relatively stable contribution to credit expansion over the period. In contrast, BEA and CPA experience episodes of stagnation and contraction, particularly around 2020–2021, reflecting the impact of adverse macroeconomic conditions and heightened uncertainty during that period.

Table 4, shows the annual loan growth at the system level, which reveals that the lending activity slows markedly during 2020–2021, before recovering in subsequent years. This pattern suggests that, despite a highly concentrated banking structure, large public banks continue to play a central role in sustaining credit provision, although their responses to economic shocks differ significantly. Overall, the findings indicate that banking concentration coexists with uneven intermediation performance, highlighting the importance of bank-specific behavior in shaping aggregate lending outcomes.

5.3. Financial Intermediation Intensity

To assess the intensity of financial intermediation, lending activity is further examined using the loans-to-assets ratio, which measures the proportion of banks' balance sheets allocated to lending activities.

Table 5 reports the loans-to-assets ratios of the four largest banks, while Table 6 presents the corresponding average for the group.

Table 5. Financial Intermediation (Loans-to-Assets Ratio, %) of Major Algerian Banks (2018–2023)

Bank	2018	2019	2020	2021	2022	2023
BNA	41.2	46.1	46.8	44.2	44.9	45.4
BEA	28.6	27.5	26.4	25.1	26.8	25.9
CPA	40.7	41.4	35.2	33.9	33.3	32.9
BDL	36.5	38.9	39.6	39.1	39.8	40.2

Source: Authors' calculations based on banks' annual financial statements.

Table 6. Average Financial Intermediation of the Four Largest Banks

Year	Average loans-to-assets (%)
2018	36.8
2019	38.5
2020	37.0

2021	35.6
2022	36.2
2023	36.1

Source: Authors' calculations based on banks' annual financial statements

The results indicate moderate and relatively stable financial intermediation among the largest Algerian banks over the period 2018–2023. On average, lending activities account for approximately 35–40% of total assets, suggesting that a significant share of bank balance sheets is allocated to non-lending activities, such as liquid assets and government securities. Among individual institutions, BNA and BDL exhibit higher and more stable intermediation ratios, while BEA consistently records lower lending intensity, reflecting its operational focus on trade finance and liquidity management.

Taken together, these findings suggest that the Algerian banking system is characterized by a structurally concentrated market in which financial intermediation remains largely dependent on a small group of large public banks. While concentration shapes the environment in which credit is allocated, intermediation outcomes ultimately depend on bank-specific strategies, rather than concentration alone.

6. Conclusion

This study analyzed the structure of the Algerian banking sector by examining market concentration and financial intermediation over the period 2018–2023. Using the four-bank concentration ratio (CR4), the results show that the Algerian banking system is highly concentrated, with a small number of large public banks dominating the market. This concentration appears to be a structural feature rather than a temporary outcome, as CR4 remains persistently high throughout the period.

The analysis of financial intermediation, measured through loan growth and the loans-to-assets ratio, indicates that lending activity remains moderate and broadly stable, despite fluctuations in concentration. While some banks display consistent credit expansion, others experience periods of stagnation or contraction, particularly during episodes of macroeconomic stress. These findings suggest that financial intermediation outcomes are shaped not only by market structure, but also by institution-specific characteristics, including risk preferences, balance-sheet conditions, and strategic orientation.

Taken together, the results indicate that a concentrated banking structure does not necessarily impede credit provision in Algeria. Instead, the relationship between concentration and intermediation is complex and non-uniform, emphasizing the importance of bank-level behavior in understanding aggregate lending dynamics.

The findings of this study carry several important policy implications. First, the persistence of high concentration highlights the need for continuous monitoring of market structure, particularly in a system dominated by large public banks. While concentration alone does not appear to constrain lending, excessive reliance on a small number of institutions may increase systemic vulnerability and reduce competitive pressures over time.

Second, policies aimed at improving financial intermediation should focus not only on market structure, but also on enhancing bank-level efficiency and risk management practices. Strengthening governance, improving credit allocation mechanisms, and encouraging diversification of lending portfolios may contribute more effectively to credit expansion than structural reforms alone.

Finally, promoting the gradual development of smaller and private banks, alongside improvements in financial infrastructure and regulatory quality, could help foster a more balanced and resilient banking system, while preserving the stability provided by large incumbent institutions. Future research could extend this analysis by incorporating longer time horizons or alternative measures of competition to further explore the concentration–intermediation nexus in Algeria.

Conflict of Interest

The authors declare **no conflict of interest** related to this research.

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