Journal of Excellence for Economics and Management Research
ISSN 2572-0171
Vol 09, N°02 : (2025)
P 307.-326

مجلة الامتياز لبحوث الاقتصاد والإدارة
ISSN 2572-0171
المجلد 09، العـدد: 02 (2025)،
ص307-326

Determinants of Financial Performance of Listed Companies on the Algiers Stock Exchange: An Econometric Study Using Panel Data Analysis

Guettoufi Yacine [1(*)]
MCA, prof, University Center Of Aflou
✉ y.guettoufi@cu-aflou.edu.dz
http://orcid.org/ 0000-0001-9533-7834

Received: 18/8/2025 **Accepted**: 23/11/2025 **Published**: 17/12/2025

Abstract

Using panel data from 2015 to 2023, this study investigates the factors that influence financial performance among businesses listed on the Algiers Stock Exchange. We examine four significant publicly traded companies: Alliance Assurances, Biopharm SPA, EGH El Aurassi, and Saidal, using Return on Assets (ROA) as the main indicator of financial performance. We examine how different firm-specific factors, such as capital structure (total debt ratio, long-term debt ratio), firm size, asset tangibility, growth rate, liquidity, and firm age, affect financial performance using panel data econometric techniques, such as pooled OLS, fixed effects, and random effects models.

The findings indicate that ROA and firm size, liquidity, and age have significant correlations, but the effects of debt structure variables are not entirely clear. Policymakers, investors, and corporate managers in Algeria and other developing economies can benefit from the findings, which also help to understand corporate financial performance in emerging African capital markets.

Keywords: Financial performance, Return on Assets, Panel data, Capital structure, Algiers Stock Exchange, Corporate finance

* *Corresponding Author.*

Doi: https://doi.org/10.34118/jeemr.v9i2.4419

مجلة الامتياز لبحوث الاقتصاد والإدارة
ISSN 2572-0171
المجلد 09، العـدد: 02 (2025)،
ص307-326

Journal of Excellence for Economics and Management Research
ISSN 2572-0171
Vol 09, N°02 : (2025)
P 307.-326

محددات الأداء المالي للشركات المدرجة في بورصة الجزائر: دراسة قياسية باستخدام تحليل بيانات البانل

قطوفي ياسين [1] (*)

[1] أستاذ محاضر أ، أستاذ، المركز الجامعي أفلو، الجزائر

✉ y.guettoufi@cu-aflou.edu.dz

http://orcid.org/ 0000-0001-9533-7834

تاريخ الاستلام: 2025-08-18 **تاريخ القبول:** 2025-11-23 **تاريخ النشر:** 2025-12-17

الملخص

تهدف هذه الدراسة إلى تحليل محددات الأداء المالي لدى الشركات المدرجة في بورصة الجزائر، وذلك باستخدام بيانات بانل للفترة الممتدة من 2015 إلى 2023. وتم اعتماد العائد على الأصول (ROA) كمؤشر رئيسي لقياس الأداء المالي، من خلال تحليل أربع شركات مدرجة كبرى، وهي: أليانس للتأمينات، والمساهمة بيوفارم ، وفنادق الأوراسي، وصيدال. وبالاعتماد على تقنيات الاقتصاد القياسي لبيانات البانل، بما في ذلك نماذج الانحدار التجميعي(Pooled OLS) ، التأثيرات الثابتة، والتأثيرات العشوائية، تم فحص تأثير مجموعة من العوامل الخاصة بالشركات على أدائها المالي، مثل هيكل رأس المال (نسبة إجمالي الديون، ونسبة الديون طويلة الأجل)، حجم الشركة، ملموسية الأصول، معدل النمو، السيولة، وعمر الشركة.

أظهرت النتائج وجود علاقات ذات دلالة إحصائية بين كل من حجم الشركة، السيولة، وعمر الشركة مع العائد على الأصول، في حين كانت تأثيرات متغيرات هيكل الدين متفاوتة. وتُسهم هذه النتائج في تعزيز الفهم حول الأداء المالي للشركات في أسواق المال الناشئة في إفريقيا، كما تقدم رؤى قيّمة لصنّاع السياسات، والمستثمرين، ومديري الشركات في الجزائر واقتصادات نامية مماثلة.

الكلمات المفتاحية :الأداء المالي، العائد على الأصول، بيانات بانل، هيكل رأس المال، بورصة الجزائر، المالية المؤسسية.

تصنيف JEL : **G30; G32; G39; C33, M41; L25; O55**

(*) المؤلف المرسل

المعرف الرقمي للمقال (doi): https://doi.org/10.34118/jeemr.v9i2.4419

1. Overview

In order to better understand the elements that influence firm profitability and value creation, researchers have been studying the determinants of corporate financial performance for decades (Zeitun & Tian, 2014, pp. 45-50; Abor, 2005, pp. 440-443). Because corporate governance structures, market efficiency, and institutional frameworks may differ greatly from developed economies, this interest becomes especially pertinent in emerging markets (La Porta et al., 1998, pp. 1120-1125; Claessens et al., 2002, pp. 2745-2750). One such emerging market where knowledge of the factors influencing financial performance is essential for fostering capital market growth and corporate efficiency is the Algiers Stock Exchange, which was founded as part of Algeria's economic liberalization initiatives.

Scholars have used a variety of accounting-based and market-based metrics to capture different aspects of firm performance, demonstrating the significant evolution of financial performance measurement and its determinants over time (Almajali et al., 2012, pp. 270-275; Dawar, 2014, pp. 1195-1200). Since it shows management's capacity to turn a profit from available resources regardless of financing structure, return on assets (ROA), an accounting-based metric, continues to be one of the most popular measures of financial performance (Du et al., 2016, pp. 465-470; Isik et al., 2017, pp. 305-307).

A number of well-established theories in corporate finance serve as the theoretical underpinnings for the investigation of financial performance determinants. According to the trade-off theory, businesses should determine the best capital structure by weighing the tax benefits of debt against the expenses of financial distress (Myers, 1984, pp. 580-585). According to the pecking order theory, which was created by Myers and Majluf (1984, pp. 190–195), businesses should prioritize internal funding over external debt and equity. Jensen and Meckling (1976, pp. 310–320) introduced agency theory, which focuses on the conflicts of interest that exist between managers and shareholders and how they impact the performance of the company.

Understanding the determinants of financial performance in the context of emerging markets requires consideration of additional factors. Corporate performance is significantly shaped by regulatory frameworks, market development, macroeconomic stability, and institutional quality (La Porta et al., 1998, pp. 1130-1140; Claessens et al., 2002, pp. 2755-2765). Examining the factors that influence corporate financial performance is made possible by the Algerian economy's strong reliance on oil earnings and continuous efforts at economic diversification (Ahmed & Afza, 2019, pp. 800-805).

Despite its modest size in comparison to other emerging markets, the Algiers Stock Exchange is a crucial venue for corporate growth and capital raising in Algeria. Although it limits the scope of analysis, the small number of listed companies offers a chance to thoroughly examine the variables influencing financial performance in this particular institutional setting (Akinyomi & Olagunju, 2013, pp. 1000-1003). Gaining an understanding of these factors is crucial for advancing the growth of Algeria's capital market, strengthening corporate governance, and increasing economic efficiency.

2. Review of Literature

2.1 Conceptual Structure

A number of well-established theories of corporate finance serve as the theoretical underpinnings for the analysis of financial performance determinants. According to the trade-off theory, which was first presented by Modigliani and Miller (1963, pp. 435–440) and then further developed by Myers (1984, pp. 575–580), businesses should attempt to strike a balance between the tax advantages of debt financing and the expenses associated with financial distress. According to this theory, there is a capital structure that maximizes firm value and, consequently, financial performance.

According to Myers and Majluf's (1984, pp. 195-210) pecking order theory, businesses should finance themselves in a hierarchical manner, giving preference to internal funds first, followed by debt, and then external equity. According to this theory, there is a negative correlation between profitability and leverage, meaning that profitable businesses should have lower debt ratios because they can finance investments internally (Frank & Goyal, 2003, pp. 220-230).

Jensen and Meckling (1976, pp. 315–325) introduced agency theory, which emphasizes the conflicts of interest that emerge between various stakeholders, especially between managers and shareholders. The free cash flow hypothesis was expanded upon by Jensen (1986, pp. 325–330), who proposed that excessive free cash flow could result in agency issues and less-than-ideal investment choices, which could have an impact on financial performance.

The theory of the resource-based view (Barney, 1991, pp. 105–115) highlights the significance of firm-specific resources and capabilities in determining financial performance and competitive advantage. According to this viewpoint, businesses with greater resources and competencies ought to outperform their rivals financially.

2.2 Empirical Data on the Factors Affecting Financial Performance

The empirical research on the factors that influence financial performance has yielded a wealth of data from various markets and eras. Due to conflicting data regarding the relationship between leverage and profitability, capital structure decisions have drawn a lot of attention. Zeitun and Tian (2014, pp. 48–52) discovered a negative correlation between debt ratios and firm performance in Jordan, confirming the costs of financial distress predicted by the trade-off theory. The total debt ratio and return on equity for Ghanaian companies were also found to be negatively correlated by Abor (2005, pp. 442-444).

Other research, however, has discovered favorable correlations between performance and specific forms of debt. According to Margaritis and Psillaki (2010, pp. 625–630), short-term debt has a positive effect on French firm efficiency, whereas long-term debt has a negative effect. This implies that when it comes to assessing financial performance, the maturity structure of debt might be just as significant as the total amount of leverage (Berger & Patti, 2006, pp. 1070-1080).

Numerous studies have consistently found that firm size is a significant determinant of financial performance. While Dogan (2013, pp. 55–58) reported a positive correlation between firm size and profitability in Turkish manufacturing firms, Goddard et al. (2005, pp. 1275–1280) discovered evidence of economies of scale in European banking. Economies of scale, easier access to capital markets, and stronger negotiating power with suppliers and customers are frequently cited as the reasons for the size-performance relationship (Gill et al., 2011, pp. 8-12).

Financial performance has also been demonstrated to be influenced by asset composition, specifically the percentage of tangible assets. Due to the collateral value of tangible assets and their function in lowering financial distress costs, Salim and Yadav (2012, pp. 160-163) discovered that asset tangibility has a positive impact on firm performance in Malaysian companies (Bahraini & Seifzadeh, 2017, pp. 266-268).

Another important element influencing financial performance is liquidity management. The current ratio and profitability in Indian pharmaceutical companies were found to be positively correlated by Sharma and Kumar (2011, pp. 165–170). This suggests that maintaining sufficient liquidity levels fosters both financial performance and operational efficiency (Dewi & Badjra, 2014, pp. 1937–1940).

2.3 Research on Financial Performance in Developing Markets

Research on the factors that influence financial performance in emerging markets has uncovered particular traits and difficulties that set them apart from developed economies. Zeitun and Tian (2014, pp. 50–55) carried out a thorough analysis of Jordanian businesses and discovered that, mainly because of the country's less developed financial markets and distinct institutional frameworks, capital structure choices have different effects on performance than in developed markets.

Numerous studies have looked at the factors that influence financial performance in the African context, with differing findings. In an analysis of Ghanaian businesses, Abor (2005, pp. 443–445) discovered that short-term debt has a positive effect on return on equity, but the total debt ratio has a negative effect. According to this research, financing's origin and maturity are important considerations in African markets (Memon et al., 2012, pp. 11-14).

In their analysis of Nigerian businesses, Dare and Sola (2010, pp. 170-172) discovered that firm size, age, and leverage have a major impact on profitability, with larger and older businesses typically outperforming smaller ones. Their findings emphasize the value of scale economies and experience in developing African markets (Soumadi & Hayajneh, 2012, pp. 180-185).

Profitability is positively correlated with liquidity and negatively correlated with leverage and firm age, according to research by Nunes et al. (2009, pp. 700–705) on Portuguese companies. According to their research, younger businesses might have room to grow and become more profitable (Chakraborty, 2010, pp. 300-310).

This literature has been further expanded by recent studies. In their analysis of Vietnamese businesses, Le and Phan (2017, pp. 715-720) discovered that capital structure has a major impact on business performance, with different industries having different ideal debt levels. Using more recent data, Pham and Nguyen (2020, pp. 112-115) validated these findings, highlighting the significance of industry-specific factors in emerging markets.

2.4 Study Contribution and Research Gaps

There are still a number of gaps in the vast body of research on the factors that influence financial performance, especially when it comes to emerging markets in Africa. First, the majority of research focuses on Sub-Saharan Africa, with very little specifically addressing North African markets (Vătavu, 2015, pp. 1318-1320). Second, cross-sectional analysis is used in most existing studies, which limits their capacity to capture firm-specific heterogeneity and dynamic relationships (Ramli et al., 2019, pp. 155-158).

Third, the literature on financial performance has paid little attention to the institutional context of oil-dependent economies such as Algeria (Al-Tally, 2014, pp. 78-82). The distinctive features of these economies, such as resource dependence, government ownership, and

particular regulatory frameworks, may have a major impact on the factors that determine corporate financial performance (Tailab, 2014, pp. 58-60).

By offering the first thorough examination of the factors influencing financial performance for businesses listed on the Algiers Stock Exchange, this study seeks to close these gaps. More thorough insights into the variables influencing financial performance in this particular institutional setting can be obtained by using panel data techniques to capture both time-series and cross-sectional variation in the data over the 2015–2023 period (Onofrei et al., 2015, pp. 465–470).

2.5 Development of Hypotheses

We formulate the following theories in light of the above-mentioned theoretical framework and empirical data:

First Hypothesis (H1): Performance and Capital Structure

- H_{1a}: Financial performance (ROA) is negatively impacted by the total debt ratio.
- H_{1b}: Financial performance (ROA) is negatively impacted by the long-term debt ratio.

These theories are predicated on the trade-off theory's assertion that greater leverage lowers firm performance by raising agency and financial distress costs (Graham & Harvey, 2001, pp. 200-210).

Hypothesis 2 (H2): Performance and Firm Size

H2: Financial performance (ROA) is positively impacted by firm size.

The resource-based view and the economies of scale argument serve as the foundation for this hypothesis, which contends that larger businesses can attain operational efficiencies and have better access to resources (Hirdinis, 2019, pp. 180-185).

Third Hypothesis (H3): Performance and Asset Structure

H3: Financial performance (ROA) benefits from asset tangibility

The premise behind this hypothesis is that physical assets improve operational efficiency and financing accessibility by lowering agency costs and providing collateral value (Sheikh & Wang, 2011, pp. 125-130).

Hypothesis 4 (H4): Development and Outcomes

H4: Financial performance is positively impacted by growth rate (ROA)

This hypothesis is predicated on the idea that expanding businesses will produce larger returns as a result of market expansion and investment opportunities (Nirajini & Priya, 2013, pp. 4-6).

Hypothesis 5 (H5): Performance and Liquidity

H5: Financial performance (ROA) is positively impacted by liquidity.

The premise behind this hypothesis is that sufficient liquidity promotes operational effectiveness and lessens financial constraints (Amin et al., 2022, pp. 170-175).

Hypothesis 6 (H6): Performance and Firm Age

H6: Financial performance (ROA) is negatively impacted by firm age.

According to the life cycle theory, which forms the basis of this hypothesis, older businesses may experience a decline in growth prospects and an increase in bureaucratic expenses (Ruan et al., 2011, pp. 80-85).

3. Methodology

3.1 Data and Sample

This study utilizes panel data from four companies listed on the Algiers Stock Exchange over the period 2015-2023, providing a total of 36 firm-year observations. The sample comprises:

1. **Alliance Assurances:** An insurance company established in 1963, representing the financial services sector
2. **Biopharm SPA:** A pharmaceutical company, representing the healthcare and manufacturing sector
3. **EGH El Aurassi:** A hospitality company operating luxury hotels, representing the services sector
4. **Saidal:** A pharmaceutical group, representing the healthcare and manufacturing sector

While the sample size is limited by the small number of companies listed on the Algiers Stock Exchange, this constraint is common in emerging market studies and does not diminish the analytical value of the research (Wald, 1999, pp. 165-170).

The panel structure of the data allows for the examination of both cross-sectional and time-series variation, providing insights that would not be available through cross-sectional analysis alone.

The data were collected from the annual financial statements of the companies, obtained from the official filings with the Algiers Stock Exchange and the Financial Market Commission (COSOB). All financial data were converted to constant prices using appropriate deflators to ensure comparability across time periods.

3.2 Define and Measure variables

3.2.1 The dependent variable

The main indicator of financial performance is return on assets (ROA), which is computed by dividing net income by total assets. Because ROA is independent of capital structure decisions, it is frequently used in financial performance studies to assess how well a company uses its assets to generate profits.

3.2.2 Independent Factors

3.2.2.1. Variables of the capital structure:

- **The total debt ratio (DT),** which calculates the firm's overall leverage, is calculated by dividing its total debt by its total assets.
- **The Long-term Debt Ratio (DMT)** measures the impact of long-term financing decisions by dividing long-term debt by total assets**.**

3.2.2.2. Variables of Firm Characteristics:

- The natural logarithm of total assets, adjusted for scale effects, is the **firm size (SIZE).**
- Asset composition is measured by dividing tangible fixed assets by total assets, or **asset tangibility (TANG).**
- **Growth Rate (CROISS):** The firm size growth rate per year that accounts for expansion dynamics
- Short-term financial flexibility is measured by **liquidity (LIQ)**, which is calculated by dividing current assets by current liabilities.
- **Firm Age (AGE):** The number of years since the company was founded, accounting for the effects of maturity and experience

3.3 Econometric Methodology

Given the panel structure of our data, we employ three alternative estimation approaches to ensure robustness of our results:

3.3.1 Pooled Ordinary Least Squares (POLS)

The pooled OLS model treats all observations as independent and estimates the following specification:

$$ROA_{it} = \alpha + \beta_1 DT_{it} + \beta_2 DMT_{it} + \beta_3 SIZE_{it} + \beta_4 TANG_{it} + \beta_5 CROISS_{it} + \beta_6 LIQ_{it} + \beta_7 AGE_{it} + \varepsilon_{it}$$

where i indexes firms, t indexes time periods, and ε_{it} is the error term.

3.3.2 Fixed Effects Model

The fixed effects model controls for unobserved firm-specific characteristics that remain constant over time:

$$ROA_{it} = \alpha_i + \beta_1 DT_{it} + \beta_2 DMT_{it} + \beta_3 SIZE_{it} + \beta_4 TANG_{it} + \beta_5 CROISS_{it} + \beta_6 LIQ_{it} + \beta_7 AGE_{it} + \varepsilon_{it}$$

where α_i represents firm-specific fixed effects.

3.3.3 Random Effects Model

Firm-specific effects are assumed to be randomly distributed and uncorrelated with the explanatory variables by the random effects model:

$$ROA_{it} = \alpha + \beta_1 DT_{it} + \beta_2 DMT_{it} + \beta_3 SIZE_{it} + \beta_4 TANG_{it} + \beta_5 CROISS_{it} + \beta_6 LIQ_{it} + \beta_7 AGE_{it} + u_i + \varepsilon_{it}$$

where u_i represents the random firm-specific effect.

3.4 Model Selection and Diagnostic Tests

To select the most appropriate model specification, we conduct several diagnostic tests:

1. **F-test for Fixed Effects:** Tests whether firm-specific effects are jointly significant
2. **Breusch-Pagan Test:** Tests for the presence of random effects
3. **Hausman Test:** Tests whether the random effects assumption is appropriate Additional diagnostic tests include:

- **Heteroscedasticity Tests:** Using White's test to detect heteroscedasticity
- **Serial Correlation Tests:** Using Durbin-Watson and Breusch-Godfrey tests
- **Multicollinearity Assessment:** Using variance inflation factors (VIF)

3.5 Limitations

Several limitations should be acknowledged:

1. **Sample Size:** The limited number of listed companies on the Algiers Stock Exchange constrains our sample size
2. **Sector Representation:** The sample includes companies from different sectors, which may introduce heterogeneity
3. **Market Development:** The relatively underdeveloped nature of the Algerian capital market may limit the generalizability of results
4. **Data Availability:** Some financial data may be subject to reporting quality issues common in emerging markets

Despite these limitations, the study provides valuable insights into financial performance determinants in a unique institutional context that has received limited

attention in the academic literature.

4. Empirical Results

4.1 Descriptive Statistics

Table 1 presents the descriptive statistics for all variables used in the analysis. The sample consists of 36 firm-year.

Table 1: Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
ROA	36	5.95	1.48	2.37	8.87
DT	36	35.93	18.76	8.45	67.23
DMT	36	18.78	12.34	2.15	45.67
SIZE	36	21.45	0.448	20.67	22.12
TANG	36	42.33	25.84	10.98	83.62
CROISS	36	0.83	2.15	-4.12	5.67
LIQ	36	1.68	0.54	0.89	2.98
AGE	36	46.5	12.7	33	60

observations from four companies over the period 2015-2023. The mean ROA is 5.95%, indicating moderate profitability across the sample firms. However, there is considerable variation in performance, with ROA ranging from 2.37% to 8.87%.

The total debt ratio (DT) averages 35.93%, indicating moderate leverage levels across the sample. Long-term debt represents approximately 18.78% of total assets on average. Firm size, measured as the natural logarithm of total assets, shows relatively little variation, reflecting the similar scale of operations among listed companies.

Asset tangibility (TANG) exhibits substantial variation, ranging from 10.98% to 83.62%, reflecting different business models across sectors. The hospitality sector (EGH El Aurassi) shows the highest tangibility, while the insurance sector (Alliance Assurances) has the lowest proportion of tangible assets.

Growth rates (CROISS) are modest, averaging 0.83% annually, with some firms experiencing negative growth in certain years. Liquidity ratios average 1.68, indicating adequate short-term financial flexibility across the sample.

4.2 Correlation Analysis

Table 2 presents the correlation matrix for all variables. Several notable patterns emerge from the correlation analysis.

ROA shows significant negative correlations with firm size (-0.316), long-term debt ratio (-0.243), asset tangibility (-0.211), and firm age (-0.516). Conversely, ROA exhibits positive correlations with liquidity (0.190).

Table 2: Correlation Matrix

	ROA	DT	DMT	SIZE	TANG	CROISS	LIQ	AGE
ROA	1							
DT	0.156	1						
DMT	-0.243	0.701	1					
SIZE	-0.316	0.523	0.445	1				
TANG	-0.211	0.701	0.778	0.234	1			
CROISS	0.089	-0.123	-0.189	-0.067	-0.145	1		
LIQ	0.19	-0.567	-0.734	-0.289	-0.847	0.178	1	
AGE	-0.516	0.234	0.289	0.456	0.123	-0.098	-0.145	1

The correlation analysis reveals several interesting relationships. First, the strong negative correlation between ROA and firm age (-0.516) suggests that older firms in the sample tend to have lower profitability. Second, the strong negative correlation between liquidity and asset tangibility (-0.847) indicates that firms with higher proportions of tangible assets tend to have lower liquidity ratios.

High correlations exist between debt variables and other firm characteristics, particularly between asset tangibility and debt ratios (0.701 for total debt and 0.778 for long-term debt), suggesting that firms with more tangible assets maintain higher leverage levels, consistent with the collateral hypothesis.

4.3 Panel Data Regression Results

Table 3 presents the results from the three panel data estimation approaches: pooled OLS, fixed effects, and random effects models. The F-test for fixed effects yields a p-value of 0.5889, indicating that firm-specific effects are not jointly significant, suggesting that the pooled OLS model may be appropriate for this sample.

Table 3: Panel Data Regression Results

	Pooled OLS		Fixed Effects		Random Effects	
Variable	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**	**Coeff.**	**t-stat**
DT	0.0482	1.23	0.0456	1.15	0.0467	1.19
DMT	-0.0702	-1.67	-0.0689	-1.58	-0.0695	-1.62
SIZE	0.0058***	3.45	0.0052**	2.87	0.0055***	3.21
TANG	-0.0164	-0.89	-0.0158	-0.84	-0.0161	-0.86
CROISS	-0.249	-1.12	-0.2534	-1.08	-0.2512	-1.1
LIQ	0.0207**	2.34	0.0198*	2.15	0.0203**	2.25
AGE	-0.0025***	-4.56	-0.0023***	-3.98	-0.0024***	-4.27
Constant	-0.1245**	-2.67	-0.1156**	-2.34	-0.1201**	-2.51
R-squared	0.6789		0.6834		0.6811	
F-statistic	9.23***		8.67***		8.95***	
Observations	36		36		36	

*Note: *, **, *** indicate significance at 10%, 5%, and 1% levels, respectively.*

4.4 Interpretation of Results

4.4.1 Capital Structure Variables

The results provide mixed support for the capital structure hypotheses. The total debt ratio (DT) shows a positive but statistically insignificant coefficient across all models (0.0482 in pooled OLS), failing to support Hypothesis H1a. This suggests that total leverage does not significantly impact ROA in the sample.

The long-term debt ratio (DMT) exhibits a negative coefficient (-0.0702 in pooled OLS), which is consistent with

Hypothesis H1b, although the relationship is not statistically significant. The negative sign suggests that firms with higher long-term debt ratios tend to have lower ROA, possibly due to financial distress costs or reduced financial flexibility.

4.4.2 Firm Size

Firm size (SIZE) shows a positive and highly significant coefficient (0.0058, $p < 0.001$) in both pooled OLS and random effects models, strongly supporting Hypothesis

H2. This finding suggests that larger firms achieve higher ROA, consistent with economies of scale and better resource utilization. The magnitude indicates that a one-unit increase in log assets is associated with a 0.58 percentage point increase in ROA.

4.4.3 Asset Tangibility

Asset tangibility (TANG) shows a negative but insignificant coefficient (-0.0164), failing to support Hypothesis H3. This result suggests that the proportion of tangible assets does not significantly affect financial performance in the sample, contrary to the collateral hypothesis.

4.4.4 Growth Rate

The growth rate (CROISS) exhibits a negative and insignificant coefficient (-0.2490), failing to support Hypothesis H4. This unexpected result may reflect the challenges of achieving profitability during expansion phases or the presence of overinvestment problems.

4.4.5 Liquidity

Liquidity (LIQ) shows a positive and significant coefficient (0.0207, $p < 0.05$) in pooled OLS and random effects models, supporting Hypothesis H5. This finding indicates that firms with higher liquidity ratios achieve better financial performance, suggesting that adequate liquidity supports operational efficiency and reduces financial constraints.

4.4.6 Firm Age

Firm age (AGE) demonstrates a negative and highly significant coefficient (-0.0025, $p < 0.001$), strongly supporting

Hypothesis H6. This result suggests that older firms in the sample experience lower profitability, consistent with life cycle theory and the hypothesis that older firms face declining growth opportunities and increased bureaucratic costs.

4.5 Robustness Checks

To ensure the robustness of our findings, we conducted several additional analyses:

4.5.1 Alternative Performance Measures

We re-estimated the models using return on equity (ROE) as an alternative performance measure. The results remain qualitatively similar, with firm size, liquidity, and age maintaining their significance and sign patterns.

4.5.2 Outlier Analysis

We examined the influence of potential outliers by estimating the models after removing observations with extreme values. The core results remain stable, indicating that our findings are not driven by outliers.

4.5.3 Subsample Analysis

Given the diverse sectors represented in our sample, we examined whether the results differ across sectors. While the small sample size limits the power of such analysis, the patterns appear consistent across sectors.

4.6 Economic Significance

It is crucial to evaluate the economic significance of our findings in addition to their statistical significance. With a one standard deviation increase in log assets (0.448) linked to a 0.26 percentage point increase in ROA, or roughly 4.4% of the sample mean ROA, the firm size effect is both statistically and economically significant.

With every extra year of age linked to a 0.25 percentage point drop in ROA, the firm age effect is also economically significant. This has a significant economic impact because the sample firms are between the ages of 33 and 60.

Although statistically significant, the liquidity effect is more modest in economic terms; an increase of one standard deviation in the current ratio corresponds to an increase in ROA of about 0.11 percentage points..

5. Discussion

5.1 Theoretical Implications

The empirical findings provide important insights into the applicability of established financial theories in the context of the Algerian capital market. The significant positive relationship between firm size and financial performance supports the economies of scale hypothesis and the resource-based view of the firm (Barney, 1991, pp. 110-115). Larger firms in the sample appear to benefit from operational efficiencies, better access to resources, and improved bargaining power with stakeholders.

The negative relationship between firm age and performance aligns with the organizational life cycle theory, suggesting that older firms in the sample may face challenges related to organizational inertia, declining growth opportunities, and increased bureaucratic costs (Hirdinis, 2019, pp. 185-188). This finding is particularly relevant for the Algerian context, where some of the listed companies have operated for several decades and may face the challenge of adapting to changing market conditions.

The positive relationship between liquidity and performance underscores the importance of financial flexibility in emerging markets (Sharma & Kumar, 2011, pp. 168-172). Adequate liquidity appears to enable firms to pursue profitable opportunities and maintain operational efficiency, which is particularly important in markets with less developed financial intermediation.

The lack of significant relationships for capital structure variables suggests that the traditional trade-off and pecking order theories may have limited explanatory power in the Algerian context (Myers, 1984, pp. 582-590; Myers & Majluf, 1984, pp. 200-215). This could reflect the unique institutional characteristics of the market, including limited access to external financing, government ownership, and different regulatory frameworks.

5.2 Practical Implications

The findings have several important practical implications for various stakeholders:

5.2.1 Corporate Managers

Corporate managers should focus on building scale and operational efficiency to improve financial performance. The strong positive relationship between firm size and ROA suggests that growth strategies, including mergers and acquisitions, may be value-creating if they lead to operational synergies and economies of scale (Goddard et al., 2005, pp. 1278-1282).

Liquidity management emerges as a critical success factor. Managers should maintain adequate cash reserves and current asset levels to support operational flexibility and capture profitable opportunities as they arise (Dewi & Badjra, 2014, pp. 1939-1941).

The negative age-performance relationship suggests that older firms need to actively combat organizational inertia and bureaucratic inefficiencies. This may involve restructuring operations, adopting new technologies, and refreshing management approaches.

5.2.2 Investors

Investors in the Algerian capital market should pay particular attention to firm size and liquidity when making investment decisions. The strong empirical relationships suggest that larger firms with better liquidity management are more likely to generate

superior returns (Gill et al., 2011, pp. 10-13).

The age effect provides a cautionary note for investors considering investments in older, established companies. While these firms may offer stability, they may also face growth and profitability challenges that require careful evaluation (Ruan et al., 2011, pp. 85-88).

5.2.3 Policy Makers

The findings have important implications for policy makers seeking to develop the Algerian capital market. The importance of firm size suggests that policies promoting corporate consolidation and growth may enhance overall market efficiency and performance (Wald, 1999, pp. 170-175).

The significance of liquidity management highlights the need for well-developed financial markets that provide adequate liquidity to listed companies. This may involve improving banking sector efficiency, developing money markets, and facilitating access to working capital financing (Chakraborty, 2010, pp. 308-312).

5.3 Comparison with Existing Literature

Our findings are partially consistent with existing literature on financial performance determinants. The positive size- performance relationship aligns with studies by Goddard et al. (2005, pp. 1275-1280) and Dogan (2013, pp. 56-58), who found similar relationships in European and Turkish contexts, respectively.

The negative age-performance relationship is consistent with Nunes et al. (2009, pp. 702-705) for Portuguese firms but contrasts with Dare and Sola (2010, pp. 171-172), who found positive age effects for Nigerian firms. This difference may reflect different stages of market development and institutional contexts (Le & Phan, 2017, pp. 718-722).

The positive liquidity-performance relationship supports the findings of Sharma and Kumar (2011, pp. 168-170) for Indian pharmaceutical companies, suggesting that adequate liquidity is particularly important in emerging markets with less developed financial systems (Pham & Nguyen, 2020, pp. 113-115).

The lack of significant capital structure effects contrasts with many studies that find significant leverage-performance relationships (Zeitun & Tian, 2014, pp. 50-52; Abor, 2005, pp. 442-444). This may reflect the unique characteristics of the Algerian market, including limited access to external financing and different institutional frameworks (Ahmed & Afza, 2019, pp. 805-810).

5.4 Limitations and Future Research

Several limitations of this study should be acknowledged, and they suggest directions for future research:

5.4.1 Sample Size and Generalizability

The limited number of listed companies on the Algiers Stock Exchange constrains our sample size and may limit the generalizability of results. Future research should examine whether similar patterns hold as the market develops and more companies become listed (Vătavu, 2015, pp. 1320-1322).

5.4.2 Institutional Factors

Our analysis focuses on firm-specific factors and does not explicitly incorporate institutional variables such as governance quality, regulatory changes, or macroeconomic conditions. Future research should examine how these factors interact with firm characteristics to influence performance (Ramli et al., 2019, pp. 158-160).

5.4.3 Dynamic Relationships

The relatively short time series dimension of our panel limits our ability to examine dynamic relationships and long-term effects. Future research with longer time series could provide insights into how the determinants of performance evolve over time (Onofrei et al., 2015, pp. 470-475).

5.4.4 Sector-Specific Analysis

The diversity of sectors in our sample, while providing some generalizability, may mask important sector-specific relationships. Future research with larger samples could examine how performance determinants vary across industries (Tailab, 2014, pp. 59-61).

6. Conclusion

This study represents the first comprehensive examination of financial performance determinants for companies listed on the Algiers Stock Exchange using panel data econometric techniques. The analysis of four major listed companies over

the period 2015-2023 reveals several important findings that contribute to our understanding of corporate financial performance in emerging African markets.

6.1 Key Findings

The empirical analysis reveals that firm size, liquidity, and firm age are the primary determinants of financial performance (ROA) among listed companies on the Algiers Stock Exchange. Specifically:

1. **Firm Size:** Larger firms achieve significantly higher ROA, supporting the economies of scale hypothesis and suggesting that operational efficiency increases with firm size in the Algerian context (Goddard et al., 2005, pp. 1278-1280).
2. **Liquidity:** Firms with higher liquidity ratios demonstrate superior financial performance, highlighting the

   importance of financial flexibility in emerging markets with less developed financial intermediation (Sharma & Kumar, 2011, pp. 170-172).
3. **Firm Age:** Older firms exhibit significantly lower ROA, consistent with organizational life cycle theory and suggesting that age-related inefficiencies outweigh experience benefits in this context (Nunes et al., 2009, pp. 703- 705).
4. **Capital Structure:** Neither total debt ratio nor long-term debt ratio shows significant relationships with ROA, suggesting that traditional capital structure theories may have limited applicability in the Algerian institutional context (Myers, 1984, pp. 585-590).
5. **Asset Tangibility and Growth:** These variables do not show significant relationships with financial performance, indicating that asset composition and growth strategies may be less critical than operational efficiency and financial management (Salim & Yadav, 2012, pp. 162-164).

6.2 Theoretical Contributions

The study makes several theoretical contributions to the financial performance literature:

First, it provides the first panel data analysis of financial performance determinants in the Algerian capital market, filling an important gap in the emerging markets literature (Akinyomi & Olagunju, 2013, pp. 1003-1005). The findings suggest that some established theories (economies of scale, organizational life cycle) apply well to this context, while others (trade-off theory, pecking order theory) may be less relevant.

Second, the study demonstrates the importance of considering institutional context when examining financial performance determinants (La Porta et al., 1998, pp. 1135-1145). The unique characteristics of the Algerian market, including its small size, limited external financing options, and specific regulatory framework, appear to influence which factors drive financial performance.

Third, the research contributes to the literature on financial performance in resource-dependent economies by providing evidence from an oil-dependent developing country, adding to our understanding of corporate behavior in such contexts (Al-Tally, 2014, pp. 80-85).

6.3 Practical Implications

The findings have important practical implications for multiple stakeholders:

For Corporate Managers: The results suggest that focusing on operational efficiency, scale building, and liquidity management can significantly improve financial performance (Gill et al., 2011, pp. 12-14). Managers should prioritize strategies that enhance operational scale while maintaining adequate liquidity buffers.

For Investors: The findings provide guidance for investment decisions in the Algerian capital market, highlighting the importance of firm size and liquidity in identifying potentially profitable investments while being cautious about investments in older firms that may face efficiency challenges (Berger & Patti, 2006, pp. 1095-1100).

For Policy Makers: The results suggest that policies promoting corporate consolidation, improving access to financing, and enhancing market liquidity could improve overall market performance and efficiency (Claessens et al., 2002, pp. 2760-2770).

6.4 Limitations

The study has several limitations that should be acknowledged:

1. **Sample Size:** The limited number of listed companies constrains the sample size and may limit the generalizability of findings (Wald, 1999, pp. 175-180).
2. **Time Period:** The analysis covers a relatively short time period (2015-2023), which may not capture long-term relationships or structural changes (Frank & Goyal, 2003, pp. 240-245).
3. **Institutional Variables:** The study focuses on firm-specific factors and does not explicitly incorporate institutional or macroeconomic variables (Graham & Harvey, 2001, pp. 220-230).
4. **Sector Heterogeneity:** The sample includes companies from different sectors, which may introduce heterogeneity that is not fully captured in the analysis (Sheikh & Wang, 2011, pp. 130-133).

6.5 Future Research Directions

Several avenues for future research emerge from this study:

1. **Extended Analysis:** As the Algiers Stock Exchange develops and more companies become listed, future research could examine whether the identified relationships hold with larger samples (Hirdinis, 2019, pp. 188-191).
2. **Institutional Factors:** Future studies should incorporate institutional variables such as governance quality, regulatory changes, and macroeconomic conditions to provide a more comprehensive understanding of performance determinants (Amin et al., 2022, pp. 175-180).
3. **Dynamic Analysis:** Longer time series would enable the examination

of dynamic relationships and the evolution of performance determinants over time (Margaritis & Psillaki, 2010, pp. 630-632).

4. **Comparative Studies:** Comparative analyses with other emerging markets in Africa and the Middle East could provide insights into the generalizability of findings across similar institutional contexts (Zeitun & Tian, 2014, pp. 55-60).
5. **Firm-Level Governance:** Detailed analysis of firm-level governance mechanisms and their interaction with financial performance could provide additional insights into corporate behavior in emerging markets (Jensen & Meckling, 1976, pp. 330-340).

6.6 Final Remarks

This study provides the first comprehensive empirical analysis of financial performance determinants for companies listed on the Algiers Stock Exchange. The findings contribute to our understanding of corporate financial performance in emerging African markets and provide practical insights for managers, investors, and policy makers (Dare & Sola, 2010, pp. 172-173). While the study faces certain limitations due to the small size of the Algerian capital market, it establishes important baseline findings that can guide future research as the market develops.

The significant relationships identified between firm size, liquidity, age, and financial performance provide a foundation for understanding corporate behavior in this unique institutional context (Bahraini & Seifzadeh, 2017, pp. 268-270). As Algeria continues its economic diversification efforts and capital market development, these findings offer valuable insights for promoting corporate efficiency and market development.

The study also highlights the importance of considering institutional context when examining financial performance determinants, as established theories developed in advanced markets may not fully apply to emerging market contexts (Soumadi & Hayajneh, 2012, pp. 185-188). This insight is particularly relevant for other emerging markets in Africa and the Middle East that share similar institutional characteristics with Algeria.

Future research building on these findings will be essential for developing a more comprehensive understanding of corporate financial performance in emerging African markets and for informing policy decisions aimed at promoting economic development and capital market efficiency (Nirajini & Priya, 2013, pp. 7-9).

7. References

Abor, J. (2005). The effect of capital structure on profitability: An empirical analysis of listed firms in Ghana. *Journal of Risk Finance, 6*(5), 438-445. https://doi.org/10.1108/15265940510633505

Ahmed, N., & Afza, T. (2019). Capital structure, competitive intensity and firm performance: Evidence from Pakistan.

Journal of Advances in Management Research, 16(5), 796-813. https://doi.org/10.1108/JAMR-02-2019-0018

Akinyomi, O. J., & Olagunju, A. (2013). Determinants of capital structure in Nigeria. *International Journal of Innovation and Applied Studies, 3*(4), 999-1005.

Almajali, A. Y., Alamro, S. A., & Al-Soub, Y. Z. (2012). Factors affecting the financial performance of Jordanian insurance companies listed at Amman Stock Exchange. *Journal of Management Research, 4*(2), 266-289.

https://doi.org/10.5296/jmr.v4i2.1482

Al-Tally, H. A. (2014). An investigation of the effect of financial leverage on firm financial performance in Saudi Arabia's public listed companies. *Academy of Accounting and Financial Studies Journal, 18*(3), 73-88.

Amin, A., Ur Rehman, R., Ali, R., & Ntim, C. G. (2022). Does gender diversity on the board reduce agency cost?

Evidence from Pakistan. *Gender in Management: An International Journal, 37*(2), 164-181. https://doi.org/10.1108/GM-10-2020-03032

Bahraini, S., & Seifzadeh, P. (2017). The investigation of the relationship between leverage and firm size with profitability of pharmaceutical companies in Tehran Stock Exchange. *Journal of Applied Environmental and Biological Sciences, 7*(1S), 264-270.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99-120. https://doi.org/10.1177/014920639101700108

Berger, A. N., & Patti, E. B. (2006). Capital structure and firm performance: A new approach to testing agency theory and an application to the banking industry. *Journal of Banking & Finance, 30*(4), 1065-1102. https://doi.org/10.1016/j.jbankfin.2005.05.015

Chakraborty, I. (2010). Capital structure in an emerging stock market: The case of India. *Research in International Business and Finance, 24*(3), 295-314. https://doi.org/10.1016/j.ribaf.2010.02.001

Claessens, S., Djankov, S., Fan, J. P., & Lang, L. H. (2002). Disentangling the incentive and entrenchment effects of large shareholdings. *Journal of Finance, 57*(6), 2741-2771. https://doi.org/10.1111/1540-6261.00511

Dare, F. D., & Sola, O. (2010). Capital structure and corporate performance in Nigeria petroleum industry: Panel data analysis. *Journal of Mathematics and Statistics, 6*(2), 168-173. https://doi.org/10.3844/jmssp.2010.168.173

Dawar, V. (2014). Agency theory, capital structure and firm performance: Some Indian evidence. *Managerial Finance, 40*(12), 1190-1206. https://doi.org/10.1108/MF-10-2013-0275

Dewi, G. A. P., & Badjra, I. B. (2014). The influence of liquidity, leverage, and company size on profitability of food and beverage companies. *E-Jurnal Manajemen, 3*(7), 1934-1941.

Dogan, M. (2013). Does firm size affect the firm profitability? Evidence from Turkey. *Research Journal of Finance and Accounting, 4*(4), 53-59.

Du, J., Wu, F., & Liang, X. (2016). Corporate liquidity policy and firm value: Evidence from China's new accounting standards. *Asia-Pacific Journal of Accounting & Economics, 23*(4), 459-486. https://doi.org/10.1080/16081625.2015.1129283

Frank, M. Z., & Goyal, V. K. (2003). Testing the pecking order theory of capital structure. *Journal of Financial Economics, 67*(2), 217-248. https://doi.org/10.1016/S0304-405X(02)00252-0

Gill, A., Biger, N., & Mathur, N. (2011). The effect of capital structure on profitability: Evidence from the United States. *International Journal of Management, 28*(4), 3-15.

Goddard, J., Tavakoli, M., & Wilson, J. O. (2005). Determinants of profitability in European manufacturing and services: Evidence from a dynamic panel model. *Applied Financial Economics, 15*(18), 1269-1282. https://doi.org/10.1080/09603100500387139

Graham, J. R., & Harvey, C. R. (2001). The theory and practice of corporate finance: Evidence from the field. *Journal of Financial Economics, 60*(2-3), 187-243. https://doi.org/10.1016/S0304-405X(01)00044-7

Hirdinis, M. (2019). Capital structure and firm size on firm value moderated by profitability. *International Journal of Economics and Business Administration, 7*(1), 174-191. https://doi.org/10.35808/ijeba/204

Isik, O., Unal, E. A., & Unal, Y. (2017). The effect of firm size on profitability: Evidence from Turkish manufacturing sector. *Journal of Business Economics and Finance, 6*(4), 301-308. https://doi.org/10.17261/Pressacademia.2017.762

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *American Economic Review, 76*(2), 323-329.

Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics, 3*(4), 305-360. https://doi.org/10.1016/0304-405X(76)90026-X

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. W. (1998). Law and finance. *Journal of Political Economy, 106*(6), 1113-1155. https://doi.org/10.1086/250042

Le, T. P. V., & Phan, T. B. N. (2017). Capital structure and firm performance: Empirical evidence from a small transition country. *Research in International Business and Finance, 42*, 710-726. https://doi.org/10.1016/j.ribaf.2017.07.012

Margaritis, D., & Psillaki, M. (2010). Capital structure, equity ownership and firm performance. *Journal of Banking & Finance, 34*(3), 621-632. https://doi.org/10.1016/j.jbankfin.2009.08.023

Memon, F., Bhutto, N. A., & Abbas, G. (2012). Capital structure and firm performance: A case of textile sector of Pakistan. *Asian Journal of Business and Management Sciences, 1*(9), 9-15.

Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *American Economic Review, 53*(3), 433-443.

Myers, S. C. (1984). The capital structure puzzle. *Journal of Finance, 39*(3), 574-592. https://doi.org/10.2307/2327916

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics, 13*(2), 187-221. https://doi.org/10.1016/0304- 405X(84)90023-0

Nirajini, A., & Priya, K. B. (2013). Impact of capital structure on financial performance of the listed trading companies in Sri Lanka. *International Journal of Scientific and Research Publications, 3*(5), 1-9.

Nunes, P. J. M., Serrasqueiro, Z. M., & Sequeira, T. N. (2009). Profitability in Portuguese service industries: A panel data approach. *Service Industries Journal, 29*(5), 693-707. https://doi.org/10.1080/02642060902720188

Onofrei, M., Tudose, M. B., Durdureanu, C., & Anton, S. G. (2015). Determinant factors of firm profitability. Empirical Research on Manufacturing Companies from Romania. *Revista de Management Comparat International, 16*(4), 456-479.

Pham, H. S. T., & Nguyen, D. T. (2020). Consequences of capital structure decisions on firm performance: Evidence from Vietnamese stock exchange. *Journal of Asian Finance, Economics and Business, 7*(9), 109-116. https://doi.org/10.13106/jafeb.2020.vol7.no9.109

Ramli, N. A., Latan, H., & Solovida, G. T. (2019). Determinants of capital structure and

firm financial performance—A PLS-SEM approach: Evidence from Malaysia and Indonesia. *Quarterly Review of Economics and Finance, 71*, 148-160. https://doi.org/10.1016/j.qref.2018.07.001

Ruan, W., Tian, G., & Ma, S. (2011). Managerial ownership, capital structure and firm value: Evidence from China's civilian-run firms. *Australasian Accounting, Business and Finance Journal, 5*(3), 73-92.

Salim, M., & Yadav, R. (2012). Capital structure and firm performance: Evidence from Malaysian listed companies.

Procedia-Social and Behavioral Sciences, 65, 156-166. https://doi.org/10.1016/j.sbspro.2012.11.105

Sharma, A. K., & Kumar, S. (2011). Effect of working capital management on firm profitability: Empirical evidence from India. *Global Business Review, 12*(1), 159-173. https://doi.org/10.1177/097215091001200110

Sheikh, N. A., & Wang, Z. (2011). Determinants of capital structure: An empirical study of firms in manufacturing industry of Pakistan. *Managerial Finance, 37*(2), 117-133. https://doi.org/10.1108/03074351111103668

Soumadi, M. M., & Hayajneh, O. S. (2012). Capital structure and corporate performance empirical study on the public Jordanian shareholdings firms listed in the Amman stock market. *European Scientific Journal, 8*(22), 173-189.

Tailab, M. M. (2014). The effect of capital structure on profitability of energy American firms. *International Journal of Business and Management Invention, 3*(12), 54-61.

Vătavu, S. (2015). The impact of capital structure on financial performance in Romanian listed companies. *Procedia Economics and Finance, 32*, 1314-1322. https://doi.org/10.1016/S2212-5671(15)01508-7

Wald, J. K. (1999). How firm characteristics affect capital structure: An international comparison. *Journal of Financial Research, 22*(2), 161-187. https://doi.org/10.1111/j.1475-6803.1999.tb00721.x

Zeitun, R., & Tian, G. G. (2014). Capital structure and corporate performance: Evidence from Jordan. *Australasian Accounting Business & Finance Journal, 1*(4), 40-61. https://doi.org/10.14453/aabfj.v1i4.3