



# IMPACT OF FINANCIAL STRATEGY ON FINANCIAL PROFITABILITY: AN EMPIRICAL STUDY OF COMPANIES LISTED ON THE ALGIERS STOCK EXCHANGE USING PANEL DATA MODELS

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## Abstract:

This study examines how financial strategy affects the financial profitability of companies listed on the Algiers Stock Exchange during 2011-2024. Financial strategy is represented by financing policy, measured through changes in equity relative to total assets, and investment policy, measured through changes in investments relative to total assets. Using panel data for five listed companies and several estimation techniques, the results show a positive significant effect of financing policy on ROA and a negative significant effect of investment policy on ROA, with the Two-Way Fixed Effects model providing the most robust specification.

key words: Financial strategy; financial profitability; financing policy; investment policy; panel data.

## Introduction:

The relationship between financial strategy and firm profitability has long been a central theme in corporate finance research, attracting considerable scholarly attention across diverse economic contexts. Financial strategy encompasses the fundamental decisions firms make regarding the acquisition and allocation of financial resources, primarily through financing policy and investment policy (Brealey, Myers, & Allen, 2020). These strategic choices critically determine a firm's ability to generate sustainable returns, navigate competitive

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pressures, and create long-term shareholder value. In emerging markets, where financial systems are still developing and capital market imperfections are more pronounced, understanding the financial strategy-profitability nexus becomes particularly salient for both academic inquiry and practical management (Demirguc-Kunt & Maksimovic, 1998).

The Algerian financial market presents a unique and compelling setting for investigating this relationship. As one of the largest economies in North Africa, Algeria has undertaken significant economic reforms aimed at diversifying its economy beyond hydrocarbon dependence. The Algiers Stock Exchange, established in 1999, represents the primary platform for capital mobilization and investment in the country, yet it remains relatively underdeveloped compared to mature markets, with a limited number of listed companies and constrained liquidity (Ghezzi, 2024). This institutional context creates distinctive challenges and opportunities for listed firms in formulating and executing their financial strategies.

The theoretical foundations for understanding this relationship rest primarily on two seminal frameworks: the Trade-Off Theory and the Pecking Order Theory. The Trade-Off Theory, building upon the work of Modigliani and Miller (1958), posits that firms seek an optimal capital structure by balancing the tax advantages of debt financing against the costs of financial distress. Conversely, the Pecking Order Theory, advanced by Myers and Majluf (1984), suggests that firms follow a hierarchical financing pattern, preferring internal funds first, then debt, and equity issuance as a last resort. These theories generate competing predictions about the relationship between financial strategy and profitability that can only be resolved through empirical investigation in specific institutional contexts (Myers, 1984).

Despite its economic significance in the MENA region, the Algerian context remains notably underexplored in the academic literature. Few empirical studies have systematically examined the determinants of profitability for Algerian listed companies using rigorous econometric techniques such as panel data models. This research gap motivates the present study, which applies multiple panel data estimation techniques to examine how financial strategy



dimensions affect the profitability of companies listed on the Algiers Stock Exchange.

This study makes several contributions to the existing literature. First, it provides one of the first empirical investigations of the financial strategy-profitability relationship specifically for Algerian listed firms. Second, by decomposing financial strategy into financing and investment components, the study offers a more nuanced understanding. Third, the application of multiple panel data estimation techniques with comprehensive diagnostic tests ensures methodological robustness. Fourth, the study uses dynamic policy measures that capture the evolving nature of financial strategy decisions.

The remainder of this paper is organized as follows: Section 2 reviews the theoretical and empirical literature. Section 3 details the research methodology. Section 4 presents the empirical results. Section 5 discusses the findings. Section 6 concludes with policy implications, limitations, and directions for future research.

## **1- Literature Review and Theoretical Framework**

### **1.1- Financial Strategy: Conceptual Foundations**

Financial strategy refers to the comprehensive framework of decisions that firms make regarding the sourcing and deployment of financial resources. At its core, financial strategy encompasses two interrelated dimensions: financing decisions, concerning how firms raise capital to fund their operations and growth, and investment decisions, relating to how firms allocate these resources across different assets and projects (Brealey et al., 2020). The theoretical underpinnings can be traced to the seminal contributions of Modigliani and Miller (1958), who initially demonstrated that in a perfect capital market, firm value is independent of capital structure. When restrictive assumptions are relaxed, capital structure decisions become value-relevant, setting the stage for two dominant theoretical frameworks.

### **1.2- The Trade-Off Theory**

The Trade-Off Theory posits that firms seek to determine an optimal capital structure by trading off the benefits and costs of debt financing. The primary benefits of debt include the tax deductibility of interest payments, which creates a valuable tax shield, and the

disciplining effect of debt on management, which reduces agency costs associated with free cash flow. Jensen and Meckling (1976) highlighted the role of debt in mitigating agency conflicts between shareholders and managers. Against these benefits, the theory identifies direct bankruptcy costs and indirect costs including loss of customer confidence and supplier relationships. The optimal capital structure is achieved when the marginal benefit of debt equals its marginal cost, implying that profitable firms with stable cash flows can support higher leverage while maintaining profitability.

### **1.3- The Pecking Order Theory**

The Pecking Order Theory proposes that firms follow a hierarchical order of financing preferences driven by information asymmetry between managers and external investors (Myers & Majluf, 1984). Because managers possess superior information about the firm's true value and investment prospects, external financing is subject to adverse selection costs. According to this theory, firms prefer internal financing first, then debt, and finally equity issuance. The Pecking Order Theory generates a clear prediction about the relationship between profitability and financing: profitable firms, which generate more internal funds, will exhibit lower leverage ratios, as they can finance investments through retained earnings rather than resorting to debt (Shyam-Sunder & Myers, 1999).

### **1.4- Investment Policy and Firm Performance**

Investment policy constitutes the second pillar of financial strategy, governing how firms allocate capital across various asset categories and projects. The theoretical link between investment policy and profitability is grounded in the principle that firms create value by investing in projects whose expected returns exceed their cost of capital. The relationship between investment intensity and profitability is theoretically ambiguous, as rapid investment expansion may temporarily depress profitability due to integration costs and time lags between investment outlays and revenue generation. From an agency theory perspective, Jensen's (1986) free cash flow hypothesis suggests that managers may be motivated to overinvest, pursuing projects that expand firm size but do not generate positive net present value.

### **1.5- Empirical Evidence on Financial Strategy and Profitability**



A substantial body of empirical research has examined the relationship between financial strategy and firm profitability across diverse institutional settings. The evidence remains mixed, reflecting differences in sample composition, measurement approaches, and institutional contexts. Pratheepan (2014), using panel data on Sri Lankan manufacturing companies from 2003 to 2012, found that firm size had a statistically significant positive relationship with profitability while leverage showed insignificant effects. Serrasqueiro and Caetano (2013), examining Portuguese SMEs, concluded that both Trade-Off and Pecking Order Theories are not mutually exclusive in explaining capital structure decisions. Genc (2020) found that profitability was negatively related to total debt leverage for French listed companies, supporting the Pecking Order Theory.

Research specifically examining the Algerian context remains scarce. Mansouri (2016) examined capital structure determinants for Algerian firms and found that profitability negatively affected leverage, consistent with pecking order behavior. More recently, research on MENA region firms has highlighted the importance of institutional factors, including underdevelopment of capital markets, concentrated ownership structures, and state intervention, in shaping financial strategy outcomes (Khalil & Magnou, 2023).

### **1.6- Research Hypotheses**

Based on the theoretical review and empirical evidence, this study examines how two dimensions of financial strategy affect the financial profitability of Algerian listed firms. Regarding financing policy, the positive relationship predicted by the Trade-Off Theory for firms operating below their optimal leverage may apply in the Algerian context, where firms may benefit from equity accumulation due to limited debt market development. We therefore hypothesize:

H1: Financing policy, measured by the change in equity, has a significant positive effect on the financial profitability (ROA) of companies listed on the Algiers Stock Exchange.

Regarding investment policy, the theoretical ambiguity suggests that the direction of the relationship depends on whether investments are value-creating or reflect overinvestment. We hypothesize:

H2: Investment policy, measured by the change in investments, has a significant effect on the financial profitability (ROA) of companies listed on the Algiers Stock Exchange.

## 2- Research Methodology

### 2.1- Research Design and Data

This study employs a quantitative research design using panel data regression analysis to examine the impact of financial strategy on firm profitability. Panel data methodology is particularly well-suited for this investigation as it allows for the control of unobserved heterogeneity across firms, captures dynamic adjustments over time, and provides more efficient parameter estimates compared to pure cross-sectional or time-series approaches (Baltagi, 2021). The final sample consists of five listed companies: Alliance Assurances (ALLIANCE), AOM Invest (AOM), El Aurassi (AURASSI), Biopharm (BIOPHARM), and Saidal (SAIDAL). Data are collected for the period 2011 to 2024, yielding 64 firm-year observations. Financial data are sourced from official financial statements published by the companies and verified through the Algerian Financial Markets Authority (COSOB).

### 2.2- Variable Measurement

Dependent Variable - Financial Profitability (ROA): Return on Assets is used as the primary measure of financial profitability, calculated as the ratio of net income to total assets (Palepu, Healy, & Peek, 2019):

$$ROA_{it} = Net\ Income_{it} / Total\ Assets_{it} \quad (1)$$

Independent Variable - Financing Policy (FP): Financing policy is measured by the change in equity normalized by total assets:

$$FP_{it} = (Equity_t - Equity_{t-1}) / Total\ Assets_{it} \quad (2)$$

Independent Variable - Investment Policy (IP): Investment policy is measured by the change in total investments normalized by total assets:

$$IP_{it} = (Investments_t - Investments_{t-1}) / Total\ Assets_{it} \quad (3)$$

### 2.3- Model Specification

The baseline econometric model is specified as:

$$ROA_{it} = \alpha + \beta_1 \cdot FP_{it} + \beta_2 \cdot IP_{it} + \varepsilon_{it} \quad (4)$$



To account for unobserved firm-specific heterogeneity, the fixed effects specification is employed:

$$ROA_{it} = \alpha + \beta_1 \cdot FP_{it} + \beta_2 \cdot IP_{it} + \mu_i + \varepsilon_{it} \quad (5)$$

The two-way fixed effects specification incorporating both entity and time effects is:

$$ROA_{it} = \alpha + \beta_1 \cdot FP_{it} + \beta_2 \cdot IP_{it} + \mu_i + \lambda_t + \varepsilon_{it} \quad (6)$$

## 2.4- Estimation Techniques and Diagnostic Tests

The study employs four panel data estimation techniques: Pooled OLS, Fixed Effects (FE), Random Effects (RE), and Two-Way Fixed Effects. Diagnostic tests include the F-test for poolability (comparing Pooled OLS vs FE), the Hausman specification test (discriminating between FE and RE), the Breusch-Pagan test for heteroskedasticity, and Variance Inflation Factors (VIF) for multicollinearity assessment (Hausman, 1978). These tests collectively ensure the selection of the most appropriate model specification for the data.

## 3- Empirical Results and Analysis

### 3.1- Descriptive Statistics

Table 1 presents the descriptive statistics for the variables used in this study. The dependent variable, Return on Assets (ROA), exhibits a mean value of 0.0407 (4.07%) with a standard deviation of 0.0454, indicating moderate variability in profitability across the sample firms. The financing policy variable (FP) has a mean of 0.0318 with a wide range from -0.2056 to 0.4366, indicating substantial variation in equity financing decisions. The investment policy variable (IP) displays a mean of 0.0420 with a relatively high standard deviation of 0.1283.

Table 1. Descriptive Statistics of Variables

| Variable               | Obs. | Mean   | Std. Dev. | Min     | Max    |
|------------------------|------|--------|-----------|---------|--------|
| ROA                    | 64   | 0.0407 | 0.0454    | -0.0666 | 0.1379 |
| Financing Policy (FP)  | 64   | 0.0318 | 0.0868    | -0.2056 | 0.4366 |
| Investment Policy (IP) | 64   | 0.0420 | 0.1283    | -0.3751 | 0.4358 |

Table 2 presents the company-level descriptive statistics. Biopharm exhibits the highest average ROA at 10.36%, reflecting the strong profitability of the pharmaceutical sector. AOM Invest shows the lowest average ROA at 1.40%, consistent with its role as an

investment company. Alliance Assurances demonstrates stable profitability at 3.39%.

**Table 2. Descriptive Statistics by Company**

| Company  | ROA Mean | ROA Std. | ROA Min | ROA Max | FP Mean | FP Std. | FP Min  | FP Max |
|----------|----------|----------|---------|---------|---------|---------|---------|--------|
| ALLIANCE | 0.0339   | 0.0294   | -0.0549 | 0.0548  | 0.0237  | 0.0387  | -0.0732 | 0.0978 |
| AOM      | 0.0140   | 0.0162   | -0.0050 | 0.0349  | 0.0675  | 0.1408  | 0.0002  | 0.4366 |
| AURASSI  | 0.0171   | 0.0401   | -0.0634 | 0.0614  | -0.0016 | 0.0693  | -0.1811 | 0.1132 |
| BIOPHARM | 0.1036   | 0.0287   | 0.0317  | 0.1379  | 0.0629  | 0.0916  | -0.0865 | 0.3271 |
| SAIDAL   | 0.0299   | 0.0374   | -0.0666 | 0.0883  | 0.0213  | 0.0839  | -0.2056 | 0.1509 |

### 3.2- Correlation Analysis

Table 3 reports the pairwise correlation coefficients. The correlation between financing policy (FP) and ROA is positive (0.307), while the correlation between investment policy (IP) and ROA is negative (-0.183). The Variance Inflation Factors for both variables are 1.25, well below the threshold of 10, indicating no multicollinearity concerns.

**Table 3. Correlation Matrix and VIF**

|     | ROA    | FP    | IP     | VIF   |
|-----|--------|-------|--------|-------|
| ROA | 1.000  | 0.307 | -0.183 | -     |
| FP  | 0.307  | 1.000 | 0.381  | 1.251 |
| IP  | -0.183 | 0.381 | 1.000  | 1.251 |

### 3.3- Diagnostic Test Results

Table 4 summarizes the diagnostic test outcomes. The F-test for poolability strongly rejects the null hypothesis ( $F = 14.668$ ,  $p < 0.001$ ), confirming significant firm-specific effects and the inappropriateness of Pooled OLS. The Hausman test indicates that Random Effects is consistent. The Breusch-Pagan test finds no heteroskedasticity ( $p = 0.586$ ).

**Table 4. Diagnostic Test Results**

| Test                               | Statistic | P-value | Conclusion                      |
|------------------------------------|-----------|---------|---------------------------------|
| F-test for Poolability             | 14.668    | 0.0000  | Reject Pooled OLS; FE preferred |
| Hausman Test                       | -3.905    | 1.0000  | Random Effects preferred        |
| Breusch-Pagan (Heteroskedasticity) | 1.070     | 0.5856  | No heteroskedasticity detected  |
| VIF (both variables)               | 1.251     | -       | No multicollinearity            |

### 3.4- Panel Data Regression Results



Table 5 presents the estimation results from the four panel data regression models. Across all specifications, financing policy demonstrates a statistically significant positive relationship with ROA, and investment policy exhibits a statistically significant negative relationship. The consistency of coefficient signs and significance levels across all four specifications enhances confidence in the robustness of the findings.

**Table 5. Panel Data Regression Results – Dependent Variable: ROA**

| Variable               | Pooled OLS         | FixedEffects      | Two-Way FE        | FE (Robust SE)     |
|------------------------|--------------------|-------------------|-------------------|--------------------|
| Constant               | 0.0386*** (6.89)   | 0.0396*** (9.62)  | 0.0388*** (10.82) | 0.0396*** (20.35)  |
| Financing Policy (FP)  | 0.2310*** (3.56)   | 0.1496*** (3.08)  | 0.1753*** (3.91)  | 0.1496** (2.30)    |
| Investment Policy (IP) | -0.1246*** (-2.84) | -0.0878** (-2.57) | -0.0881** (-2.69) | -0.0878*** (-4.45) |
| R-squared              | 0.200              | 0.175             | 0.290             | 0.175              |
| F-statistic            | 7.623***           | 6.043***          | 8.991***          | 10.268***          |
| Observations           | 64                 | 64                | 64                | 64                 |
| Firms / Periods        | 5 / 14             | 5 / 14            | 5 / 14            | 5 / 14             |
| EntityEffects          | No                 | Yes               | Yes               | Yes                |
| Time Effects           | No                 | No                | Yes               | No                 |

Notes: *t*-statistics in parentheses. \*\*\*, \*\*, \* denote significance at 1%, 5%, and 10% levels respectively.

The financing policy variable maintains a positive coefficient significant at least at the 5% level in all models. In the Pooled OLS model, the coefficient is 0.2310 ( $t = 3.56$ ,  $p < 0.01$ ), indicating that a one-unit increase in FP is associated with a 23.1 percentage point increase in ROA. In the Fixed Effects model, the coefficient is 0.1496 ( $t = 3.08$ ,  $p < 0.01$ ). The Two-Way Fixed Effects model produces a coefficient of 0.1753 ( $t = 3.91$ ,  $p < 0.001$ ), representing the most comprehensive specification. Investment policy exhibits a statistically significant negative relationship with ROA across all specifications, with the Two-Way Fixed Effects model confirming -0.0881 ( $t = -2.69$ ,  $p < 0.05$ ) and an overall R-squared of 0.290.

## 4- Discussion

### 4.1- Interpretation of Financing Policy Results

The positive and statistically significant relationship between financing policy and ROA carries important theoretical implications. From a Trade-Off Theory perspective, the positive coefficient suggests that Algerian listed firms may operate in a region where increasing equity capital enhances profitability by reducing financial distress costs and providing financial flexibility. In an emerging

market context where access to external financing is constrained and capital market imperfections are pronounced, maintaining adequate equity reserves may be particularly valuable for sustaining profitable operations (La Porta et al., 1998). The underdeveloped nature of Algerian debt markets means that firms face limited refinancing options, making equity accumulation a strategically important source of financial flexibility.

From a Pecking Order Theory perspective, the positive relationship between equity changes and profitability can be interpreted as reflecting the accumulation of retained earnings from profitable operations. The results align with emerging market research: Abor (2005) on Ghanaian firms and Nguyen and Nguyen (2020) on Vietnamese firms documented positive associations between equity financing and profitability in contexts characterized by underdeveloped capital markets.

#### **4.2- Interpretation of Investment Policy Results**

The negative relationship between investment policy and ROA requires careful interpretation. First, investments typically involve upfront costs and integration periods before generating returns, creating a temporary profitability dip. The lag between investment expenditure and revenue realization means that the denominator effect may initially outweigh the numerator effect. Second, the agency theory of overinvestment suggests that if managers pursue projects that expand firm size but do not generate positive net present value, such empire-building behavior would manifest as a negative relationship (Jensen, 1986). In the Algerian context, where corporate governance mechanisms may be less robust, the risk of overinvestment may be pronounced.

#### **4.3- Practical Implications**

For corporate managers, the findings underscore the importance of maintaining a strong equity base while exercising discipline in investment decisions. For investors, monitoring changes in a firm's equity base can provide valuable signals about future profitability prospects. For policymakers, the study highlights the need to develop the Algerian financial market to provide firms with diversified financing options. Strengthening corporate governance standards



could help mitigate the negative profitability effects of investment expansion (World Bank, 2024).

## Conclusion

This study examined the impact of financial strategy on the financial profitability of companies listed on the Algiers Stock Exchange over 2011-2024. Using panel data regression techniques on five listed companies with 64 firm-year observations, we find that financing policy has a statistically significant positive effect on ROA (coefficient 0.1496 to 0.2310,  $p < 0.05$ ), while investment policy has a statistically significant negative effect (coefficient -0.0878 to -0.1246,  $p < 0.05$ ). The Two-Way Fixed Effects model, controlling for both firm-specific and time-specific unobserved heterogeneity, emerges as the most robust specification with an R-squared of 0.290.

These findings contribute to the corporate finance literature by extending the analysis to the Algerian emerging market context. The results offer qualified support for both the Trade-Off Theory and Pecking Order Theory, suggesting that these frameworks are not mutually exclusive but capture different aspects of firm financial behavior in environments characterized by capital market imperfections.

Several limitations should be acknowledged. First, the sample of five companies limits statistical power and generalizability. Second, the study focuses exclusively on listed companies. Third, the model employs a parsimonious specification with only two explanatory variables. Future research should expand the sample, incorporate richer control variables, employ dynamic panel estimators such as GMM, and explore nonlinear relationships using threshold regression techniques.

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