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# The Influence of Firms' Internal Characteristics on Financial Profitability: A Study of the Moroccan Financial Market

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**Abstract:** This paper analyzes the influence of stock market listings on the financial results of Moroccan businesses, focusing on key variables such as firm size, leverage, and revenue growth to assess their influence on profitability, capital structure, and post-listing valuation. Drawing on finance frameworks of financing compositon, businessoversight, and exchange effectiveness, particularly agency theory and signaling theory, the study investigates the effects of IPOs on corporate performance. The methodological approach relies on econometric models, including the GLM, the CS-ARDL model, and OLS, to examine near- and distant-term performance developments using data from listed Moroccan family businesses. The findings indicate that IPOs improve return on assets (ROA), especially over extended periods, through more productive management of firm size and leverage, although excessive financial leverage may adversely affect long-term performance. Return on equity (ROE) follows a similar pattern, with financial leverage having a more pronounced impact in the short term. These findings provide valuable insights into the determinants of post-IPO performance, highlighting the significance of effective business expansion, debt, and financial risks. This study contributes to the existing literature by providing original empirical evidence on the post-IPO performance of family businesses in an emerging market context, namely Morocco.

**Keywords**: Initial Public Offering (IPO); Family Businesses, Profitability; Capital Structure; Econometric Methods

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## 1 Introduction

IPOs are considered a decisive milestone in a company's development, marking its transition towards new sources of financing and growth (Alexander Ljungqvist, 2007). Even so, this process additionally entails major obstacles, such as stricter statutory requirements, greater financial disclosure, and susceptibility to stock trading fluctuations (Serletis & Elder, 2010). These challenges are particularly pronounced among non-institutional (family-owned) firms, which play a key role in Morocco's economic activity, particularly through their capacity to generate employment and their substantial contribution to national GDP (Faccio & Lang, 2002). These companies, often characterized by concentrated family ownership and strong emotional involvement, are required to adapt their management and governance strategies to meet stock market expectations following their initial public offering (Anderson & Reeb, 2003).

This study forms part of a broader investigation into the implications of stock exchange admission for the economic profitability of non-institutional firms listed on the Moroccan stock exchange. Its primary objective is to examine whether going public affects their profitability and capital structure (Hassan & Obaid, 2013). To this end, several econometric methods are employed, including the GLM, the CS-ARDL model, and the OLS method (Pesaran & Shin, 1999). These tools make it possible to capture the short-term dynamics between stock market listing and corporate performance.

The study is structured around three main sections. The first reviews the theoretical and empirical literature on the effects of becoming publicly traded on the profitability of non-institutional firms, particularly in emerging

economies such as Morocco, highlighting its effects on profitability, growth, and value creation. The second section presents the econometric models employed (GLM, CS-ARDL, and OLS) and defines the selected variables, including profitability, return on equity, and control variables such as leverage, revenue growth, and firm size. The third section analyzes the empirical findings in light of the specific characteristics of our sample of Moroccan listed companies, distinguishing between the immediate and lasting consequences of stock market listing on corporate economic outcomes, and provides recommendations for improving management practices in an increasingly competitive business environment.

## 2 Theoretical Framework

The impact of IPOs on the economic performance of family-owned firms has attracted growing attention in academic research, although the findings remain complex and somewhat ambiguous. Going public represents a major turning point in the development of a family business, as it offers significant financial benefits while simultaneously exposing the firm to considerable challenges. Researchers have extensively debated whether this process enhances the long-term economic profitability of non-institutional firms or creates risks that may undermine their profitability and competitiveness.

Furthermore, several studies highlight the positive effects that IPOs can have on non-institutional firms. Going public provides greater opportunities to raise capital, thereby facilitating the financing of strategic development programmes and geographical expansion. Access to additional funding may lead to improvements in key financial performance indicators, such as return on assets (ROA) and return on equity (ROE), representing an important growth driver for family-owned businesses seeking modernization and enhanced competitiveness (Bharath et al., 2009). Moreover, the IPO process is often regarded as a means of strengthening corporate governance, improving transparency, and introducing more rigorous management practices in line with stock market requirements. Such managerial modernization is considered essential for enhancing long-term profitability, particularly through the implementation of stricter control mechanisms and more transparent reporting practices. Going public also requires companies to comply with stringent corporate governance standards, which can strengthen their credibility and market position while attracting investors seeking companies with strong growth potential.

However, these benefits are not necessarily consistent and depend on the specific characteristics of each firm. Furthermore, empirical research highlights several risks and limitations associated with going public. One of the main challenges facing non-institutional firms is the influence of external investors seeking immediate returns, which may conflict with the company's long-term objectives. Founding families are generally driven by goals that extend beyond short-term profitability, such as corporate longevity, intergenerational succession, and the preservation of family values. However, financial markets, which tend to prioritize short-term returns, may exert pressure on these companies to adopt short-term-oriented management practices, potentially creating tensions with the family's long-term objectives (Klein & Prasnikar, 1994). Such pressure for immediate returns may also undermine the organizational climate inherent in family businesses, which is often based on strong interpersonal relationships and less formal internal control mechanisms. At the same time, these characteristics may be perceived as obstacles to the adoption of more modern and structured management practices. Moreover, going public exposes family-owned firms to the potential loss of family control, which may generate conflicting interests between family members and independent investors. Vaninsky and Lauterbach (1999) highlight that such pressures may complicate fundamental decision-making processes, particularly when the priorities of independent investors conflict with those of the founding family.

The way family-owned firms manage the transition following an IPO appears to be a crucial determinant of their success or failure. Companies that manage to maintain family-oriented management while taking institutional shareholders' objectives into account are more likely to achieve positive post-IPO performance. Amit and Villalonga (2006) explain that family businesses capable of adopting advanced corporate management practices while preserving a strong family ownership structure tend to maintain solid performance even after going public. Nevertheless, achieving this balance can be challenging. The potential loss of control associated with an IPO often leads to changes in decision-making dynamics, creating tensions within the family and between family members and independent investors. These tensions may affect corporate strategy and internal cohesion, particularly when the interests of external investors conflict with the family's long-term objectives.

Firm size and industry sector also influence post-IPO economic performance. Vaninsky and Lauterbach (1999) observed that large family-owned firms tend to perform better following stock market listing due to their greater ability to raise capital, manage market volatility, and adopt modern management practices more rapidly. Conversely, smaller family businesses, which are generally more dependent on family relationships and informal management practices, may face greater difficulties in adapting to stock exchange listing requirements and procedures. These firms may also experience a reduction in their decision-making autonomy, potentially undermining their organizational flexibility and their ability to respond promptly to market changes.

Ultimately, although going public offers family-owned firms significant advantages, including improved access to capital and greater corporate visibility, it also entails considerable risks. Pressures to deliver immediate returns, managerial conflicts, and stock price volatility may limit the benefits associated with an IPO. The ability of family businesses to capitalize on the advantages of stock market listing while mitigating its associated risks depends on several key factors, particularly firm size, industry sector, and the quality of post-IPO management. Consequently, these companies must be adequately prepared to manage this transition strategically and with discipline, while meeting shareholders' expectations without compromising their long-term vision. Adequate preparation, appropriate management structures, and effective governance practices are essential to the successful integration of non-institutional firms into stock markets.

In light of this limitation, this paper raises the subsequent research inquiry: What is the impact of initial public offerings (IPOs) on the economic performance of family-owned firms listed on the Moroccan stock exchange? The following section examines this research question through an empirical analysis.

## 3 Methodology

This research primarily Investigates the contribution of IPOs to the economic results of family-owned firms listed on the Moroccan stock market. The dataset used in this research is mainly based on secondary sources, including documentation provided by the Casablanca Stock Exchange, the official website of the Moroccan Capital Market Authority, and the official websites of family-owned companies listed on the Casablanca Stock Exchange. These sources are essential for conducting an in-depth analysis of the role of IPOs in achieving sustained economic performance while taking into account the various factors that may influence this relationship.

The data are annual and cover 20 family-owned firms that went public between 1999 and 2011. The study period ends in 2011 because no family-owned companies carried out an IPO between 2012 and 2019. Furthermore, the analysis focuses on the five years following each IPO. It is important to note that the sample period was determined according to data availability, which may have implications for the main findings of the analysis.

To estimate the effects of public offerings on financial outcomes, various measures are employed. Revenue growth (CA) is used as an indicator of economic performance, while firm size (Size) helps assess its influence on corporate performance. In addition, the level of debt (Debt) is included to measure firms' financial leverage.

The economic performance of family-owned firms listed on the Casablanca Stock Exchange is assessed using financial ratios, particularly return on assets (ROA) and return on equity (ROE). The variables included in the analysis are described in the following table.

**Table 1.** Description and Measurement of Variables

| Variables | Operational Measure | Abbreviations | Sources | Type |
|---|---|---|---|---|
| Return on Assets (ROA) | Net income / Total assets | ROA | Bharath et al. (2009) | Outcome Variable |
| Return on Equity (ROE) | Net income / Shareholders' equity | ROE | Bharath et al. (2009) | |
| Firm Size | Logarithm of revenue or total assets | Size | Klein & Prasnikar (1994) | Explanatory Variable |
| Debt Ratio | Total debt / Equity | Debt | Brenes et al. (2008) | |
| Growth Rate | $(CA_t - CA_{t-1}) / CA_{t-1}$ | Growth | Villalonga & Amit (2006) | |

The main objective of this study is to examine how initial public offerings (IPOs) influence economic performance while taking into account both structural and macroeconomic factors. In the current international environment, in which economic progress and financial soundness remain key priorities, this research aims to to provide a clearer understanding of the relationships between IPOs and key economic performance indicators.

The methodological framework adopted in this study is based on a set of quantitative techniques. Given the relatively limited number of observations, the use of highly sophisticated econometric procedures is not considered appropriate. Accordingly, the analysis focuses primarily on examining the direct relationships between the selected variables. More specifically, the methodological approach is structured around the following components:

**Descriptive Statistics:** The study begins with a descriptive empirical assessment, examining statistical measures of location and the dispersion of the observations included in the sample. This initial stage makes it possible to identify the overall characteristics and general patterns of the data under investigation.

**Stationarity Tests:** Before applying cointegration procedures, it is essential to examine the time-series properties of the variables in order to assess their statistical stability. The presence of non-stationary series may lead to biased conclusions in cointegration analysis. To this end, statistical tools such as the Augmented Dickey-Fuller (ADF) test and the Phillips-Perron (PP) test are employed to assess the stationarity of the data. When the series exhibit non-stationary behaviour, first-differencing may be required to meet the conditions for subsequent analysis.

**Pedroni and Kao Cointegration Tests:** These analytical procedures aim to establish if a long-run association is present between going public and the economic performance of listed family-owned firms. Examining long-run relationships makes it possible to identify whether the variables under consideration follow a common trajectory over an extended period, which is essential for assessing the persistence of the effects associated with going public.

**Wooldridge Test for Autocorrelation in the Residuals:** This statistical procedure aims to identify the presence of serial correlation in the residuals of panel data models. The absence of such dependence is an important condition for ensuring the credibility of statistical outcomes and their reliability of the estimated parameters.

**Heteroskedasticity Test:** This diagnostic tool is used to examine whether the variance of the residuals remains constant within the selected econometric framework. Unaccounted-for heteroskedasticity may affect the reliability of the estimates and lead to misleading conclusions concerning the influence of share exchange admission on financial outcomes.

All empirical analyses were conducted using EViews software, which provides advanced statistical and econometric analysis capabilities. Despite the limitation arising from the relatively limited observational scope, the techniques employed offer relevant a deeper understanding of the relationship between stock market listing and the economic performance of family-owned firms listed on the Casablanca Stock Exchange.

The findings of this research may provide useful guidance for public policymakers and the managers of family-owned companies listed on the Casablanca Stock Exchange, helping them develop effective financial policies and more sustainable governance practices, thereby contributing to stable economic growth and more efficient allocation of financial resources.

### 3.1 Formulas and Equations

The econometric models employed in this analysis have been developed to assess the effects of various determinants on the economic performance of Moroccan firms following their entry into the stock market.

$$Y_t = \beta_0 + \beta_1 \text{Size}_t + \beta_2 \text{Debt}_t + \beta_3 \text{Growt}_t + \varepsilon_t$$

Where:

- (Y t): Represents the economic performance indicator, measured by asset profitability ROA or equity profitability (ROE), to ass's corporate profitability.
- (Size t): Is measured by the natural log of firm size, making it possible to assess the effect of company scale on economic results.
- (Debt t): Corresponds to the Index of total debt to shareholders' equity. It is used to evaluate the firm's financial leverage and associated financial risk.
- (Growth t): Represents the firm's annual revenue growth rate, serving as an indicator of its expansion or contraction.

This model makes it possible to analyze the main determinants of economic performance, focusing on firm size, financial leverage, and revenue growth.

## 4 Presentation and Discussion of the Results

### 4.1 Descriptive Statistics

**Table 2.** Descriptive Statistical Analysis

| Statistiques | ROA | ROE | Taille | Dette | Croissance |
|---|---|---|---|---|---|
| Moyenne | 6.1359 | 10.0698 | 15.1784 | 0.423741 | 4.202158 |
| Médiane | 6.1000 | 10.1000 | 15.2000 | 0.430000 | 4.200000 |
| Maximum | 8.0000 | 12.9000 | 16.5000 | 0.490000 | 5.800000 |
| Minimum | 4.5000 | 7.5000 | 13.8000 | 0.300000 | 2.800000 |
| Écart-type | 0.7810 | 1.1338 | 0.5168 | 0.0334 | 0.7143 |
| Coefficient d'asymétrie | 0.1234 | 0.0123 | -0.0534 | -0.7577 | 0.0578 |
| Coefficient d'aplatissement | 2.4980 | 2.4975 | 2.6280 | 4.0310 | 2.2356 |
| Test de Jarque–Bera | 5.43 | 5.10 | 6.85 | 15.49 | 8.90 |
| Probabilité (p-value) | 0.02 | 0.01 | 0.01 | 0.00 | 0.02 |
| Somme | 852.90 | 1,399.70 | 2,109.80 | 58.90 | 584.10 |
| Somme des carrés des écarts | 84.18 | 177.39 | 36.86 | 1.0149 | 70.41 |
| Nombre d'observations | 139 | 139 | 139 | 139 | 139 |

The following table displays a summary of analysis of multiple indicators: ROA, ROE, Size, Debt, and Growth, using a dataset containing 139 observations. The findings indicate relatively consistent earnings throughout the firms, with an average ROA of 6.14% and an average ROE of 10.07%, suggesting a higher return on shareholders' equity. The firms are generally medium-sized relatively high, reaching limited differences in company scale and indebtedness, while leverage displays a certain predominance of reduced values, while a few firms have relatively high debt ratios. Average revenue growth stands at 4.20%, indicating steady expansion approximately symmetric, whereas Debt displays a marked negative skewness. The Jarque–Bera assessment confirmsthat, although some variables are approximately normally distributed, others, particularly Debt, deviate from while some variables follow a normal distribution, others, particularly Debt, exhibit departures from normality, potentially influencing certain statistical procedures

### 4.2 Unit root analysis

**Table 3.** Unit root analysis Results

| Indicator | Statistical.T | Original Series | Significance Probability | First-Order Differencing | Significance Level |
|---|---|---|---|---|---|
| ROA | ADF | $9.512 \times 10^{0}$ | $4.325 \times 10^{-1}$ | $3.520 \times 10^{1}$ | 0.0000*** |
| | PP | $1.165 \times 10^{1}$ | $2.678 \times 10^{-1}$ | $2.199 \times 10^{1}$ | 0.0000*** |
| ROE | ADF | $1.012 \times 10^{1}$ | $3.847 \times 10^{-1}$ | $7.646 \times 10^{1}$ | 0.0000*** |
| | PP | $1.287 \times 10^{1}$ | $5.679 \times 10^{-1}$ | $2.399 \times 10^{1}$ | 0.0000*** |
| Size | ADF | $8.567 \times 10^{0}$ | $1.243 \times 10^{-1}$ | $3.279 \times 10^{1}$ | 0.0000*** |
| | PP | $7.459 \times 10^{0}$ | $4.579 \times 10^{-1}$ | $4.299 \times 10^{1}$ | 0.0000*** |
| Debt | ADF | $9.345 \times 10^{0}$ | $3.876 \times 10^{-1}$ | $2.465 \times 10^{1}$ | 0.0000*** |
| | PP | $8.789 \times 10^{0}$ | $5.643 \times 10^{-1}$ | $2.892 \times 10^{1}$ | 0.0000*** |
| Growth | ADF | $6.123 \times 10^{0}$ | $2.754 \times 10^{-1}$ | $3.088 \times 10^{1}$ | $1.2 \times 10^{-3}$*** |
| | PP | $9.897 \times 10^{0}$ | $4.321 \times 10^{-1}$ | $3.399 \times 10^{1}$ | 0.0000*** |

The results of the stationarity tests applied to the different variables under investigation (Asset Profitability, Equity-based Profitability, Company Scale, Leverage Ratio, and Revenue Growth Indicator) indicate that none of the series exhibits stationarity in its level form, but all variables achieve stationarity after first differencing. The tests employed, namely the ADF and PP tests, show that the p-values at level indicate presence of a unit root (p-value > 0.05), whereas the p-values In the first-differenced form fall to 0.0000 (or near zero), Indicating that the series has achieved stationarity. These findings suggest that all the factors are integrated of level one, denoted I(1), and should therefore undergo differencing prior to conducting certain econometric analyses, Including time-series estimation and long-run relationship tests. Achieving first-order stationarity differencing is crucial to avoid spurious regression problems and ensure more reliable econometric results, particularly when using ARDL frameworks or cointegration procedures.

### 4.3 Cointegration Tests

**Table 4.** Pedroni Cointegration Test

| Test Statistic | Statistic | Probability | Adjusted Statistic | Probability |
|---|---|---|---|---|
| Panel v | $-1.456 \times 10^{0}$ | $7.540 \times 10^{-2}$ | $-1.213 \times 10^{0}$ | $9.510 \times 10^{-2}$ |
| Panel rho | $-2.345 \times 10^{0}$ | $9.200 \times 10^{-3}$ *** | $-2.789 \times 10^{0}$ | $5.600 \times 10^{-3}$ *** |
| Panel PP | $-4.782 \times 10^{0}$ | 0.0000*** | $-3.221 \times 10^{0}$ | $1.100 \times 10^{-3}$ *** |
| Panel ADF | $-2.534 \times 10^{0}$ | $1.120 \times 10^{-2}$ ** | $-2.901 \times 10^{0}$ | $6.300 \times 10^{-3}$ *** |
| Group Test | Statistic | Probability | | |
| Group rho | $-1.234 \times 10^{0}$ | 0.2184 | | |
| Group PP | -3.562 | 0.0004*** | | |
| Group ADF | $-2.345 \times 10^{0}$ | 0.0091*** | | |

**Table 5.** Kao Cointegration Test

| Test | t-Statistic | Probability |
|---|---|---|
| ADF | -1.897 | 0.0032*** |

The findings obtained from the Pedroni panel cointegration test and the Kao residual-based cointegration test offer a thorough assessment of the LT relationships among the factors under investigation.

The Pedroni framework assesses cointegration using multiple statistical measures. The Panel v, Recording $-1.456 \times 10^{0}$ With a significance probability of $7.540 \times 10^{-2}$, is not statistically metting the 5% threshold. Nevertheless, its statistical relevance at approximately the 10% level may suggest weak evidence of potential cointegration within certain panel dimensions, While this remains insufficient The null hypothesis of no cointegration can be rejected with a high degree of confidence by comparison, the weighted Panel v indicates a marginally weaker level of statistical significance value (-1.213), With an associated probability of 0.0951, supporting this finding of limited evidence of a possible long-run equilibrium relationship.

The Panel rho reports a figure of -2.345, Associated with a probability value of 0.0092, indicating statistical significance at the 1% level. This strongly suggests the presence of cointegration across the panel variables. Likewise, the weighted form of the test produces a statistic of -2.789, With an observed probability value of 0.0056, further supporting the existence of a persistent long-run association. This finding implies that, notwithstanding temporary variations, the variables exhibit a tendency to move towards a shared long-run equilibrium

The Panel PP indicates further signs in support of cointegration. Its value of -4.782, associated with a p-value of 0.0000, indicates a statistically significant result at a stringent threshold. This test confirms the existence of a stable long-term relationship among the panel variables. The corresponding weighted Panel PP, with a value of -3.221 yielding an associated probability value of 0.0011, Additionally supports this results.

The Panel ADF, designed to assess the absence of a long-run equilibrium association, this statistic records a figure of −2.534, accompanied by a probability value of 0.0112, thereby meeting the conventional 5% statistical significance threshold. This suggests That the assumption of an absence of long-term relationship may be dismissed. The weighted version reinforces this finding, standing at a value of -2.901 accompanied by a probability value of 0.0063, thereby satisfying the 1% statistical significance criterio.

As for the group-based statistics, the Group rho reports recording -1.234, corresponding to a p-value of 0.2184, reflecting no statistically significant evidence of cointegration according to this particular statistic. In contrast, the Group PP-Statistic exhibits a high degree of statistical significance, accompanied by a value of -3.562 with an estimated p-value of 0.0004, confirming the existence of a cointegrating relationship among the group factors. The Group ADF also indicates statistically significant cointegration, with a value of -2.345 and a corresponding p-value of 0.0091, satisfying the 1% significance criterion.

As for the Kao test, which is drawing on the ADF.s, it produces a value of -1.897 alongside an associated p-value of 0.0032, indicating statistical significance at the 1% scales. This conclusion Provides evidence for cointegration, suggesting a persistent long-run association among the factors. It also reinforces the findings derived from the Pedroni.t.

Taken together, the findings of the Pedroni and Kao cointegration tests reveal substantial empirical support indicating that the variables included Included in the specification exhibit a common long-run association. While certain tests, particularly the Panel v and the Group rho-, do not indicate despite variations in statistical strength, most of the procedures employed, particularly the Panel PP measure, the Group PP measure, and the Kao

cointegration procedure, provide substantial empirical support for the existence of a long-run equilibrium association. These findings Indicate that, although the variables may exhibit distinct short-time dynamics, whereas they tend to move towards a long-run equilibrium association. Such ezsults are particularly signifiant in panel-based empirical analysis, since they enable prevent misleading interpretations arising from the absence of a stable statistical distribution over time.

**Table 6.** SR and LR Estimation Results

| Variables | OLS | CS-ARDL |
|---|---|---|
| LR coefficients | | |
| (S) | $2.7 \times 10^{-2}$ *** | $2.3 \times 10^{-2}$ *** |
| (D) | $-8.105 \times 10^{0}$ *** | $-5.006 \times 10^{0}$ *** |
| (G) | $4.8 \times 10^{-2}$ *** | $5.2 \times 10^{-2}$ *** |
| SR coefficients | | |
| Error Correction Term (-1) | $5.3 \times 10^{-1}$ ** | $8.5 \times 10^{-1}$ *** |
| D(S) | $-6.035 \times 10^{0}$ ** | $-7.10 \times 10^{0}$ ** |
| D(D) | $7.1 \times 10^{-2}$ *** | $6.7 \times 10^{-2}$ *** |
| D(G) | $6.2 \times 10^{-2}$ ** | $6.5 \times 10^{-2}$ ** |

The profitability of listed family businesses in morocco represents a major concern, particularly int the environment of an emerging economy such as Morocco. The preceding table reports the estimation results obtained using the OLS and CS-ARDL econometric approaches to assess The association between asset profitability (ROA) and three principal explanatory factors: company scale, financial leverage, and business expansion. This comprehensive examination seeks to clarify the effects of each determinant and the channels through which stock exchange admission can affect the financial performance of Moroccan family-owned enterprises.

The results reveal a positive long-run coefficient for firm size (0.027 by OLS and 0.023 by CS-ARDL), suggesting that bigger publicly traded family businesses are associated with higher economic profitability (ROA). This relationship can be explained by several factors. First, larger firms Frequently gain from scale-related cost advantages, allowing them to reduce Per-unit expenses and increase profitability levels. Furthermore, stock market listing provides financial market entry, allowing large firms to secure funding under more supportive conditions. This is particularly relevant for listed family businesses, which often have an established reputation and stable governance structures that help reassure investors.

Nevertheless, over the short run, the impact is negative (-6.035 by OLS and -7.10 by CS-ARDL), indicating a swift increase in firm dimension may temporarily reduce Profit-generating capacity. This cloud be attributable to the expenses associated with organizational changes or short-term operational shortcomings associated with handling business expansion, such as integrating new subsidiaries, increased organizational complexity, or investments in assets that do not immediately generate positive returns. Thus, although firm size represents a favorable factor in the long run, family businesses need to handle their expansion carefully to prevent undermining their immediate financial results.

The leverage ratio exhibits a significant adverse long-term effect (-8.105 by OLS and -5.006 by CS-ARDL). This indicates that publicly traded family businesses that become more dependent on debt tend to experience lower profitability, potentially due to higher interest expenses and increased financial risk. Although family businesses may be inclined to use debt to finance their growth, they must exercise caution. Excessive debt can place pressure on cash flows, restrict financial maneuverability and heighten the likelihood of financial difficulties, particularly when sales fail to match the rate of the growth in debt-related commitments.

This finding is consistent with the conservative nature of family businesses, which often prefer to minimize debt in order to preserve family control over the organization. In the Moroccan context, where alternative financing sources may be limited, prudent debt management is particularly important for ensuring the long-term sustainability and performance of these organizations.

The growth rate has a positive and significant effect regarding economic profitability over both short-term and long-term horizons, the growth rate records coefficients of 0.048 in the OLS specification and 0.052 in the CS-ARDL framework over the long term, suggesting that publicly traded family businesses achieving higher growth rates tend to experience improved profitability. This relationship may result from that growth enables firms to expand their market position, increase revenues, and strengthen their competitiveness. Family businesses that

achieve sustained growth may also innovate, diversify their revenue streams, and thereby create opportunities for higher returns.

Over the short term, the positive estimates associated with the growth rate (0.062 in the OLS model and 0.065 in the CS-ARDL model) suggest that business expansion can lead to an immediate improvement in profitability. This suggests that listed Moroccan family businesses investing in their development and expansion may quickly benefit from these initiatives. However, this also requires effective management of investments and operations to avoid excessive expansion costs.

The error correction term is particularly noteworthy, with estimated coefficients of 0.53 for the OLS model and 0.85 for the CS-ARDL model. However, these coefficients should be interpreted with caution. For the error correction mechanism to indicate convergence towards long-run equilibrium, its coefficient must be negative and statistically significant. Therefore, if the reported values are positive, they do not support the interpretation of a corrective adjustment mechanism. The original estimation output should be checked to verify the signs of these coefficients.

The econometric analysis suggests that the determinants of the economic performance of listed Moroccan family businesses operate differently in the short and long run. In the long run, firm size and growth contribute positively and significantly to profitability, whereas debt has a negative effect and therefore requires careful management. In the short run, changes in firm size may create temporary challenges, while growth has a positive effect on profitability. The overall findings highlight the importance of effective management of firm size, financial leverage, and growth in sustaining the economic performance of listed family businesses.

### 4.4 Interpretation of Results

The findings indicate that the stock exchange admission of family businesses in Morocco exerts heterogeneous effects on their financial performance, reflecting the complex interplay of scale, leverage, and expansionThese results are consistent with several international and local studies highlighting the distinctive characteristics of listed family businesses. Their performance is influenced not only by economic factors but also by internal dynamics specific to their family-owned nature.

The findings regarding firm size are consistent with the existing literature, indicating that bigger firms often achieve cost efficiencies through economies of scale., greater risk spreading and improved access to external funding. (Morck & Yeung, 2003). Nevertheless, listed family businesses may face specific challenges related to family governance. As demonstrated by Anderson and Reeb (2003), increasing firm size may intensify tensions between the founding family and minority shareholders, potentially undermining short-term performance.

The adverse impact of financial leverage on profitability is widely established in the financial literature. Family businesses generally tend to avoid excessive indebtedness because of their risk aversion and desire to maintain family control (Fama & French, 2002). Indeed, several studies, including that of Villalonga and Amit (2006), suggest that family businesses tend to prioritize retained earnings over debt financing to support their growth. This approach reduces their financial burden but may also limit their growth potential.

Like other types of firms, listed family businesses benefit from growth. As noted by (Penrose,1959) and, more recently, (Bjuggren and Sund2002), Expansion is essential for improving profitability by strengthening market share, operational efficiency, and innovation. However, in the context of family businesses, rapid growth may also generate internal tensions, particularly regarding succession and the allocation of family responsibilities (Schulze et al., 2001).

### 4.5 Recommendations for Policymakers

The importance of cautious firm Firm-scale management is reinforced by the study of (Bloom, Van Reenen 2007), which demonstrates that firms investing in effective management practices are better equipped to manage rapid expansion. Improving internal management, particularly through the implementation of modern information systems and enhanced managerial training, can help overcome short-term inefficiencies.

Research by Modigliani and Miller (1958) on capital structure and by Jensen and Meckling (1976) on agency conflicts suggests that firms adopting optimal debt levels can benefit from tax advantages while maintaining financial flexibility. However, recent literature warns against excessive indebtedness, particularly among family businesses, which tend to prioritize long-term stability (Gómez-Mejía et al., 2011).

The academic literature on the growth of family businesses highlights technological development as a key driver of improved economic profitability (Craig & Dibrell, 2006). However, family businesses are often perceived as less inclined to innovate because of their risk aversion (Mazzola & Marchisio, 2002). It is therefore recommended that these firms increase their investment in research and development (R&D) to maintain their competitiveness.
Diversification is commonly regarded as a relevant approach for enhancing earnings performance while reducing risk Markowitz (1952). Within the Moroccan context, listed family businesses could consider diversifying their activities, particularly into international markets, in order to capitalize on growth opportunities and mitigate the risks associated with a more volatile domestic market.
Integrating academic literature into these recommendations provides a better understanding of the challenges and opportunities facing listed family businesses in Morocco. The economic findings are consistent with theories of family business management and offer insights into improving their profitability in both the short and long term.

**Table 7.** GLM Estimation Results

| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
|---|---|---|---|---|
| Dependent Variable: ROA | | | | |
| (S) | $8.97487 \times 10^{-1}$ | $8.0340 \times 10^{-2}$ | $1.117106 \times 10^{1}$ | 0.0000 |
| (D) | $-2.924327 \times 10^{0}$ | $1.226186 \times 10^{0}$ | $-2.384897 \times 10^{0}$ | $1.71 \times 10^{-2}$ |
| (G) | $4.86327 \times 10^{-1}$ | $6.8769 \times 10^{-2}$ | $7.071893 \times 10^{0}$ | 0.0000 |
| C | $8.290934 \times 10^{0}$ | $1.144415 \times 10^{0}$ | $-7.244689 \times 10^{0}$ | 0.0000 |

The examination of the GLM the model outcomes indicate important a clearer understanding of the association among various determinants alongside the economic profitability of firms. The estimated coefficient for the variable “Sales Growth” is 0.486, with a highly significant associated p-value of 0.0000, revealing a positive and statistically significant association. Put differently, a higher rate of revenue growth is associated with an enhancement of a firm's economic profitability. This finding is consistent with previous previous research, which has frequently identified increase in turnover as a key influential factor in corporate results, as it reflects a firm's capacity to adjust its strategies to competitive pressures developments, strengthen their competitive position, and improve its financial performance. Research conducted by Liu (2020) and Harris et al. (2019) has identified comparable associations, especially among firms operating in a challenging business environments.
With respect to financial leverage, the findings reveal a coefficient of −2.924, accompanied by a statistically significant an associated p-value of 0.0171. This negative association indicates that excessive indebtedness may adversely affect economic performance. Indeed, a rise in financial leverage corresponds to with a decline in profitability, potentially due to higher cost of debt and increased default risk. This result aligns with established theories of capital structure., particularly the work of Modigliani and Miller (1958), which highlights that elevated levels of debt may weaken returns, especially when debt-servicing costs become a significant constraint. These findings are also supported by research conducted in emerging economies, particularly Morocco, where excessive indebtedness has often been associated with a deterioration in firms' financial performance (Ben Amar, 2018).
Firm scale, quantified as the natural logarithm of total assets, demonstrates a positive estimated effect of 0.897, which is additionally, strongly statistically is similarly very (p-v = 0.0000). This indicates that larger firms, owing to their ability to reduce average costs as output expands and access greater access to capital, achieve improved financial outcomes. This result aligns with Penrose's (1959) study, which established firm size as an essential determinant of operational effectiveness. Large-scale enterprises generally possess greater capabilities to finance innovative activities, absorb external economic disturbances, and capitalize on their leading position within their respective industries. In the Moroccan context, these firms tend to play an essential position within the economic system, supported by access to international financing and expanded markets.
Overall, the findings of this analysis align with earlier empirical studies examining the factors influencing of firm corporate results, whereas also providing particular perspectives on the Moroccan context. Revenue growth and firm company scale represents a favorable determinant of corporate performance, while excessive indebtedness continues to represent a limiting factor. These findings are in consistent with conventional economic frameworks and empirical studies conducted in less mature economies.

### 4.6 Discussion

The discussion of the results obtained through the GLM analysis provides further insight into the factors influencing the economic performance of Moroccan firms. First, the positive effect of revenue growth on economic

performance, with a coefficient of 0.486 and a highly significant statistical level, is consistent with the existing literature. Numerous studies have demonstrated that revenue growth is one of the key determinants of firm performance. It not only reflects a firm's ability to capture new market shares but also indicates greater operational efficiency, thereby fostering value creation (Liu, 2020; Harris & Raviv, 2019). In the Moroccan context, where the economy is undergoing rapid development, firms that successfully increase their revenue are often those that adapt to emerging consumption trends and changing customer needs (Abdelmoula, 2017).

Simultaneously, the negative effet of debt on economic profitability, with a coefficient of -2.924, raises important questions regarding the management of financial resources within organizations. The results suggest that excessive indebtedness leads to a deterioration in economic performance. This may be attributed to the burden of interest payments and the increased risk of bankruptcy faced by highly indebted firms. Jensen (1986) had already highlighted the detrimental effects of excessive debt, particularly through agency cost theory, which argues that excessive indebtedness can generate conflicts between shareholders and creditors. In the Moroccan context, Ben Amar (2018) also observed that local firms often rely excessively on debt as a financial leverage mechanism, thereby increasing their financial vulnerability and reducing their capacity to reinvest in growth projects.

Furthermore, firm size is a key determinant of economic performance, with a positive coefficient of 0.897. This finding is consistent with economic theories, particularly the framework developed by Penrose (1959), who argued that firm size enables organizations to gain greater advantages effectively through scale-related cost advantages and strengthen their organizational capabilities. Large Moroccan firms, particularly those listed on the stock exchange, often benefit from greater financial flexibility and better access to international markets, enabling them to diversify risks and improve their performance (Abdelkader, 2019). Previous studies have shown that larger firms are more likely to achieve better results because of their ability to innovate and establish dominant positions in key sectors of the economy.

However, these findings should be interpreted with caution. The Moroccan context presents specific structural characteristics that are not always directly comparable with those of other emerging markets. Although relatively developed, the Moroccan financial sector is characterized by a high degree of concentration, which may influence how firms access credit and manage their debt (Boubker & Bouaissi, 2021). In this respect, the negative impact of indebtedness on profitability may also be exacerbated by high borrowing costs and conservative banking practices. Moroccan firms, particularly small and medium-sized enterprises (SMEs), often face difficulties in obtaining financing under favorable conditions, which may amplify the adverse effects of excessive indebtedness.

Moreover, macroeconomic dynamics must also be taken into consideration. In recent years, Morocco has experienced moderate economic growth and economic volatility, partly due to its dependence on agricultural and tourism-related activities (Sijilmassi, 2020). These sectors are vulnerable to climate-related risks and external shocks, which may affect firm performance through more unstable economic cycles. A firm experiencing strong revenue growth is not necessarily able to sustain that growth over the long term in a volatile economic environment.

The findings regarding debt and firm size can also be examined through the capital structure trade-off framework. This approach argues that companies seek to balance the fiscal advantages of borrowing against the potential bankruptcy costs associated with excessive indebtedness (Kraus & Litzenberger, 1973). In the case of Moroccan firms, this trade-off appears to favor a cautious approach, with an optimal debt level potentially lower than that observed in other emerging economies. Furthermore, large Moroccan firms are often better positioned to capitalize on the benefits of financial leverage, which may help explain the favorable association between corporate scale and financial outcomes.

Another important point concerns the negative constant in the model, which suggests that, all other factors being equal, firm performance would be negative. This may indicate the importance of factors not explicitly included in the analysis. For instance, corporate management, managerial efficiency, and organizational effectiveness are often overlooked in quantitative studies, although they play a crucial role in organizational success (Bhagat & Bolton, 2008). Improved corporate governance, in particular, could help Moroccan firms strengthen their financial resilience and mitigate the adverse effects of debt.

The findings of this study also have implications for public policy and the regulatory environment in Morocco. Promoting incentive-based policies to improve SMEs' access to financing could help mitigate the negative effects of indebtedness. Furthermore, reforms aimed at strengthening corporate governance and transparency could enhance shareholder confidence and contribute to better stock market performance, thereby supporting firm growth.

In conclusion, this study shows that, in the Moroccan context, revenue growth and firm size have positive effects on economic performance, whereas indebtedness acts as a limiting factor. These findings are consistent with the international literature while offering additional insights into the specific characteristics of the Moroccan market. They also highlight the importance of considering qualitative and structural determinants when assessing firm performance in a country undergoing economic transition.

**Table 8.** GLM Estimation Results

| Variable | Coeff | Stand Err | z-Stati | Probability |
|---|---|---|---|---|
| Dependent Variable: ROE | | | | |
| (S) | $1.069178 \times 10^{0}$ | $1.28751 \times 10^{-1}$ | $8.304259 \times 10^{0}$ | 0.0000 |
| (D) | $-1.177043 \times 10^{1}$ | $1.965039 \times 10^{0}$ | $-5.989919 \times 10^{0}$ | 0.0000 |
| (G) | $9.87585 \times 10^{-1}$ | $1.10207 \times 10^{-1}$ | $8.961205 \times 10^{0}$ | 0.0000 |
| C | $5.321020 \times 10^{0}$ | $1.833997 \times 10^{0}$ | $-2.901323 \times 10^{0}$ | $3.7 \times 10^{-3}$ |

An analysis of the differences across the results obtained from The two models, with ROA and ROE serving as dependent variables, respectively, offer a better insight into the effects of various factors on the profitability of listed family businesses. ROA assesses the firm's overall profitability of a firm's corporate resources, whereas ROE evaluates the firm's capacity to generate profits from shareholders' invested capital. Taken together, these two measures provide complementary insights into how publicly traded family businesses maximize their financial means and operational capabilities.

Regarding the growth in corporate revenues, both specifications reveal a statistically significant favorable impact on performance, in terms of both ROA and ROE. However, the estimated parameter is considerably a higher coefficient is observed for ROE (0.987), compared with ROA (0.486). This suggests that revenue growth has a stronger association with returns on equity than with returns on assets. This difference may be attributed to the fact that listed family businesses, in their efforts to maximize shareholder returns, may be more effective in reinvesting the profits generated by growth. In addition to increasing profit margins, revenue growth enables firms to make more effective use of their equity, resulting in higher annual earnings. This finding is consistent with studies showing that firm profitability in stock market environments is often more closely associated with indicators such as ROE, particularly in high-growth settings.

The effet of debt reveals significant differences across both specifications. Whereas the coefficient in the ROA model is -2.924, indicating a moderately inverse association between debt and asset profitability, the coefficient in the ROE model is considerably more pronounced, at -11.770. This suggests that debt has a substantially stronger negative association with returns on equity. Indeed, when listed family businesses rely on high levels of debt, the resulting increase in financial risk places a greater burden on shareholder returns. The debt burden not only increases financial costs but also amplifies earnings volatility, potentially undermining investor and shareholder confidence and reducing profitability as measured by ROE. This finding reflects concerns among family businesses regarding excessive indebtedness, as it may compromise not only short-term financial stability but also long-term growth prospects.

With regard to firm size, both models also show a significant positive effect, with coefficients of 0.897 for ROA and 1.069 for ROE. However, the effect is more pronounced in the ROE model, indicating that large listed family businesses may benefit more from economies of scale and the efficient use of resources to improve returns on equity. Larger firms often have greater access to stock capital markets, thereby facilitating their ability to obtain capital at reduced financing costs, allocate resources to more profitable projects, and consequently improve shareholder returns. By comparison, the effect of firm size on ROA remains positive but less pronounced, suggesting that firm size is more strongly associated with the ability to generate returns on shareholders' equity than with the optimization of total assets.

In summary, although explanatory factors such as revenue growth, debt, and firm size influence both return on assets and return on equity, their estimated effects are more pronounced in the ROE model. This highlights the importance for listed family businesses of managing shareholders' equity efficiently and maintaining a prudent balance in their financing strategies, particularly with regard to debt. These findings are consistent with the literature on the performance of family businesses following stock market listing, in which capital structure and the ability to generate profitable growth from shareholders' equity are key factors in creating shareholder value.

### 4.7 Autocorrelation Test

In panel data analysis, various econometric issues may arise, particularly serial correlation among error terms. This phenomenon occurs when the residuals of a given period are correlated with those of other periods, or when past errors influence future errors. Such a situation may compromise the accuracy and effectiveness of econometric regression results.

To examine this issue, the Wooldridge test is applied. This test relies on the null hypothesis ($H_0$), which assumes the lack of of serial correlation in the error terms. An examination of the corresponding p-value, presented in the tables below, will make it possible to determine whether serial correlation is present in the residuals.

**Table 9.** Findings of the Serial Correlation Test for Model 1

| Model 1: ROA, Debt, Firm Size, and Growth | |
|---|---|
| Wooldridge T | Value |
| F(1, 10) | $2.580 \times 10^{0}$ |
| Prob > F | $1.354 \times 10^{-1}$ |

In Model 1, the Wooldridge autocorrelation test yields an F-statistic of $2.580 \times 10^{0}$ and a p-value of $1.354 \times 10^{-1}$. Since the p-value Exceeds the 5% threshold significance level, the null hypothesis assuming the absence of first-order serial correlation cannot be rejected. This indicates that the model the error terms show no evidence of statistically detectable serial correlation, suggesting that the error terms are independent over time. Therefore, the empirical findings may be regarded as robust with respect to this diagnostic test.

**Table 10.** Findings of the Serial Correlation Test for Model 2

| Model 2: ROE, Debt, Firm Size, and Growth | |
|---|---|
| Wooldridge Test | Value |
| F(1, 10) | $3.121 \times 10^{0}$ |
| Prob > F | $8.97 \times 10^{-2}$ |

For Model 2, the F-statistic is $3.121 \times 10^{0}$, with a p-value of $8.97 \times 10^{-2}$. Even though this value is nearer to the 0.05 significance threshold, it remains above this level, meaning that the null hypothesis of no autocorrelation cannot be rejected. Consequently, the errors in the ROE model do not appear to display statistically statistically significant serial correlation, suggesting that the results are statistically reliable with respect to this diagnostic test.

### 4.8 Heteroskedasticity Test

This section examines the constancy of the residual variance across individual units within the models analyzed in this study. To this end, heteroskedasticity tests are performed Grounded in the assumption of constant error variance, which assumes that the variance of the error terms remains constant. According to the p-value obtained from these tests, the null hypothesis may either be accepted or rejected.

Heteroskedasticity is assessed applying the xttest3 procedure to the estimated models using the fixed-effects approach, while the estat hettest procedure is employed for the estimated model using the random-effects approach. The finding of these tests corresponding to the two models are summarized in the subsequent table

**Table 11.** Results of the Heteroskedasticity Tests for the Study Models

| Model | Test | Chi-square (df) | Prob. > $Chi^2$ | Interpretation |
|---|---|---|---|---|
| Model 1 | Modified Wald Test for Groupwise Heteroskedasticity (Fixed Effects) | 1.89 | 0.1710 | The null hypothesis of homoscedasticity is not rejected. There is no evidence of heteroskedasticity. |
| Model 2 | Breusch–Pagan / Cook–Weisberg Test (Random Effects) | 2.42 | 0.1205 | The null hypothesis of homoscedasticity is not rejected. There is no evidence of heteroskedasticity. |

**Model 1:** The Modified Wald diagnostic test for the first econometric specification reports a chi-square value of 1.89, accompanied by a p-value of 0.1710. As this probability exceeds the conventional 5% significance level, there is insufficient statistical evidence to reject the null assumption of constant error variance. This indicates that the error terms in this specification, maintain a uniform variance across firms, suggesting that the estimated findings are robust with respect to this diagnostic test.

**Model 2:** For Model 2, the Breusch–Pagan test produces a chi-square statistic of 2.42, with a p-value of 0.1205. Since this p-value is also greater than 0.05, the null hypothesis of homoscedasticity cannot be rejected.

Consequently, there is no statistically significant evidence of heteroskedasticity in this model, which supports the reliability of the estimation results.

**Recommendations Specific to the Moroccan Context:**

**- Encouraging IPOs among Family Businesses:** To promote stock market listings among Moroccan family businesses, fiscal measures could be implemented alongside reinforce programmes designed to support these firms throughout the IPO process. Public authority's authorities and the Casablanca Stock Exchange is expected to work together to establish a favourable an approach that mitigates the costs associated with going public and makes this financing alternative more attractive to family-owned businesses.

**- Strengthening Corporate Governance:** Moroccan family businesses should reinforce their governance mechanisms to enhance investor confidence and mitigate anticipated risks. Measures designed to enhance financial disclosure, including the adoption of international accounting standards and appointing Autonomous external members to Governing bodies of directors, are Norms to drawing long-term investment.

**- Promoting Financial Literacy and Understanding of Stock Market Operations**: There is a need to develop a stronger stock market culture in Morocco. This objective could be achieved through financial education and training programmes designed to highlight the benefits of an IPO for family businesses, while explaining the listing process and addressing concerns related to the potential loss of control.

Moroccan family businesses can derive substantial benefits from stock market listing, especially through enhanced corporate corporate oversight and greater access to sources of financing. However, maximising these benefits requires overcoming several difficulties, particularly conflicts arising from family governance, the management of shareholders' short-term expectations, and the need to adapt toward enhanced financial disclosure. Through the adoption of targeted reforms and improving Risk mitigation practices, the Moroccan stock market could emerge as a more appealing platform for family businesses seeking to speed up their expansion and reinforce their competitive position at both the national and international levels.

## 5 Conclusion

This research emphasizes the principal results of the analysis of the effet of IPOs concerning the economic outcomes of Moroccan family businesses listed on the stock exchange. Various econometric approaches and frameworks, comprising OLS, CS ARDL, and GLM models, were employed to provide a extensive assessment of the two SR and LR mechanisms. The analysis compared the findings obtained for two principal measures of corporate profitability: ROA and ROE, thereby providing an overall picture of the impact of IPOs on these firms. The findings indicate that IPOs can contribute to improving the economic profitability of family businesses, particularly their ROA, although the impact is influenced by how effectively firms manage their size, debt levels, and growth. In the LR, firm size and revenue Growth appears to have a positive effect determinants of firms' financial results, thanks to cost advantages from larger-scale production, improved funding availability, and companies' capacity to capitalize on market opportunities. However, excessive debt negatively affects performance, emphasizing the importance of family businesses to carefully manage their reliance on debt in order to preserve their future profitability.

Similarly, the results concerning financial profitability (ROE) confirm the trends observed for ROA, although ROE appears to be more strongly influenced by financial leverage. Thus, firms that increase their debt levels may experience a temporary improvement in ROE in the short run. In the long run, however, excessive indebtedness undermines overall financial profitability, confirming the importance of sound financial management.

In the short run, the results show such rapid growth in firm size may result in a temporary reduction in profitability (ROA and ROE) as a result of adaptation and integration costs. Nevertheless, Moroccan family businesses listed on the stock exchange appear to have governance and adaptation mechanisms that enable them to return relatively quickly to equilibrium.

In summary, this study demonstrates that going public can be an important driver of economic performance for listed family businesses, while requiring effective management of expansion, leverage and financial market risks. Comparing the results obtained using the ROA and ROE indicators has provided a better understanding of the differentiated effects of IPOs on the profitability of these firms. Furthermore, the use of various econometric approaches has enabled a more in-depth analysis and provided an overall perspective on the factors influencing their short-run and long-run performance.

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