



Cattedra Corporate Finance

The impact of Female Leadership on Financial Performance in Family Firms

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1. Abstract

This study aims to investigate the relationship between CEO gender, family ownership and financial performance.

In particular, it investigates how gender diversity in top level executive positions interacts with the ownership structure in influencing the firms financial performance.

The sample includes 395 publicly listed companies based in Italy, France, Spain, and Sweden. These countries were chosen both due to their high concentration of family firms and for their approach to gender inclusion, which are relevant aspects to conduct the analysis.

Over the past decade, the corporate governance literature has largely investigated the role and the influence of female leadership in different corporate contexts. However, findings remained inconclusive and did not highlight a unique result, suggesting the need to investigate further.

In addition, the effect of having family firm structure on company performance was also largely discussed, since it has specific peculiarities, considered relevant in impacting the corporate dynamics. Family ownership is, in fact, often associated with long term orientation as well as reduced agency costs.

However, the role and the impact of a female leader in this context still needs to be investigated.

This research explores how the presence of a female CEO, particularly in family firms, can affect the financial performance. These two factors are examined both independently and jointly, to analyze the interaction effect on company's key financial metrics.

To test the hypotheses, an OLS regression model was developed, including financial metrics such as Return on Equity (ROE), Return on Assets (ROA) and Return on Capital Employed (ROCE).

These indicators were chosen as they are objective metrics, widely used to assess financial performance.

The study also includes control variables such as firm size (measured in terms of number of employees), leverage (measured by the gearing index), and industry sector, to better isolate the net results of gender and family ownership, while at the same time considering additional firms characteristics.

Initial regression results were not statistically significant, probably due to the low percentage of female CEOs on the whole sample. This fact puts an accent on the underrepresentation of women in the top executive roles, especially in companies with a traditional structure like family firms.

However, when accounting for sectors heterogeneity within the sample, it was possible to observe that in certain industries, both female leadership and family ownership are positively and significantly associated with a better financial performance. This aspect supports the previous literature further reinforcing the relevance of accounting for the context in which the company operates, when analyzing financial outcomes.

Specifically, in these sectors, family ownership was positively associated ROE ($p < 0.10$), ROA ($p < 0.05$), and ROCE ($p < 0.05$). The presence of a female CEO also impacts the three financial performance indicators considered, showing a positive association with ROE ($p < 0.10$), ROCE ($p < 0.05$), and ROA ($p < 0.05$).

While interaction terms were excluded due to multicollinearity issues, the combined impact of female leadership and family ownership appears additive and beneficial in specific sectoral contexts.

This suggests that the two factors, although studied separately, may be able to reciprocally reinforce themselves if the environment is favorable.

Overall, the findings suggested that female CEOs and family ownership can be associated with enhanced financial performance, particularly when contextual factors such as industry fields are considered. These results contribute to the ongoing debate,

highlighting how industry specific dynamics can have an impact on how firm performance is influenced by ownership structure and female leadership.

2. Introduction and Literature Review

2.1 Gender Diversity in Corporate Governance: conflicting empirical evidence

Over the last two decades, gender equality in the corporate context has become an increasingly discussed topic. The impact of women in businesses, especially when appointed in leadership positions such as board members and top executives, has gained attention in the corporate governance literature. This growing concern reflects the society tendency to shift toward a more inclusive and diverse leadership, which enables to offer equal opportunities across sectors.

Concurrently, the peculiar dynamics of family firms, influenced by their ownership and control structures, have been examined to assess their influence on corporate governance aspects.

Regarding gender diversity, many studies have highlighted the positive effect of increasing the presence of female in the board of directors on non-financial firm performance. Aspects taken into account range from transparency and non-financial reporting quality to ESG compliance.

For what concern the latter, as reported in the research conducted by Nicolò et al (2021), the presence of women in the boards enhances the ESG scores, impacting the long term value creation ability of the company. Such findings shed light on the importance of promoting gender inclusive governance in driving sustainable performance. Women give, in fact, their contribution in better understanding stakeholders' needs, which results in an enhanced ESG performance.

This emerged also from the study “Cultural and gender diversity for ESG performance towards knowledge sharing: empirical evidence from European banks” (Paolone et al., 2024), which demonstrated that gender diversity improves ESG outcomes in European

banks. This effect is enhanced in companies where good governance practices are already in action and voluntary inclusion policies are present. These findings reveal that the sole female presence seems not to be sufficient if not supported by an appropriate organizational culture.

On the other hand, the relationship between female presence in leadership positions and financial performance seems not to be that linear. Despite, research such as “Board gender diversity and firm performance: The UK Evidence”, conducted by Brama et al (2018) identified a positive relationship between women in the board and financial performance, other studies did not reveal the same results. This inconsistency highlights the fact that the interaction of different factors plays a crucial role in the gender-performance relation.

There are several possible explanations to this phenomenon. This divergence in findings is in fact often attributed to the cultural context and to institutional variables. In this regard, when appointing female leaders is just a formal requirements fulfillment, women do not really have the possibility to exert their power and to positively influence the performance, lacking a real influence on firm strategy (Setiawanta, 2022). This finding sheds light on the problem of tokenism, that results in the need to distinguish between symbolic and substantial representation.

This view is further reinforced by Martinez-Garcia et al (2024), who put the accent on the importance of context in which the company is operating in shaping governance practices. In fact, through their analysis on thirty European countries, they explore both formal and informal institutional settings impact on the approval of regulations to increase female presence on boards.

Surprisingly, countries with higher level of gender inequality are more likely to introduce quotas, probably to compensate the absence of a rooted egalitarian mentality. This paradox raises questions about the effectiveness of this kind of policies in changing established socio-cultural patterns.

This could explain why the introduction of mandatory laws, does not always have the desired results. In fact, countries that are problematic in terms on inclusion and that tend to be less openminded, need to introduce laws to ensure the minimum level of women in the board.

On the other hand, countries with higher average level of women education, lower gender gap and a spread egalitarian mentality, are naturally able to insert women in leadership context.

Building on this reasoning, this topic was further examined in the study conducted by Maida et al (2022), providing an overview on the effect of the Italian board gender quota law. The findings revealed that despite a rapid and substantial increase in female representation in the board after its introduction, this effect was, in the majority of the cases, only formal. Additionally, it was mainly concentrated in firms which already had a significant percentage of diversity even before the law, suggesting that improving just from a numeric point of view the overall presence of women in the board, does not imply leading to a substantial change in the organizational patterns.

In relation with this point, several studies have underlined the risk of tokenism deriving from gender diversity initiatives rather than a true inclusion. As highlighted by Guldiken et al. (2019), the appointment of a single female directors is often the answer to institutional requirements to satisfy, rather than a real interest in promoting change. If this is the case, of course the performance cannot be enhanced. On the other hand, when female directors are appointed while the company is led by female executives the results can be evident, and the change is substantial.

Having said that, the theoretical concept of tokenism can be used to interpret empirical results.

Going into deep in this topic, as highlighted by Flabbi et al (2019), it is essential to consider the general presence of women, not only in the leadership positions, but in the whole company. In fact, according to this study, female leadership is associated to an increase in firm productivity when the company registers a great number of women appointed in all the departments.

The theoretical perspective to take into account in this context is the Critical Mass theory, which can be perfectly applied in the context of women representation in leadership positions. In fact, it is coherent with the concept according to which a single woman in the board cannot influence enough the dynamics or change the mentality. As suggested by Yang et al (2019), who identify the “critical mass” in at least three female directors,

there is a certain threshold to reach in order to switch from being tokens to become active contributors. According to the authors, this is explained by the fact that value is created when women create strong relationships among each other, building coalitions to challenge the rooted social norms. This concept reinforces even more the already explored necessity to go beyond the mere numeric presence, stimulating the creation a really inclusive board to reach tangible improvements in terms of performance. If women are numerically underrepresented or appointed just to comply with pressures, their impact on strategic decision-making will probably not be relevant. This offers an interesting explanation for the contrasting findings of the previous literature.

Another theoretical perspective to examine in this regard is represented by the institutional theory, which supports the idea that organization dynamics such as the propensity to appoint and support women in leadership roles, is influenced by external expectations and pressures.

As demonstrated by Brammer et al. (2012) in their study “Corporate Social Responsibility and institutional theory: new perspectives on private governance”, firms often show a tendency to adapt their behavior not only to the written law, but also to the social norms and cultural expectations. This is unconsciously perceived by businesses as a way to get recognition and gain legitimacy. This approach is sometimes adopted even at the expense of efficiency.

Given this background, appointing female directors may not reflect a true change in the mentality or a real commitment toward creating a more inclusive corporate environment, but could be done only to conform to expectations.

In this context, as previously explored, the women leadership can lose its effectiveness.

Another point of view, is provided by Resource Based View Theory. According to it, company's sustainable competitive advantage comes from having valuable, rare, not imitable and not substitutable resources. These characteristics are usually found in non-tangible resources such as leadership capabilities and board diversity, which ensure to be able to adapt to the external environment, offering a better capability to innovate and perform. This view is applied to women presence in the board, in the study conducted by Ismail et al. (2022) which highlights the fact that gender diversity has a positive impact

on financial firm performance, acting like a strategic resource. This effect is particularly relevant in highly competitive sectors. Despite the sample being Malaysian public listed firms, which operates in a totally different cultural settings with respect of the sample used in this study, this research proposes an interesting way to read female roles in shaping the corporate dynamics, considering them as a strategic resource.

2.2 The Family Business Context: Ownership, Culture and Institutional Environment

As demonstrated, the external environment plays a crucial role in moderating or enhancing the effects of gender diversity. Contextual patterns such as legal frameworks, investor protection, social norms, and cultural values strongly influence the effectiveness of women's leadership.

These dimensions impact becomes even more accentuate in the family firms context. In fact, in this kind of corporations, both emotional and economic goals are significant, creating an interesting environment to analyze how gender and ownership intersect.

Family firms have their specific dynamics, that impact their performance in several ways and that differentiate them from non-family firms.

Similarly to what emerged from the female leadership effect analysis, as highlighted by Aguilera et al (2012), family firms' governance practices must be contextualized in the institutional environment. The ability of families to exert control, in fact, depends on several aspects. Their ownership percentage, the succession plans and the legal frameworks, as well as investors protection and market transparency constitute aspects to monitor.

In emerging markets, where the institutions are not able to properly exercise control, the guide of a family in the business can be perceived as a proxy of stability and long-term orientation. On the other hand, in more strictly regulated contexts, the perception can be different and family-owned businesses can possibly be seen as inefficient, due to the fact that top leadership roles are perceived as not merit-based.

Due to the several influential factors of the external context, the question of whether family firms outperform the non-family ones, has not found yet a unique result in the literature. Theoretical arguments put the accent on the potential capability of this kind of ownership structure to reduce agency cost thanks to the alignment of ownership and control, as well as for their tendency to adopt a long-term orientation.

However, in their meta-analysis on the results of 95 studies, O'Boyle et al. (2012) did not find a statistically significant direct relationship between family ownership and firm performance. The result does not show significant differences when cultural dimensions are incorporated as control variables. This empirical evidence could suggest the need to analyze more institutional objective aspect, such as market transparency, regulation and investors protection, as suggested by Aguilera and Crespi-Cladera (2012).

These findings reinforce the need to move toward a multidimensional approach that considers ownership, institutional setting, and organizational culture. Introducing, among those, gender diversity, can offer a broader perspective, which enables to analyze this theme, considering multiple potential influential factors.

2.3 Female Leadership in Family Firms: An Emerging Field of Study

Building upon the intersection between gender and ownership, several scholars have explored the specific role of gender diversity within family firms. Recent contributions highlight that the family firm entrepreneurial orientation and learning attitude can enhance the impact of female leadership.

Both the studies conducted by Hernández-Linares et al. (2023) and Arzubiaga et al. (2017), demonstrated that family small and medium enterprises led by a woman benefit more from learning orientation than non-family firms, due to the supportive environment that fosters open-mindedness and entrepreneurship.

For what concerns instead the quantitative firms' performance, several studies investigated the impact of female leaders on the financial metrics.

The meta-analysis conducted by Hoobler et al. (2018), provided an overview of how female leadership can impact financial performance by aggregating the results of 78 studies on 117,639 organizations. The metrics considered as proxies for financial performance include ROA, ROE, leverage, sales, Tobin's Q, and market capitalization. The findings highlighted that the presence of women on the board of directors, may affect firms' performance, particularly in terms of sales increase. However, this effect seems to be more accentuated when the firms operate in countries with gender egalitarian cultures.

This aspect was also highlighted by the research conducted by Amore et al (2014) on an Italian sample, that stated that female directors' positive impact on firm's performance is reduced when companies operate in regions with gender prejudices.

The paper "The impact of female directorship on firm performance: a systematic literature review" published by Hussain et al (2024), confirmed the impact trend, showing a positive relation between the presence of female directors in the board and financial performance, measured by return on asset and Tobin's Q.

The same variables were also analyzed by Sanjukta et al (2020) in a study conducted on UK firms, which revealed that the relation between the presence of women in the board and financial performance increases its significance when more than one female director is appointed.

The same evidence was found in Spain, in the research "Does Board Gender Diversity Influence Financial Performance? Evidence from Spain" (Reguera-Alvarado et al, 2015).

However, further exploring research conducted in Spain, both the study conducted by Fernández-Temprano et al (2020) and the research "Gender Diversity and Firm Performance: Evidence from Dutch and Danish Boardrooms" by Marinova et al. (2010), maintained a certain level of skepticism on this topic, revealing that there is not clear evidence of the impact of gender diversity on firm performance.

Additional investigations were then conducted on the possibility that the family firm context could provide a better environment for female leadership.

Chadwick & Dawson (2018) found that female-led firms outperformed male-led firms in non-financial performance metrics, both in family and non-family firms.

Despite that, when considering the purely financial aspect, the higher performance was significant only in non-family firms.

Magnanelli et al (2020) reinforced this thesis with the study conducted on an Italian sample, finding a positive relation between the presence of women in the board of directors and financial performance. This relation becomes particularly significant especially in family-owned businesses.

Nekhili et al (2016), on the other hand, showed that the impact of having a female leader depends on the position, revealing that hiring women as board Chairs is more valuable for family firms, while female CEOs perform better in non-family businesses.

Bjuggren et al. (2018) found that female leadership has a stronger impact in family firms on profit margins, but this relationship is not present in non-family businesses.

Different findings were presented by D'Amato (2017), whose study suggested that women in top positions do not in general have a precise effect, but in low family-controlled firms, female involvement negatively impacts firm performance.

Overall, female presence appears often to be impactful on firm's performance, but its impact is often mediated by the context in which the firm is operating, including the fact of being a leader in a family or non-family firm.

As revealed by the literature on gender diversity and family firms, the evidence are often contradictory. When analyzing non-financial firm performance, the positive relation with female leaderships is robust, especially in terms of ESG compliance, long term value creation and stakeholder orientation. However, when analyzing the financial performance, findings are less homogeneous. While some studies identified a positive relation, other failed to reveal significant results, or shed light on the impact of contextual factors such as culture, institutional environment and laws, in moderating this effect.

In fact, the organizational dynamics impacting the firm performance, were often found to be related and influenced by them. In the interaction with leaders' gender and ownership structure, these factors create an interesting environment to analyze.

The existing literature tends to focus on gender diversity and family firms in isolation, without considering their combined effects.

Some recent studies started to explore the interaction of these two variables, for example in the context of small and medium enterprises or in specific geographic regions, but the topic must be further explored. Additionally, while the presence of women in the board of directors was largely explored, female leadership in terms of female CEOs should be further investigated.

A relevant limitation concerns the low percentage of women in top executive roles. Gender quotas have, in fact, played a role in increasing the number of women in the board, but the prior concern remains being able to stimulate a change in the effective power structure.

This could possibly explain why the number of female CEOs remains extremely low, causing empirical analysis to get limited results due to the lack of statistical significance of findings.

Having said that, there is the need of further testing the relations with firm performance, since they did not always identify clear results, and to include additional variables to better assess which are the main influential contextual factors.

This study aims to fill the gap, investigating jointly the roles of female CEO leadership and family firm ownership in their impact on firm's financial performance.

2.4 Sectoral Heterogeneity and its Relevance in the Gender-Performance Nexus

To consider other potentially relevant factors, this research explores industry heterogeneity, exploring how the industry sector can impact the relationships considered. Sectoral differences have in fact been increasingly acknowledged as a key factor to consider. For this reason, scholars had started analyzing gender diversity effects across the different business fields.

Recent studies have highlighted the importance of considering industry specific dynamics when analyzing both the distribution and the impact of female leadership. The empirical research conducted by Sanchez and Frey (2020), revealed that there are some differences among the different sectors. In transportation and financial sectors, in the firms characterized by rapid growth the leaders are less likely to be female. Instead, in sectors

such as leisure, wholesale and construction, firms with slower growth had a higher level of female presence. This evidence suggests in on one side that industrial context creates different opportunities, it also influences the outcomes that female led firms can achieve.

Building on this topic, to test Upper Echelons Theory, recent literature has explored the theme of recognizing some specific characteristics as aspects that cannot be considered in isolation from the external context.

In this regard, Yamak et al. (2014), explain in their study how industry environment influences top management teams composition and effectiveness. For example, the fact that weather the industry is stable, or it is subjected to several transformations, influences the leadership dynamics. What emerges is that in those business fields characterized by uncertainty, diverse teams better contribute to enhance the firm's performance, as they are more aligned with the perspective of innovation and adaptability of the business. In this kind of context, female leaders and heterogenous boards are able influence the strategy and the corporate culture. Instead, in highly regulated or stable sectors, diversity was found to be not always beneficial, since their rigidity is hard to overcome, and the diversity can be just symbolic, without really introducing different perspectives.

These findings contribute to further explain the often contrasting results on the impact of female presence on financial performance, highlighting the need to incorporate sectoral dynamics in the analysis.

3. Sample

The sample is made of 395 public listed European companies, based in Italy, France, Spain and Sweden. For each company, the data collected were the CEO gender and the main shareholders to determine whether the company was a family firm or not.

Additionally, the dataset comprises some control variables such as leverage, measured in terms of gearing index (total debt/shareholder's equity), industry sector and company size, measured in terms of number of employees.

The financial performance is measured using financial indicators such as ROE (calculated as net income/shareholders' equity), ROA (calculated as operating profit/total assets) and ROCE (calculated as operating profit/capital employed).

From a practical point of view, the choice of creating a database with public listed firms, was driven by the possibility to collect more reliable data, with a higher level of transparency, in consideration of the mandatory disclosure requirements to which public companies are subjected.

Additionally, for the listed firms it was easier to find available data on public sources such as Orbis and corporate websites. This gave the opportunity to get standardized governance and financial data, useful to run the OLS model.

Despite this, it is important to be aware of the limitation related to the fact that a high percentage of family businesses is not listed, especially in countries such as Spain and Italy.

Eventually, including in the sample variables such as sectors, which were then more broadly reclassified into "super-sectors", allowed to understand how industry dynamics interact with governance structure, further exploring this already discussed theme.

4. Barriers to Female Leadership

Despite the percentage of women appointed in the board of directors is increasing, also due to the new regulations enacted, the percentage of female leaders and, specifically of female CEOs remain extremely limited, as reflected also in the sample.

For example, in Italy, according to the data collected in 2024 by *Il Sole 24 Ore*, only 24% of CEOs and 32% of managers are women. This evidence, despite showing a progressive improvement in the last years, confirms the existence of a still problematic gender gap, especially when considering top corporate roles. (*Il Sole 24 Ore*, 2024).

The situation in the European Union is not very different from the Italian one, since according to European University Institute survey conducted in 2022, only 8% of CEOs and 22% of executives were women (European University Institute, 2023).

As a consequence, it is evident that despite recent improvements and gender quota laws, the scarcity of women in top corporate roles remains an issue.

To investigate the reasons behind this evidence, Asao et al. (2024), explored the barriers and the main variables preventing women to be appointed in leadership position. Their study was based on the Japanese sample, but the dynamics can be generalized to other countries. The main factors, in fact, were found to be absence of flexible work to help female workers with children and rigid employment structures. Additionally, the traditional view of a linear and uninterrupted career path, indirectly penalizes women. Similarly, long working hours do. These issues reflect a societal mindset, according to which women are expected to take care of children, at expenses of their career.

Additionally, senior roles are still commonly considered more suitable for men rather than women, even at an unconscious level.

Further exploring stigmas behind this tendency, another aspect to consider when investigating the reasons of female underrepresentation in firms leadership roles is the difference of the aspirations between women and men. In this regard, the meta-analysis conducted by Netchaeva et. Al (2022), showed that on average men demonstrate higher leadership aspirations with respect to women. This result is based on a US sample but provides some interesting points of reflection. This tendency is in fact particularly evident

in male-dominated industry and seems to be present even in workplaces that promote gender equality. These findings suggest that stereotypes and internally developed convictions can play a crucial role in shaping the approach to work, contributing to obscure women ambition for leadership roles and further perpetuating their limited presence in top level corporate positions.

5. Institutional and Geographical Context

The European geographic focus of this study was chosen as it is an interesting context to explore the gender dynamics in family businesses for several reasons.

First, Europe has a relevant portion of family firm, especially in Italy, Spain and France. According to the EY and University of St. Gallen Family Business Index (2023) in fact, Europe hosts 234 of the 500 largest family firm all over the world. Among European countries, the study “Family Governance in Europe: trends and insight”, conducted by BNP Paribas (2023) revealed that in Italy, France and Spain, the percentage of family firms accounts for more than 80% of the total.

The European countries selection gives the possibility to explore different corporate governance aspects. Nations such as Italy, France and Spain historically exhibit a strong concentration of family firms, as well as relatively conservative culture. On the other hand, Sweden, has a lower percentage of family firms but is commonly recognized as a progressive country, characterized by gender egalitarian culture. This common view was supported by the EU Gender Equality Index of 2024, according to which Sweden is the most virtuous country in Europe in this regard (Statista, 2024).

Having said that, this sample gives the opportunity to observe and study the impact of female leadership in different contexts.

According to the principle of equal treatment and opportunities, in the last decade the European Union has started taking steps toward promoting more gender balanced board of directors. In 2022, women presence in the boards was around 34%, with only few countries exceeding 40%. To fix this systematic imbalance, EU adopted the Directive (EU) 2022/2381, regarding non-executive directors of listed companies. Over the last decade, both European directives and national regulations addressed the theme of

increasing female representation also in executive roles. This step was reflected into the EU directive "Women on Boards" 2022/2381.

Given the regulatory and institutional context, which however was seen to be often in contrast to the real women empowerment, Europe provides an interesting landscape to conduct the study.

The choice of limiting the field of analysis only to Europe, offers the possibility to consider firms with a certain level of comparability, while keeping a diversified sample.

6. Hypotheses

Analyzing the previous literature, it emerges that the findings about the relationship between family ownership in a business and female leadership with the firms' performance, do not always show unique results.

In this study the aim is to investigate further this theme, considering female leadership and family ownership both separately and jointly.

Prior research has demonstrated that family firms have some specific characteristics such as long-term orientation, risk aversion and commitment which had led in many cases to the capability of creating a sustainable profitability.

The theoretical background previously analyzed in the literature review, highlights the reduction of agency costs registered in family-owned businesses due to the alignment of ownership and control. This supports long term views and value creation, resulting in positive strategic implications (Aguilera et al., 2012).

Furthermore, O'Boyle et al. (2012) highlighted that it is true that empirical studies did not always reveal coherent results. However, family firms are characterized by peculiar governance dynamics, that create an interesting context to explore to understand the performance patterns. Moreover, some specific aspects of this kind of ownership structure such as emotional involvement and long-term orientation, can promote a sustainable long term value creation, which can be reflected in financial better decision making processes.

In consideration of that, the first hypothesis is developed to test whether family firms reach better financial outcomes with respect to non-family firms.

Hypothesis H1: *Family firms show a better financial performance compared to non-family firms.*

The impact women in leadership positions, has been largely explored, bringing to different results. Often, the presence of a female leader is correlated with better financial results. However, this is strongly influenced by the contexts, in terms of institutions and social norms, in which the company operates. Considering that, the aim of this study is to test further this relation.

Additionally, several meta-analyses, such as the one conducted by Hoobler et al. (2018) showed the positive impact of female leadership on financial metrics. This effect is registered mostly in gender egalitarian context. The possible explanation can be found in tokenism theory, explaining that often the female appointment is just symbolic rather being a true shift toward a more inclusive business environment. As discussed by Guldiken et al. (2019), symbolic appointments are rarely able to prompt a performance improvement, as the context plays a crucial role.

This study aims in this sense, to further investigate whether the presence of a female CEO is able to increase financial performance, regardless the possible underrepresentation of the gender in the company. The second hypothesis is structured as follows:

Hypothesis H2: *CEO gender affects the firms' financial performance.*

Some studies highlighted that family firm context is a supportive environment for female leaders, since women can exploit the informal context and the human relationships within the company to better exert their power. Empirical findings suggested that family firms context foster trust-based relations and create a climate that may better allow females to exert their power.

As explained by Hernández-Linares et al. (2023) and Arzubiaga et al. (2017) the learning orientation as well as the entrepreneurial mindset typical of these ownership and control structures can enhance the positive effect of women leadership.

One of the goals of this study is to further examine this aspect. In consideration of that, the third hypothesis is the following:

Hypothesis H3: *The positive effect of having a female CEO on financial performance is higher within family firms.*

Finally, as many previous studies have demonstrated, the impact of having a female leader is moderated by several variables, hence it is unlikely to be the same in every industry sector.

This hypothesis has its fundamentals into the Upper Echelons Theory, which was empirically tested in the study conducted by Yamak et al. (2014), who included the industry stability and level of innovation as a variable impacting the firm outcomes. The research shows that in innovative and more dynamic sectors, the effect of a diverse board is positive, while in regulated and rigid industry this is not always true since the possibility to translate diversity in strategic actions is more limited.

Additionally, as demonstrated by Sanchez and Frey (2020), the average sectors growth as well as the female access in leadership positions of the specific sectors also play an important role in shaping the dynamics.

In consideration of the importance of specific industry peculiarities, the sectoral heterogeneity hypothesis was formulated as follows:

Hypothesis H4: *The effect of CEO gender and family ownership on performance is more pronounced in specific sectors.*

7. Methodology

All the data used in this study were collected from the Orbis database, except for the information about the ownership, which were taken from the companies' official websites.

To analyze the relationship between having a female CEO in a family firm and the firm's financial performance, OLS regression model was used.

The financial metrics used to assess firms' financial performance are ROA, ROE and ROCE. These variables are widely used in the corporate literature, as they provide information about profitability in terms of equity and in efficiency, in terms of how the resources are used.

ROE is in fact a key measure in the investors' perspective, showing the profit that shareholders' equity generates.

ROA, instead, focuses on the asset usage, expressing numerically how much a company is able to earn relatively to the assets it owns. For this reason, it is a good measure to use when comparing companies with different capital structure in terms of debt-equity portions.

Eventually, ROCE provides a broader view on the profit generation ability of the company, since it takes into account all the capital invested, going beyond considering the financial performance only for equity holders.

Including in the analysis all these indicators enables to have a comprehensive view, spreading from profitability aspects to the company efficiency.

For each of these financial metrics an OLS regression was implemented, obtaining three regression models. The structure of the models is as follows:

Model 1 (ROA)

$$ROA_i = \beta_0 + \beta_1 * female_{ceo_i} + \beta_2 * family_{firm_i} + \beta_3 * (female_{ceo_i} * family_{firm_i}) \\ + \beta_4 * employees_i + \beta_5 * leverage_i + \varepsilon_i$$

Model 2 (ROE)

$$ROE_i = \beta_0 + \beta_1 * female_{ceo_i} + \beta_2 * family_{firm_i} + \beta_3 * (female_{ceo_i} * family_{firm_i}) \\ + \beta_4 * employees_i + \beta_5 * leverage_i + \varepsilon_i$$

Model 3 (ROCE)

$$ROCE_i = \beta_0 + \beta_1 * female_{ceo_i} + \beta_2 * family_{firm_i} + \beta_3 \\ * (female_{ceo_i} * family_{firm_i}) + \beta_4 * employees_i + \beta_5 * leverage_i \\ + \varepsilon_i$$

For each model, the dependent is the financial metrics, respectively ROA in Model 1, ROE in Model 2 and ROCE in Model 3.

Explaining the variables included in the three regressions, $female_{ceo_i}$ is a dummy variable and it is equal to 1 if the CEO is female, 0 otherwise.

The variable $family_{firm_i}$, similarly, is 1 if the company is a family firm and 0 otherwise.

The variable $employees_i$ accounts for the firm size and it is the number of people employed in the company.

The variable $female_{ceo_i} * family_{firm_i}$ is the interaction term, measuring the effect of having a female CEO in a family firm on the above-mentioned financial metrics.

Eventually, the variable $leverage_i$ represents the gearing index, while ε_i is the error term.

OLS (Ordinary Least Squares) regression is largely used in business research which goal is to identify the linear relationship between a dependent variable and one or more independent variable. This method also ensures an easy interpretability and a good level of efficiency in the estimation of linear models.

ROA, ROE and ROCE, besides being a good proxy to identify a company's financial performance, being continuous, they meet the requirements to run the OLS model.

Additionally, this regression model allows to assess the marginal effect of each independent variable, giving the possibility to distinctly understand the contribution both of CEO gender and of family ownership factors.

With OLS, it is also possible to use dummy variables. This aspect suits particularly well with the objective of this research since both family firm status and CEO gender can be in this way synthetized in the binary value of 0 or 1.

Moreover, this model is appropriate when the goal is to understand the association between different variables, which is coherent with the investigation of this study. The aim of this research is in fact to test the presence of significant patterns and correlations, rather than finding direct causality effects.

Additionally, OLS regression gives the possibility to include control variables such as firm size and leverage, as well as sector classifications. This is coherent with the scope of this research, which is willing to include, coherently with the findings of previous literature that has demonstrated their relevance is shaping the results, context variables.

However, despite OLS regression model having several strength points, it can suffer from endogeneity and omitted variables biases. The dataset construction and the control variables selection were structured with the aim to reduce these issues. However, this still is a limitation that could potentially be addressed in future studies.

The analysis process was structured in several phases. First of all, the data were cleaned and a dummy variable was assigned to the CEO gender. This variable value is 1 if the CEO is female and 0 otherwise.

Through this process it was possible to create a categorical variable for CEO gender and to insert it in the model as a binary predictors, through which it was easy to provide an

interpretation of impact on financial performance, giving all other variables remaining constant.

Observing the data, it appeared evident that the presence of a female CEO was not very high, as represented in the bar chart showing gender distribution of CEOs (figure 1).

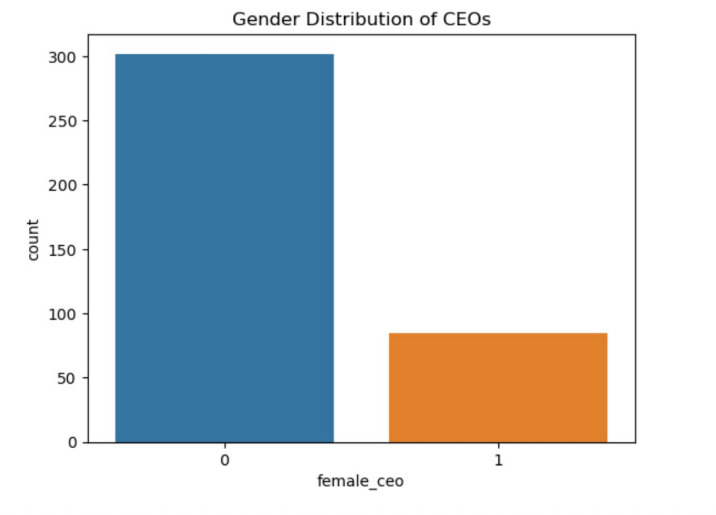


Figure 1

Gender distribution of CEOs. The blue bar represents male CEOs (0), while the orange bar represents female CEOs (1)

The imbalance of the dataset reflects a structural generalized tendency present in most of the countries to have more male CEOs, reinforcing the need of investigating whether the female CEOs presence could be able to enhance the financial performance or not.

Regarding the information on firm ownership, the dataset presents a higher number of non-family firms, as shown in the distribution bar chart.

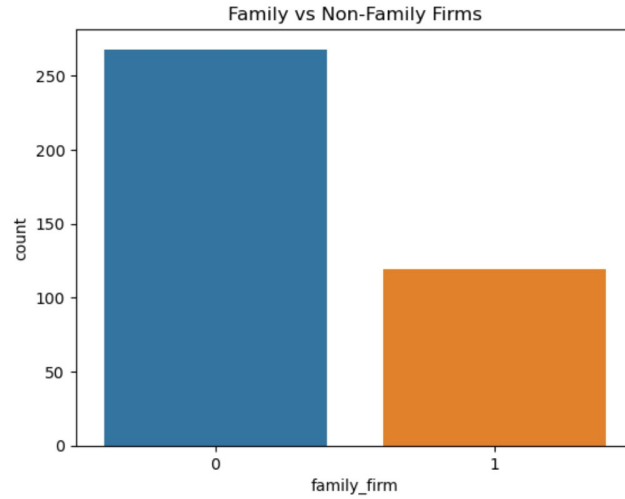


Figure 2

Distribution of family and non-family firms. The bar chart shows the number of companies classified as family firms (1) and non-family firms (0) in the dataset, indicating a higher prevalence of non-family firms.

A similar process was implemented, creating a dummy variable, where 1 indicates the majority of shares belonging to the family founder. This binary classification was useful to understand the impact of this kind of ownership structure on the firm's performance.

When performing the analysis, sector aggregation was made defining broader categories called “super-sectors”, to group companies operating in similar fields.

The regressions run including super sectors, used the same dependent and independent variables and was structured as follows:

Model 1:

$$ROA = \beta_0 + \beta_1 \cdot \text{female}_{\text{ceo}_i} + \beta_2 \cdot \text{family}_{\text{firm}_i} + \sum K y_k \cdot \text{broad}_{\text{sector}_k} + \beta_3 \cdot \text{leverage} + \beta_4 \cdot \text{size}_i + \varepsilon_i$$

Model 2:

$$ROE = \beta_0 + \beta_1 \cdot \text{female}_{\text{ceo}_i} + \beta_2 \cdot \text{family}_{\text{firm}_i} + \sum K y_k \cdot \text{broad}_{\text{sector}_k} + \beta_3 \cdot \text{leverage} + \beta_4 \cdot \text{size}_i + \varepsilon_i$$

Model 3:

$$ROCE = \beta_0 + \beta_1 \cdot \text{female}_{\text{ceo}_i} + \beta_2 \cdot \text{family}_{\text{firm}_i} + \sum K y_k \cdot \text{broad}_{\text{sector}_k} + \beta_3 \cdot \text{leverage} + \beta_4 \cdot \text{size}_i + \varepsilon_i$$

In these models the variables $\text{female}_{\text{ceo}_i}$, $\text{family}_{\text{firm}_i}$, size_i and leverage were the same already explained.

The variable $\text{broad}_{\text{sector}_k}$ was introduced as a categorical control, to consider in the regression the industry-specific effects. By including it as a fixed effect in the regression model using dummy variables, it is possible to account for the differences present across sectors that might otherwise create biases.

To include this categorical variable, it was necessary to create dummy variables for each sector with value 1 in the company belongs to that sector and 0 otherwise. This was done for each category, except one, the reference group (Business Services in this case), against which the other sectors are compared. This process is implemented to avoid the dummy variable trap.

The technical rational behind the sector aggregation was to reduce dimensions to ensure an easier and better interpretability of the model.

From a theoretical point of view, instead, companies were grouped in sectors with strategic and operational similarities, allowing to understand the effect of industry specific dynamics.

Specifically, companies operating in manufacturing or in infrastructure performing activities such as construction, machinery & equipment and transportation were classified under the Industrial super-sector.

Similarly, the super-sector Technology includes both IT & Consulting and telecommunications, while Energy & Utilities includes also waste & recycling and mining & metals.

Moreover, Healthcare super-sector includes biotechnology, while Media & Communication encompasses media, advertising and publishing.

The Financials super-sector is comprehensive of Investment & Services and Real estate, while Consumer groups Retail, Leisure and Luxury.

Finally, business services super-sector was considered in a broader way, including also Testing & Certifications and Education. The remaining sectors were included in the “Other” super-sector.

Additionally, control variables such as firm size, leverage and sector were included.

Firm size was chosen since it is a commonly adopted control variable in the business literature. In fact, it is often connected to governance structures as well as to many aspects of the firm’s performance. In this regard, larger firms, usually have a higher resource capacity, due to easier credit access, stronger capability of talent attraction and retention and benefit from economies of scale.

Considering leverage as control variables is very common too. In this case it was expressed in terms of gearing ratio. This variable typically represents a proxy to assess the financial risk profile of the firms. High levels of debt are commonly associated, also in consideration of the investor’s perspective, to a higher risk. Additionally, the capital structure can impact how the firm operates and which strategies it implements in the use of assets.

Similarly, sectors were included in the analysis, due to the fact that the industry to which a company belongs, shapes capital structure used, affecting profitability and financial metrics.

The inclusion of these variable is very common in literature, as seen in several studies previously cited, as it helps to reduce omitted variable bias.

As shown in the correlation matrix (Figure 3), the correlation between size, measured in terms of number of employees and leverage is weak. Similarly, the sector variable does not show strong correlations, suggesting that these variables vary independently across different sectors in the dataset.

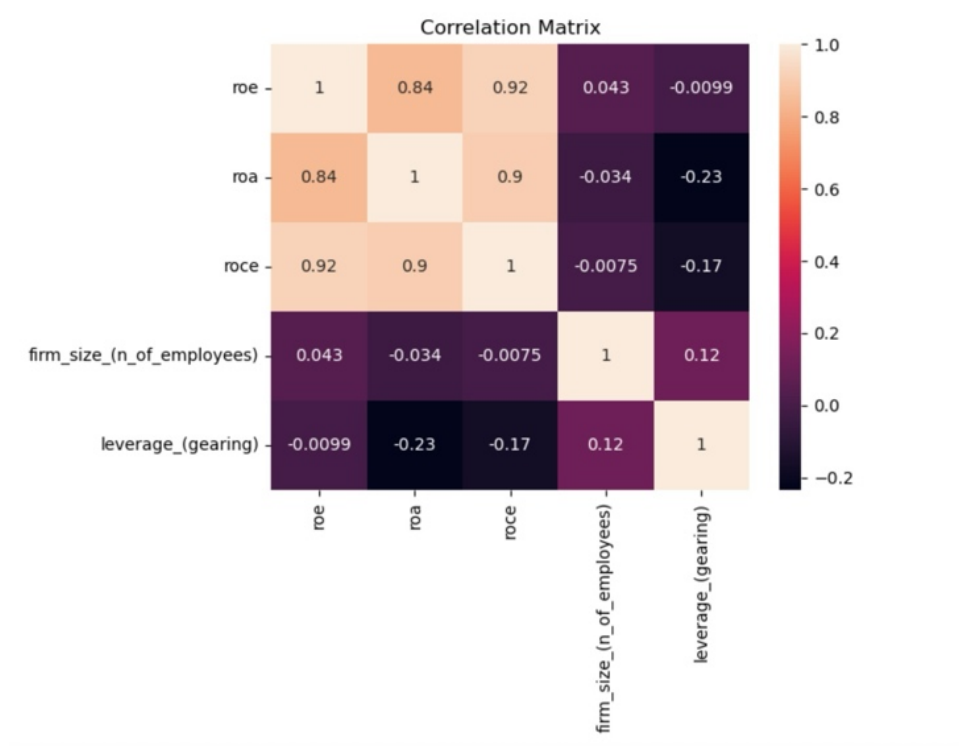


Figure 3

Correlation matrix between control variables. This graph shows the correlation coefficients among firm size (number of employees), leverage (gearing), and sector

The correlation matrix helped understanding the correlation among the independent variables in order to test potential multicollinearity. In case of high correlation is in fact hard to assess their effect separately. In this case, since the correlation among them is low, the inclusion of the three control variables chosen resulted not to be problematic.

The control variables that helped improving were firm size, measured as number of employees and leverage, while the sector, as previously specified, was used to perform aggregation.

After the analysis, it emerged that in many sectors, the presence of female CEO in the family firm, seems not to have an impact on firm's financial performance.

The chosen financial metrics distribution among the super-sectors is represented in the figures below.

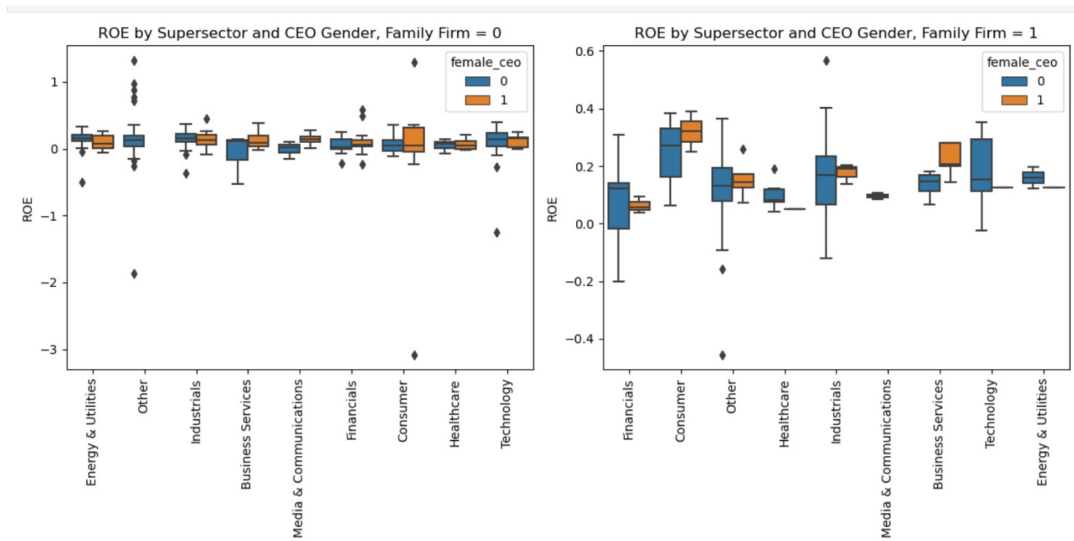


Figure 4

ROE distribution across super-sectors by CEO gender and family firm status. The left panel displays return on equity (ROE) for non-family firms, while the right panel focuses on family firms. Each bar compares firms led by male and female CEOs within the same sector, highlighting potential differences in financial performance related to gender and ownership structure.

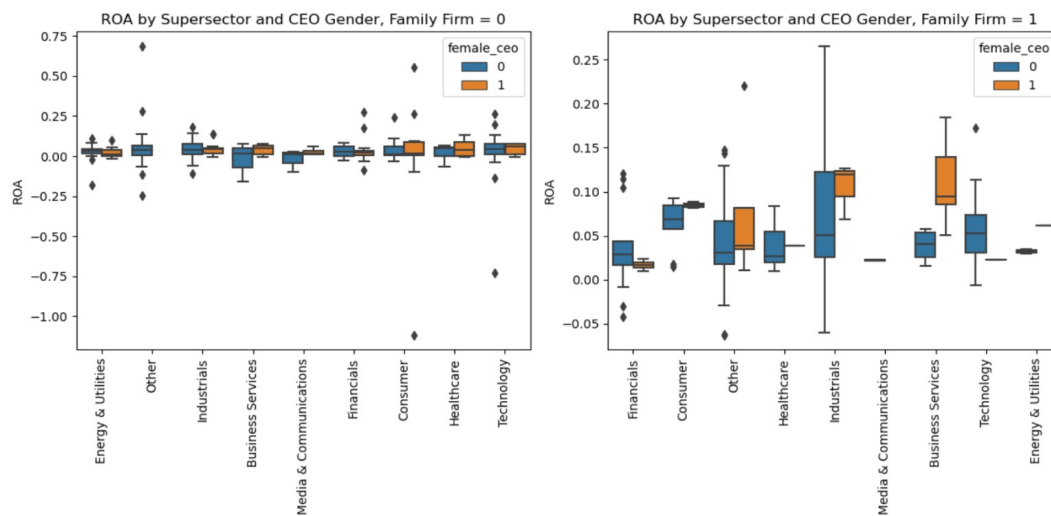


Figure 5

ROA distribution across super-sectors by CEO gender and family firm status. The left panel displays return on assets (ROA) for non-family firms, while the right panel focuses on family firms. Each bar compares firms led by male and female CEOs within the same sector, highlighting potential differences in financial performance related to gender and ownership structure.

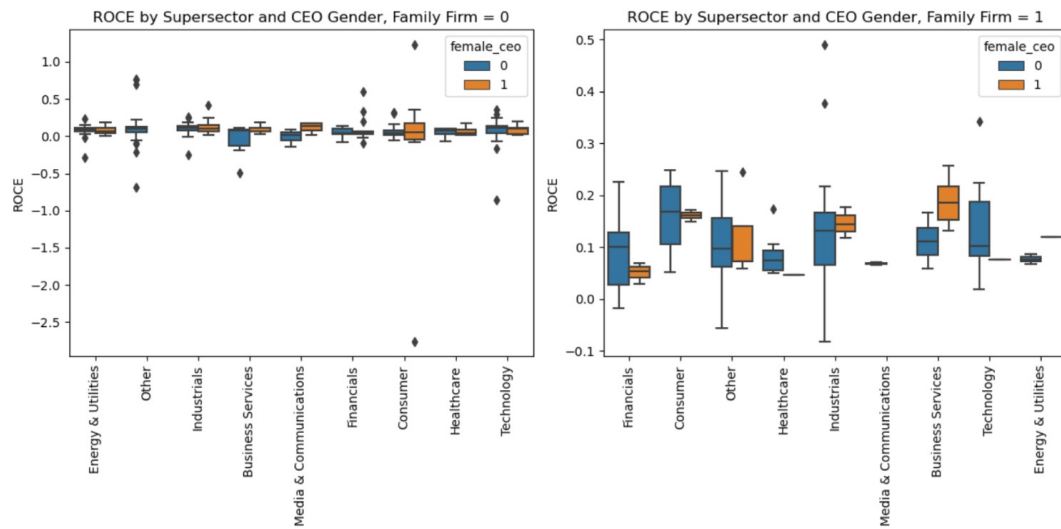


Figure 6

ROCE distribution across super-sectors by CEO gender and family firm status. The left panel displays return on capital employed (ROCE) for non-family firms, while the right panel focuses on family firms. Each bar compares firms led by male and female CEOs within the same sector, highlighting potential differences in financial performance related to gender and ownership structure.

Further investigating the sectors where this effect was present, specifically “Media & Communications” and “Business Services”, the aim was to quantify the relation.

To this extent, OLS regression was run in these sectors to explore these differences.

6. Results

The results that emerged by considering the sectors where there was a stronger impact (business services and media & communications), revealed the following.

Supporting H1, it emerged that there is a positive and significant correlation between the presence of a family firm ownership structure and ROE (coefficient = 0.1324, $p < 0.10$).

This result is coherent with the theoretical assumptions presented in the literature review, according to which family firms, due to their long-term orientation, are able to develop better strategies, which at the end are reflected into financial gains.

Moreover, this finding can be interpreted as the result of the reduced agency costs related to the alignment of ownership and control that characterized the family firms, which are reflected in a higher stability, positively impacting financial metrics such as Return on Equity.

This positive relation also holds for ROA (coefficient = 0.0630, $p < 0.05$) and ROCE (coefficient = 0.1182, $p < 0.05$), suggesting that family firms tend to perform better from a financial point of view.

This additional empirical evidence suggests that the enhanced performance is not only present in terms of profitability on equity, but also in terms of gains in efficiency of asset usage, as well as on capital allocation.

Consistent with H2, the presence of a female CEO is statistically significant and positively associated with ROE (coefficient = 0.1387, $p < 0.10$), ROA (coefficient=0.0625, $p < 0.05$) and ROCE (coefficient= 0.0989, $p < 0.05$).

Interpreting these results, it is possible to notice that despite the low presence of female CEOs in the sample, reflecting the trend present in the majority of countries, still females are able to generate a positive effect when appointed in top executive positions. This can be also explained by the fact that since there is a general aversion in appointing a female CEO, the presence of a women in such a position denotes particular individual capabilities.

Furthermore, it strengthens the thesis according to which women in boards of directors succeed in having an influence only when their presence is not just symbolic. In fact, in case of female CEO, the position itself implies a real and effective power.

Regarding H3, to avoid multicollinearity issues, no interaction term between female CEO and family firm was included. However, their combined effect was considered as the sum of individual coefficients and emerged to be positively correlated with the financial performance. Their combined impact, interpreted as the sum of coefficients, is strongest in the ROCE model ($0.0989 + 0.1182 = 0.2171$), suggesting a potentially enhanced effect when both factors are present.

Analyzing this result, despite the lack of interaction term due to the already explained statistical issues does not allow to test directly the moderating effect of one variable on the other one, the additive interpretation highlights that the presence of a female leader into a family-owned business can amplify the effect noticed when only one of these two factors is present.

Interpreting the results, as reported also in the previous literature, the mentality, the values and the vision typical of family firms could create the perfect environment for women to exert their power and to share their strategic vision.

```

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
      OLS Regression Results
=====
Dep. Variable:          roe      R-squared:          0.279
Model:                  OLS      Adj. R-squared:       0.199
Method:                 Least Squares      F-statistic:       3.477
Date:                  Wed, 30 Apr 2025      Prob (F-statistic):   0.0529
Time:                  13:12:49      Log-Likelihood:      9.0132
No. Observations:      21      AIC:                -12.03
Df Residuals:          18      BIC:                -8.893
Df Model:              2
Covariance Type:       nonrobust
=====
               coef      std err          t      P>|t|      [0.025      0.975]
-----
Intercept      -0.0259      0.062      -0.420      0.679      -0.155      0.104
female_ceo      0.1387      0.074      1.862      0.079      -0.018      0.295
family_firm     0.1324      0.075      1.762      0.095      -0.025      0.290
=====
Omnibus:              10.841      Durbin-Watson:       1.442
Prob(Omnibus):        0.004      Jarque-Bera (JB):     8.891
Skew:                 -1.176      Prob(JB):             0.0117
Kurtosis:             5.151      Cond. No.             3.04
=====

```

Figure 7

Output of the OLS regression model for Return on Equity (ROE)

```

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
      OLS Regression Results
=====
Dep. Variable:          roa      R-squared:          0.414
Model:                  OLS      Adj. R-squared:       0.349
Method:                 Least Squares      F-statistic:       6.356
Date:                  Wed, 30 Apr 2025      Prob (F-statistic):   0.00816
Time:                  13:12:49      Log-Likelihood:      31.530
No. Observations:      21      AIC:                -57.06
Df Residuals:          18      BIC:                -53.93
Df Model:              2
Covariance Type:       nonrobust
=====
               coef      std err          t      P>|t|      [0.025      0.975]
-----
Intercept      -0.0189      0.021      -0.895      0.383      -0.063      0.025
female_ceo      0.0625      0.025      2.452      0.025      0.009      0.116
family_firm     0.0630      0.026      2.450      0.025      0.009      0.117
=====
Omnibus:              2.557      Durbin-Watson:       1.983
Prob(Omnibus):        0.278      Jarque-Bera (JB):     1.175
Skew:                 -0.538      Prob(JB):             0.556
Kurtosis:             3.431      Cond. No.             3.04
=====

```

Figure 8.

Output of the OLS regression model for Return on Assets (ROA).

```

Notes:
[1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
      OLS Regression Results
=====
Dep. Variable:          roce      R-squared:          0.391
Model:                  OLS      Adj. R-squared:       0.324
Method:                 Least Squares      F-statistic:       5.785
Date:                  Wed, 30 Apr 2025      Prob (F-statistic): 0.0115
Time:                  13:12:49      Log-Likelihood:    18.970
No. Observations:       21      AIC:              -31.94
Df Residuals:           18      BIC:              -28.81
Df Model:                2
Covariance Type:        nonrobust
=====
               coef      std err          t      P>|t|      [0.025      0.975]
-----
Intercept      -0.0185      0.038      -0.481      0.636      -0.099      0.062
female_ceo      0.0989      0.046       2.133      0.047       0.001      0.196
family_firm      0.1182      0.047       2.528      0.021       0.020      0.217
=====
Omnibus:          12.104      Durbin-Watson:       1.667
Prob(Omnibus):     0.002      Jarque-Bera (JB):    10.262
Skew:              -1.325      Prob(JB):            0.00591
Kurtosis:          5.168      Cond. No.             3.04
=====

```

Figure 9.

Output of the OLS regression model for Return on Capital Employed (ROCE).

Lastly, in line with H4, business sectors to which companies belong play a key role: the financial performance benefits associated with CEO gender and family ownership were more prominent in certain industries.

In particular, Media & Communications and Business Services exhibit enhanced financial performance. This is coherent with the previous research stating that diversity and different orientation in the leadership teams are more effective and lead to better results in rapidly changing and dynamic industries, that are, for their nature, less resistant to the change.

This further supports Upper Echelons Theory, which puts the accent on the importance of environmental aspects in shaping the top management orientation and actions.

Additionally, these findings highlight the importance to perform sector disaggregation to understand all the different nuances and differences, when discussing this topic.

In conclusion, within more coherent sectoral contexts, the presence of female leadership and the family-owned nature of the company appear to be associated with superior financial performance.

These results together suggest the need to prefer a multidimensional approach when analyzing organizational dynamics, to account for all the differences and the potentially impactful variables.

Regarding the goodness of fit of the OLS model, examining R^2 is relevant as it gives information about the portion of the dependent variable variance explained by independent variables included in the regression.

It is calculated as follows:

$$R^2 = 1 - \frac{RSS}{TSS}$$

Where RSS (Residual Sum of Squares) represents the unexplained variation in the dependent variable, and TSS (Total Sum of Squares) indicates the total variation present in the data.

Its value ranges between 0 and 1; with R^2 equal to 1 meaning that the dependent variables variance is fully explained by the chosen independent variables. In similar academic studies, R^2 value above 0.3 is considered acceptable.

In this study, R^2 value assesses the percentage of variation of financial performance, measured in terms of ROA, ROE and ROCE, explained by the chosen independent variables such as CEO gender, family firm status, firm size and sector.

The values obtained by the regressions are 0.279 for ROE, 0.414 for ROA and 0.391 for ROCE. This result suggests that despite these variables not being able to completely explain financial performance variation, they still have a certain level of explanatory power.

However, when the model has multiple predictors, $R_{adjusted}^2$ is commonly preferred to assess the goodness of fit of the model, since it provides a more accurate evaluation.

It is calculated as follows:

$$R_{adj}^2 = 1 - \left(\frac{(1 - R^2)(n - 1)}{n - k - 1} \right)$$

Where n is the number of observations and k is the number of independent variables.

Having said that, the $R_{adjusted}^2$ values found are 0.199 for ROE, 0.349 for ROA, and 0.324 for ROCE. This means that CEO gender and family ownership together with the control variables are able to explain respectively 19.9% of ROE, 34.9% of ROA and 32.4% of ROCE.

Despite using R^2 provides slightly worse results in the analysis, it is more appropriate for the corporate governance research. In consideration of this measure to assess robustness, still the result obtained remains relevant.

The findings of the study suggest that ROA and ROCE, which are focused respectively on assets usage and capital employed, are better explained by the chosen variables.

On the other hand, ROE seems to be influenced by other factors not included in the model. This could be explained by the fact that, especially in listed companies, equity valuation is subjected to variation related to the market conditions and to the external environment. Therefore, ROE is influenced not only from the internal governance dynamics, but also from other conditions.

This consideration opens the necessity to include other predictors when considering financial metrics such as ROE, to better explain the model.

8. Conclusion and Future Research

Starting from the previous literature analysis, the objective of this study was to investigate the relationship between female CEO in a family firm context and financial performance, considering both these variables separately and jointly. Four European countries with a high presence of family firms were used for the sample.

It was evident from the first analysis that the presence of female CEOs was extremely limited, creating issues in obtaining a statistically significant result.

However, using control variables, and, specifically, considering sectors heterogeneity, a positive correlation with financial performance emerged.

In particular, in sectors such as Business Services and Media & Communications, female leadership and family firm status were both found to be significantly and positively associated with a better financial performance.

Specifically, family ownership was correlated with improved ROE and female CEO presence was associated with better ROE and ROCE, with consistent significance observed also for ROA.

These findings suggest that the industry in which the firms analyzed operate, play a role in shaping governance dynamics that affect financial performance.

However, it is evident that despite the average number of women in the board of directors is increasing, also because of gender quota laws, having a female CEO remains something extremely rare in most of the sectors.

Moreover, despite a single variable including both female CEO and family ownership was excluded due to multicollinearity issues, both the evidence of this study and the previous research, suggest that their jointed effect could be beneficial.

In fact, in consideration of what explored by the literature, the family firm context seems often to offer a better environment to allow women to exert their leadership in a constructive way.

However, these dynamics are often industry specific or, influenced by several other variables.

For this reason, future research could question what are the main factors that impact the effectiveness of female leadership, analyzing their relationship with the ownership and control structure of the companies. Further investigations could also propose a stricter sectoral classification, to better understand all the nuances present, identifying the specific types of businesses where female leadership is more effective.

Furthermore, a limitation of this study could be found in the dataset, that, for reason of data availability, was limited to listed firms. Including also non-listed companies in future research, could provide a more comprehensive overview on the environment, especially in the family firms context, since most of the businesses with this ownership structure are privately held. For this reason, expanding the dataset could allow to overcome the limitations related to the underrepresentation of family firms in the sample.

Further investigation could also address the cultural nuances of the countries where the companies are located, trying to assess their impact in terms of level of gender inclusive environment.

For example, a female CEO in Sweden may operate in a more favorable environment with respect to other southern Europe more traditionalist countries, potentially influencing the financial outputs of the firms with women in leadership positions. As the different effect of mandatory laws versus voluntary inclusion policies has already been examined, this topic could be further analyzed by studying how the situation changed in those countries in which the gender quota was abrogated.

Additionally, it could be beneficial for the research scope to extend the time frame, considering how financial performance has evolved before and after CEO appointment. The same could be done analyzing the moments of change in the ownership structure. This could allow to develop a more dynamic analysis able to provide a long-term view on the topic.

In summary, this study shows evidence of the positive impact of female CEO and family ownership on the financial performance, confirming prior studies. Moreover, it reinforces the importance of adopting a multidimensional approach, able to capture all the potentially impactful variables such as industry differences.

However, there is the need to proceed with a broader and more inclusive research to provide more reliable results, able to capture also other aspects.

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