



Lisbon School
of Economics
& Management
Universidade de Lisboa

MASTERS IN MANAGEMENT (MIM)

MASTERS FINAL WORK

DISSERTATION

MEASURING THE FINANCIAL IMPACT OF GENDER QUOTAS ON PORTUGUESE LISTED COMPANIES

SARA DE BRITO MENDES

JULY – 2025

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RESUMO

Este estudo analisa o impacto das quotas obrigatórias de género no desempenho financeiro das empresas em Portugal, onde as mulheres continuam a estar sub-representadas em cargos de liderança de topo, apesar dos elevados níveis de qualificação académica. Na sequência da introdução, em 2017, de uma lei que estabeleceu a obrigatoriedade de uma participação mínima de 33,3% de mulheres nos conselhos de administração das empresas cotadas em bolsa, o presente trabalho procura avaliar se esta medida resultou em ganhos significativos de desempenho empresarial.

Embora a literatura prévia apresente resultados contraditórios, esta dissertação aborda a questão da causalidade e controla a heterogeneidade não observada através da metodologia de Diferenças-em-Diferenças (DiD) com Efeitos Aleatórios. Com recurso a um painel de dados referente ao período de 2013 a 2022, o estudo compara as empresas cotadas, sujeitas à lei da quota, com um grupo de controlo constituído por empresas privadas não abrangidas pela medida. Os indicadores de desempenho analisados são o Return on Assets (ROA) e o Return on Equity (ROE), controlando simultaneamente fatores específicos das empresas, como a Dimensão, Idade, Total dos Ativos, Liquidez, Solvabilidade e Endividamento, de modo a isolar o efeito da quota sobre o desempenho financeiro.

Os resultados evidenciam que a política de quotas teve um impacto positivo e estatisticamente significativo após a sua implementação, fornecendo suporte empírico às medidas de promoção da igualdade de género e contribuindo para o debate político em torno da diversidade nos conselhos de administração.

PALAVRAS-CHAVE: Quotas de Género; Composição do Conselho de Administração; Desempenho Empresarial; Diferenças-em-Diferenças

ABSTRACT

This study examines the impact of mandatory gender quotas on corporate financial performance in Portugal, where women continue to have a disproportionately low presence in senior leadership roles despite high levels of educational attainment. Following the 2017 introduction of a quota law mandating at least 33.3% female board involvement in publicly traded companies, this study examines whether the policy resulted in significant gains in firm performance.

Although previous research has produced conflicting findings, this dissertation address causality and accounts for unobserved heterogeneity using a Differences-in-Differences (DiD) methodology with Random Effects. Using a panel dataset spanning 2013-2022, the study compares publicly listed firms subject to the gender quota with a control group of private firms not affected by the policy. The outcomes Return on Assets (ROA) and Return on Equity (ROE) are examined while controlling for firm-specific factors such as Size, Age, Total Assets, Liquidity, Solvency, and Indebtedness to isolate the effect of the quota on financial performance.

The findings reveal that the quota policy had a statistically significant positive effect after the intervention. Ultimately, this study provides evidence-based support for gender equality measures in corporate governance and adds to the policy discussion on board diversity.

KEYWORDS: Gender Quotas; Board Composition; Firm Performance; Differences-in-Differences

JEL CODES: M14; L25; J16; C21

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GLOSSARY

DiD - Difference-in-Differences

EC - European Commission

EIGE - European Institute for Gender Equality

ESG - Environmental, Social, and Governance

EU - European Union

FE - Fixed Effects

PLC - Public Limited Companies

RE - Random Effects

ROA - Return on Assets

ROE - Return on Equity

SDGs - Sustainable Development Goals

TFP - Total Factor Productivity

TFEU - Treaty on the Functioning of the European Union

1. INTRODUCTION

Although as of 2024 women accounted for around 62% of new university graduates in Portugal (World Bank Gender Data Portal, 2024), they remained significantly underrepresented in the economic decision-making sphere, particularly in leadership roles. According to the European Institute of Gender Equality (EIGE), as of 2024, women still accounted for only 35.6% of board members and 9.5% of board chairs in the European Union. Portugal followed this trend, with women holding just 34.7% of board positions and 6.7% of chair roles (EIGE, 2024).

One way to reduce these disparities, while promoting a more balanced representation and aligning the composition of decision-making bodies with the gender diversity of society, is through “gender quotas”. Measuring their impact, particularly on financial performance, is essential to assess their effectiveness, ensuring it does not undermine other dimensions of corporate performance, and to prevent biased conclusions.

Given that boards play an important role in firm performance, by first overseeing management and second providing resources, their composition must be considered to assess the impact of gender quotas on these functions. Ultimately, financial performance will depend on how quotas shape these two roles (Comi et al., 2019). Different theoretical approaches help explain this impact. Some scholars (e.g. Pfeffer & Salancik, 1978; Hillman & Dalziel, 2003), drawing on the resource dependence theory, support that boards are chosen to maximise the firm value as board members provide essential resources such as strategic guidance and expertise. With this view, gender quotas may reduce firm value by limiting the selection of the most qualified candidates, potentially weakening board effectiveness. Others (Jensen et al., 1976), take a different approach grounded on agency theory, arguing that entrenched managers may appoint directors who serve their personal interests, so quotas may improve oversight of management practices.

Considering the European landscape, Norway led the way in 2003 by becoming the first country to enforce mandatory quotas for corporate boards of publicly listed companies, requiring at least 40% female representation by 2008. Following this law implementation, nine European countries introduced similar legislation, namely Spain, Iceland, France, Italy, the Netherlands, and Germany. Partially driven by these

regulations the proportion of women on the boards of the largest publicly listed companies across the EU-28 Member States rose significantly, reaching 23.3% in 2016, compared to just 9% in 2003 (Yu & Madison, 2021).

In line with these efforts, the EU has also sought to promote gender equity through regulatory measures. Notably, in 2012, the European Commission (EC) proposed a directive setting a minimum of 40% representation of females among non-executive directors in listed companies by 2020, and in state-owned enterprises until 2018 (EC, 2012). These efforts align with the EU's broader commitment to eliminate gender disparities and foster equality across its activities, as supported by Article 8 of the Treaty on the Functioning of the European Union (TFEU).

Building on the EU's regulatory initiatives, Portugal took significant steps to align with the broader European push for gender equality in corporate governance. On the 1st of August 2017, it was published in *Diário da República* Law No. 62/2017 that established that the proportion of men and women serving on the managerial and supervisory bodies of each Public Limited Companies (PLC) should not be lower than 20% as from the first elective general meeting after the 1st of January 2018, and 33.3% as from the first elective general meeting after the 1st of January 202 (Diário da República, 2017). However, as of 16th of February 2017, among publicly listed companies in Portugal, only one - *Galp Energia* - had a woman as head of the board, while 13 companies had no women on their boards. To comply with the new legal requirements, the 46 listed companies would need to appoint a total of 121 women to their management and supervisory bodies, with 45 appointments required by early 2018 and an additional 76 by 2020 (Público, 2017).

Seven years after the enforcement of Law No. 62/2017, there is an opportunity to evaluate the financial impact of the mandatory increase in female representation on corporate boards. In this context, the present study aims to contribute to the assessment of the impact of gender quotas on the financial performance of the 38 publicly listed Portuguese companies eligible for this analysis.

By focusing on the Portuguese context, this study addresses a quantitative gap by applying the Difference-in-Differences (DiD) methodology, a widely used and

recognised approach to investigate the impact of the gender quotas on firm financial performance. This is relevant, as relying on general perspectives is insufficient, and the effects of gender quotas are strongly influenced by country-specific factors, such as the availability of qualified women, legislative strictness, and timeframes (short-term vs. long-term effects). By comparing outcomes before and after the intervention in both *Treated* and *Control* groups, the DiD method offers a clear evaluation of causal effects (Roberts & Whited, 2013), and will try to answer the research question: *Do this mandatory gender quotas affected firms' financial performance?*

For this purpose, the study is structured into different chapters. Chapter 1, *Introduction*, that outlines the context, motivation, and objectives of the study. Chapter 2, *Literature Review*, that covers the theoretical background, mainly the historical context of gender equality in Portugal, management theories on board composition, and empirical findings from other countries. Chapter 3, *Sample & Methodology*, that details the sample selection and testing, variables, model specification, and descriptive analysis. Chapter 4, *Results*, that analyses the results from the applied model and check model robustness. And finally, Chapter 5, *Discussion*, that provides a conclusion of the findings, managerial and theoretical implications, highlights the limitations of the study, and potential directions for future research.

2. LITERATURE REVIEW

2.1. Portuguese Gender Diversity Framework

Gender equality, particularly in the labour market, is a fundamental value embedded in the Portuguese constitutional framework. Article 9(h) of the Portuguese Constitution identifies the promotion of equality between women and men as a core responsibility of the State. This institutional commitment to improve female representation has been reflected in the national policy, although efforts prior to 2017 relied primarily on non-binding recommendations and voluntary initiatives.

Looking specifically at the landscape of the listed companies in Portugal, in March 2012, the Resolution of the Council of Ministers No. 19/2012 was adopted, recommending the implementation of gender equality measures in corporate governance. This resolution encouraged listed companies to adopt equality plans and self-regulatory measures aimed at achieving balanced gender representation on their boards.

In December 2013, the Council of Ministers Resolution No. 103/2013 approved the V National Plan for Gender Equality, Citizenship, and Non-Discrimination, encouraging private companies to adopt gender equality plans. Later, in July 2014, Law No. 46/2014 required board selection policies to promote diversity, aiming to increase female representation. This legal requirement represented a transition from voluntary steps to mandatory obligations, yet it did not establish precise quotas, allowing companies significant freedom in implementation.

And a further step was taken in March 2015 with the adoption of Resolution No. 11-A/2015, which introduced measures to promote gender balance on corporate boards, setting a target of 30% representation for the underrepresented gender by the end of 2018, presupposing a voluntary commitment by the covered companies to pursue this objective.

Despite these ongoing efforts to promote gender equality, progress between 2013 and 2017 remained slow, as illustrated in Figure 1, which draws on data obtained from the European Institute for Gender Equality.

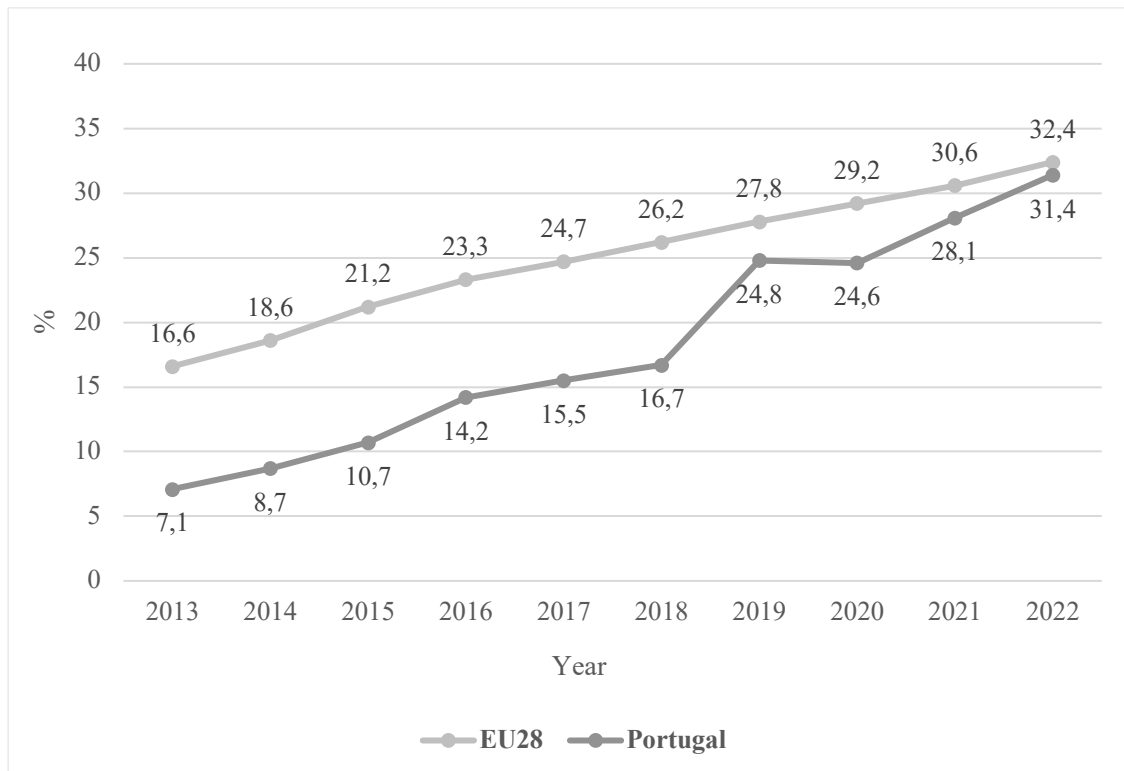


FIGURE 1 – Women among members of boards of largest listed companies (%)

From 2013 to 2017, the share of women on the boards of the largest listed companies rose from 7.1% to 15.5%, reflecting an average annual increase of just over 2 percentage points. Despite this upward trend, Portugal consistently lagged the EU-28, with an average gap of approximately 9.6 percentage points over the period. By 2017, women still accounted for just 15.5% of board members in these companies, far below the 24.7% average in the EU. This data shows that, as of 2017, a significant gender imbalance persisted in corporate leadership positions, pointing to the need for more robust measures, to address the limited impact of earlier initiatives based on soft law and voluntary self-regulation (Casaca, 2017).

Under this context, and consistent with its political programme, the XXI Constitutional Government committed to promoting gender balance in the political and economic spheres of activity. It set a target of at least 33% of gender representation for board-level positions in listed companies, state-owned enterprises, and public institutions.

Recognising that the existing legislative framework was inadequate to fulfil this objective and supported by statistical evidence of the persistent underrepresentation of women in senior corporate roles, the Government determined that previous non-binding

positive measures had failed to yield the intended structural change. As a result, the government submitted Proposal for Law No. 52/XIII to the Assembly of the Republic, introducing binding rules to ensure balanced representation of women and men on the boards of public sector enterprises and listed companies.

The proposal was approved on the 23rd of June 2017, leading to the enactment of Law No. 62/2017, that introduced the mandatory requirement for balanced gender representation on the boards of directors and supervisory bodies of publicly listed and public sector companies. Specifically, for publicly listed companies, the law required that *“The proportion of individuals of each gender newly appointed to each management and supervisory body of each company must not be less than 20% as of the first elective general meeting after January 1, 2018, and 33.3% as of the first elective general meeting after January 1, 2020”*.

This law reflected the principles of Article 157 of the Treaty on the Functioning of the European Union (TFEU), which allows the adoption of positive measures to enhance women's representation and autonomy, thereby acknowledging that such initiatives are congruent with the principle of equal treatment. While also aligned with the objectives of the *Women on Boards Directive*, initially proposed by the European Commission in 2012 but only adopted in 2022 after facing nearly a decade of obstruction within the EU Council due to lack of consensus. This directive emphasises that mandatory measures were effective in achieving gender balance on corporate boards more so than voluntary initiatives.

The adoption of this law therefore sets a clear benchmark to evaluate the financial impact of gender quotas on corporate governance, creating a timeframe for the comparative analysis.

2.2. Gender Diversity in Boards of Directors

The relationship between corporate governance and firm performance has been thoroughly debated, and investors recognise boards of directors as the highest legal authority within a company, playing an important role in shaping its success (Demb & Neubauer, 1992). Particularly, the composition of a board of directors is seen as essential to its performance, with diversity often recognised as an important factor (Mannix & Neale, 2005). Among various types of diversity, such as age, nationality, and race, gender

diversity in leadership roles has been the most extensively studied, particularly regarding its potential to increase financial outcomes (Pletzer et al., 2015; Post & Byron, 2015).

The majority of this research is based on empirical analysis, drawing its theoretical foundations primarily from management literature, examined at three dimensions: the individual, the board and the firm (Reddy & Jadhav, 2019). Understanding these existing theories is a starting point to explore the opportunities and challenges that may arise from the implementation of gender quotas.

The premise is that the board of directors is expected to provide shareholders of large companies with reliable information, ensuring that that managers are effectively overseen. Agency theory, that investigates the relationship between personal incentives and self-interest, argues that much of corporate activity is shaped by individual incentives. As so, it suggests that when managers exert control over the board, they may strategically appoint directors whose interests align their own personal gains, rather with the long-term interests of the firm (Jensen et al., 1976). This perspective is rooted in organisational economics, emphasising how the separation of ownership and control in modern corporations creates agency problems (Fama, 1980). To mitigate managerial self-interest, agency theory advocates for governance structures like independent boards, performance-linked executive compensation, and external market oversight to safeguard shareholder interests and reduce conflicts (Fama & Jensen, 1998).

In this context, gender quotas may introduce external accountability for managers, as female directors are generally more likely to be independent than their male counterparts, more tougher monitors of firm executives, and more frequently participate in monitoring committees (Adams & Ferreira, 2009). However existing male board members, with the aim to preserve their influence, could appoint woman who are supportive of the existing management, thereby not challenging the status quo. In this scenario a gender quota would not necessarily prevent them from appointing women aligned with the management's interests (Comi et al., 2019).

Stewardship theory argues that managers, unlike the self-interested agents in agency theory, act as stewards driven by intrinsic motivation to serve the organisation's and stakeholders' best interests (Davis et al., 1997). This approach, grounded in sociological and psychological theories, offers a more comprehensive understanding of human

behaviour in organisational settings. Rather than viewing individuals as opportunistic, solely profit-driven, and unreliable, individuals are recognised as having higher-order needs, such as self-esteem and self-actualisation (Maslow, 1954), growth (Alderfer, 1972), as well as achievement and affiliation (McClelland, 1975).

Consequently, it suggests that managers are more likely to cooperate with the principal, aligning their objectives and promoting a long-term, trust-based governance structure, in contrast to the agency theory's preference for external monitoring mechanisms (Davis et al., 1997). This framework aligns with research on female leadership, that state that women are more likely to adopt transformational leadership styles, especially collaboration, communication, and personnel development (Eagly & Carli, 2003). In this context, gender quotas may not only promote diversity but also enhance corporate governance by reinforcing leadership behaviours that align with stewardship principles, ultimately contributing to sustainable firm performance (Galbreath, 2011).

Building on this perspective, the resource dependence theory further illustrates the strategic value of heterogeneous leadership, arguing that board members act as providers of resources, such as strategic guidance and expertise (Hillman & Dalziel, 2003). And a board composed of individuals with various backgrounds can offer a broad range of networks, expertise, experiences, and viewpoints into the boardroom, which may help mitigate operational uncertainty, strength the company image in the market, and ultimately strength overall performance (Pfeffer & Salancik, 1978).

In this context, imposing quotas for board members can improve company performance by increasing access to a more diverse pool of talent. This is particularly true in environments where gender bias influences hiring decisions, leading to the undervaluation of women's abilities. By requiring companies to appoint women to the board, they may benefit from better managerial skills, ultimately enhance corporate decision-making and increasing firm value (Comi et al., 2019a). However, a lack of qualified women may lead to underqualified candidates filling board roles and that qualified women may occupy multiple seats on boards, known as "golden skirts". This phenomenon arises from the temporal constraint on the availability of qualified and skilled women to fill these positions (Seierstad & Opsahl, 2011).

As outlined, theoretical frameworks provide different views on the potential impact of gender quotas, yet this does not suggest that only one perspective is valid. The actual outcomes are influenced by different contextual factors, which will impact their potential success, as shown through empirical evidence in the next section.

2.3. Evidence on Impact of Gender Quotas

Qualitative research on the impact of gender quotas on corporate boards presents a complex picture, with findings ranging from positive to negative or mixed outcomes. For comparability with the present study, the focus will be on research that also applied the Differences-in-Differences (DiD) methodology.

Following this framework, Ahern & Dittmar (2012) found that gender quotas in Norway resulted in a reduction of Tobin's Q, a proxy for firm valuation. The result came from demand for qualified female candidates outstripping supply when the law was applied. These findings support the previously discussed resource dependence theory, that states that sudden quota changes can cause inefficiencies due to immediate compliance demands.

Matsa et al. (2013) provided a more comprehensive perspective on the Norwegian case, as they found that while the short-term financial impact of quotas on corporate boards was negative, with decreased profitability due to higher labour costs and fewer layoffs, the long-term effects were more positive. Companies with higher female representation maintained stable employment levels, which improved long-term stability and innovation. Furthermore, female-led companies showed stronger commitment to corporate social responsibility (Post et al., 2011), suggesting that women in leadership contribute not only to ethical decision-making but also to financial performance over time. Thus, although immediate profits might decline, the overall financial performance and sustainability of firms could improve in the long run.

Yang et al. (2019) supported this trend as they also found that the Norwegian gender-balancing quota negatively impacted firm performance, particularly in accounting measures such as return on assets and operating income. However, the quota reduced both systematic and idiosyncratic risk, potentially contributing to the companies' long-term viability.

Unlike the previous findings, Dale-Olsen et al. (2013a) reported that the short-term impact on Norway, measured by ROA, was not significant. PLCs showed greater capital accumulation post-reform, though this was more likely due to the increased leverage or an improved equity-debt ratio rather than the quota itself. Nonetheless, the reform was seen as successful in promoting gender equality, with the authors suggesting it may have ongoing benefits for women's career prospects.

While focusing on the ROA of French companies, Ben Slama et al. (2019) reached additional conclusions, finding that board diversity improved performance in high-performing firms but led to decreased performance in lower-performing firms due to hiring costs. They also discovered that accounting performance peaked at 40% female representation on boards, aligning with French regulatory expectations, but financial performance could decline with higher gender diversity. In addition, phased imposition of gender quotas, as seen with the Cope-Zimmerman law, helped to ease the transition period for companies without disrupting board efficiency.

In a similar line, Comi et al. (2019) widened their analysis to include not only France, but also Italy, France, and Belgium, focusing on Labour Productivity, Total Factor Productivity (TFP), and ROA. They found that gender quotas had mixed effects: in Italy, quotas significantly increased productivity by 5-6%, while in France and Spain, the effects were either statistically insignificant or slightly negative. These differences in outcomes have been credited to legislative frameworks, with Spanish laws not having strong penalties and Italian laws being applicable to a small group of companies, allowing the increased presence of qualified women.

Magnanelli et al. (2020) examined the impact of female directors on the performance of Italian family-owned firms, using Tobin's Q. Their findings confirmed that gender diversity on boards positively affected firm performance, with the most significant impact observed in family firms. The introduction of mandatory gender quotas led to younger and more qualified boards, which contributed to better performance. Specifically, family firms benefited greater from female directors as they helped mitigating typical agency problems and strengthen governance structures.

A close examination of these studies reveals a significant heterogeneity in their approaches. Particularly their time periods, control groups, companies examined, and

outcome measures, with even the same metrics computed differently, which explains the variation in results. Additionally, a recurring factor for the negative outcomes was the replacement of older, experienced males with younger, less experienced females (Ahern & Dittmar, 2012; Matsa et al., 2013). This suggests that the short-term effects of quotas may not fully reflect their long-term impact, with the potential for different results as more data is gathered and longer time frames are analysed in future studies.

3. SAMPLE & METHODOLOGY

3.1. Sample

The sample for this study includes Portuguese companies listed on the stock exchange market, as they fell under the regulatory framework introduced by Law No. 62/2017. Within this universe, only those companies that were already listed at the time the legislation came into effect were considered, as these were the entities covered by the measure and, therefore, eligible for this study. This group is, then, designated as the *Treated Group*, as it was the subject to the intervention (introduction of gender quotas), and comprises 38 companies.

A *Control Group* was also selected, comprising an equal number of companies operating within the same industry (identified by the same NACE code) and matched to those with the closest business volume. The difference, regarding the *Treated Group*, stems from the fact that these companies are not publicly listed and, therefore, not subject to the intervention, acting as a comparative benchmark for the analysis. The composition of both the *Treated Group* and the *Control Group*, can be found in Table I.

TABLE I

SAMPLE ELEMENTS

Treated Group	Control Group
Altri, SGPS, S.A.	Unimadeiras - Produção, Comércio E Exploração Florestal, S.A.
Banco Comercial Português, S.A.	Banco Santander Totta, S.A.
Sport Lisboa E Benfica - Futebol, Sad	Vitória Sport Club – Futebol SAD
Cofina, SGPS, S.A.	Sociedade Vicra Desportiva, S.A.
Conduril - Engenharia, S.A.	Ferrostaal, Lda
Corticeira Amorim, Sgps, S.A.	Cork Supply Portugal, S.A.
CTT - Correios De Portugal, S.A.	DHL Express Portugal

EDP, S.A.	Endesa Energia S.A. – Sucursal Portugal
Estoril-Sol, SGPS, S.A.	Solverde
Futebol Clube Do Porto - Futebol, Sad	Marítimo Da Madeira - Futebol, Sad
Galp Energia, SGS, S.A.	Iberdrola Clientes Portugal, Lda
Glintt Global, S.A.	Noesis Portugal – Consultadoria Em Sistemas Informáticos, S.A.
Greenvolt - Energias Renováveis, S.A.	Atlantic Islands Electricity (Madeira)
Ibersol - SGPS, S.A.	Sistemas Mcdonald's Portugal, Lda
Imobiliária Construtora Grão-Pará, S.A.	Latur - Sociedade De Empreendimentos Turísticos e Hoteleiros, Lda
Impresa, SGPS, S.A.	Sport TV Portugal, S.A.
Jerónimo Martins - SGPS, S.A.	Auchan
Lisgráfica - Impressão E Artes Gráficas, S.A.	Fig - Indústrias Gráficas, S.A.
Litho Formas, S.A.	Papelmunde - Sociedade De Manufacturas Gráficas, Lda
Martifer - SGPS, S.A.	Metalgalva – Irmãos Silvas, S.A
Grupo Média Capital, SGPS, S.A.	Medialivre, S.A.
Mota - Engil, SGPS, S.A.	Afávias – Engenharia E Construções, S.A.
NOS, SGPS, S.A.	Vodafone Portugal - Comunicações
Novabase, SGPS, S.A.	Fujitsu Technology Solutions, Lda
Pharol - SGPS, S.A.	Sc - Sonae Capital Investments, Sgps, S.A.
Ramada - Investimentos E Indústria, S.A.	Apcl Invest, S.A.
Redes Energéticas Nacionais, Sgps, S.A.	Floene - Energias, S.A.
Sporting Clube De Braga - Futebol, Sad	Portimonense Futebol, SAD
Semapa, SGPS, S.A.	Grupo Visabeira, S.A

Sonae, SGPA, S.A.	El Corte Inglés - Grandes Armazéns, S.A.
Sonaecom - SGPS, S.A.	Globaleda - Telecomunicações E Sistemas De Informação, S.A.
Sonagi, SGPS, S.A.	Montoit 2 - Sociedade De Gestão Imobiliária, Lda
Sporting - Futebol, SAD	Boavista Futebol Clube - Futebol, SAD
Teixeira Duarte, S.A.	Domingos Da Silva Teixeira, S.A.
The Navigator Company, S.A.	Ds Smith Paper Viana, S.A.
Toyota Caetano Portugal, S.A.	Carclasse - Comércio De Automóveis, S.A.
Vista Alegre Atlantis, SGPS, S.A.	Ria Stone

Source: Own elaboration

To validate the Differences-in-Differences (DiD) model that will be applied in subsequent analysis, a linear regression was performed to test the Parallel Trends Assumption during the pre-intervention period (2013-2017), between these two sample groups. This step was essential to ensure that there were no significant differences in time trends between the *Treated* and *Control Groups* before the implementation of the gender quotas (Riveros-Gavilanes et al., 2023), and the results can be found in Chapter 4.

The analysis covers the period from 2013 to 2022, including five years before and five years after the implementation of the quotas. These quotas became applicable starting from the first elective general shareholders' meeting held after the 1st of January 2018 and were reinforced by stricter requirements for meetings held after the 1st of January 2020.

The dataset used for the regression analysis in Stata was compiled using data from the SABI Informa and ORBIS databases.

3.2. Variables

In this analysis, the financial indicators used to measure firm performance were Return on Assets (ROA) and Return on Equity (ROE), both accounting-based metrics

commonly used ratios in previous similar studies such as in Dale-Olsen et al. (2013) and Ben Slama et al. (2019). **ROA** is one of the dependent variables used to evaluate the intervention's impact as it is an indicator on how efficient the company uses its assets to generate earnings. ROA is defined as net income before tax divided by total assets, expressed as a percentage. Similarly, **ROE** is used as a dependent variable to measure profitability from the shareholders' equity perspective, providing an additional dimension of firm performance and enhancing the robustness of the analysis. ROE is defined as net income before tax divided by shareholders' equity, expressed as a percentage.

The independent variables, in this model, provide a framework for understanding both group-specific and time-specific effects. **TREAT** is a binary variable that differentiates the companies that are subject to the intervention (the implementation of gender quotas) and those that are not. **POST** is another binary variable, that indicates whether the observation falls within the post-intervention period, allowing the model to isolate the intervention itself. In addition, the model also includes **group fixed effects**, which account for time-invariant characteristics that are unique to each group. As **time fixed effects**, that capture year-specific factors that may affect all companies, such as economic conditions, or industry-wide trends.

Additionally, control variables were included to ensure the robustness of the model by isolating the effects of the intervention, controlling for external factors that could potentially distort the relationship between the intervention and the dependent variable. These control variables include **Size** (number of employees), **Age** (years since firm founding), **Total Assets** (natural logarithm of total assets), **Liquidity** (difference between current assets and stock, divided by current liabilities) **Solvency** (total shareholders' funds divided by total assets), and **Indebtedness** (natural logarithm of total shareholders' funds and liabilities minus the shareholders' equity, divided by the total shareholders' funds and liabilities), as previous studies have identified these variables as important determinants of financial performance (Ahern & Dittmar, 2011; Dale-Olsen et al., 2013). Total Assets and Indebtedness were transformed into their natural logarithmic form to reduce the influence of outliers, improving the statistical robustness and interpretability of the model. Table II provides a summary of the definitions for these described variables.

TABLE II
VARIABLE DEFINITIONS

Dependent Variable	
Return On Assets (ROA)	Net income before tax divided by total assets, expressed as a percentage.
Return On Equity (ROE)	Net income before tax divided by shareholders' equity, expressed as a percentage.
Independent Variables	
<i>TREAT</i>	Binary variable that equals one if the company is in the <i>Treated</i> group and zero if the company is in the <i>Control</i> group.
<i>POST</i>	Binary variable that equals one if the observation is in the post-intervention period (2018-2022) and zero if the observation is in the pre-intervention period (2013-2017).
α_g	Group fixed effects, capturing time-invariant characteristics of <i>Treated</i> and <i>Control</i> groups.
α_t	Time fixed effects, accounting for factors affecting all companies in a specific year.
Control Variables	
Size	Number of the employees of the firm.
Age	Number of years since the firm was founded.
Total Assets	The natural logarithm of total assets.
Liquidity	The difference between current assets and stock, divided by current liabilities, expressed as a ratio.
Solvency	The total shareholders' funds divided by total assets, expressed as a ratio.
Indebtedness	The natural logarithm of total shareholders' funds and liabilities minus the shareholders' equity, divided by the total shareholders' funds and liabilities, expressed as a ratio.

Source: Own elaboration

3.3. Parallel Trends Assumption

The Parallel Trends Assumption is a fundamental underlying assumption of the DiD model as it states that the *Treated* and *Control Group* would have had parallel outcome trends in the absence of the policy change. Consequently, any divergence in trends between the *Treated* and *Control* groups observed after the policy implementation is attributed to the effect of the policy change (Wang et al., 2024).

For this analysis, the study period encompasses the years 2013 to 2017, which is designated as the pre-intervention period. During this time frame, the regression model will assess the outcomes (ROA and ROE) of the two distinct samples, the *Treated* and the *Control Group*.

3.3.1. Model

The linear regression model used for testing the Parallel Trends Assumption, for each dependent variable, follows the specification (Angrist & Pischke, 2008; Huntington-Klein, 2021):

$$Y_{it} = \beta_0 + \beta_1 YEAR_t + \beta_2 TREAT_i + \beta_3 (YEAR_t \times TREAT_i) + \epsilon_{it}$$

Where $YEAR_t$ captures the yearly variation over the pre-intervention period, from 2013 to 2017, $TREAT_i$ is a binary indicator for the intervention status, that equals to 1 if the company is in the *Treated Group* and 0 if in the *Control Group*, and ϵ_{it} is the error term. The interaction term $YEAR_t \times TREAT_i$ is the interaction term capturing any differential pre-treatment trend between the *Treated* and *Control* groups. Thus, the coefficient of interest is β_3 , as it indicates whether there is a statistically significant difference in trends between the *Treated* and *Control* groups prior to the intervention.

If the interaction term β_3 is found not significant, it suggests that both groups followed similar trends before intervention, enabling valid causal analysis, as it follows:

- $H_0: \beta_3 = 0$ (The trends are parallel)
- $H_1: \beta_3 \neq 0$ (The trends are not parallel)

3.3.2. Regression Results

TABLE III

PARALLEL TRENDS ASSUMPTION RESULTS

Variable	Coefficient (β_3)	p-value
ROA		
2014	-7.39	0.44
2015	-14.38	0.13
2016	-10.33	0.28
2017	-15.22	0.11
ROE		
2014	6.94	0.89
2015	18.26	0.71
2016	102.89	0.06
2017	37.85	0.43

Source: Own elaboration using data computed in Stata.

Table III shows the interaction coefficients β_3 for each pre-treatment year, that measure the differences in trends between the *Treated* and the *Control* group, as well as their corresponding p-values, for the outcome variables ROA and ROE. The analysis is carried out year by year for the pre-intervention period, with 2013 excluded as the reference year from the regression specification.

Overall, the results confirm the Parallel Trends Assumption, for both ROA and ROE, as the lack of significance means we fail to reject the null hypothesis, indicating that the *Treated* and *Control* groups followed similar pre-intervention trends. For ROA, none of the interaction terms are statistically significant at a 5% level, showing that the *Treated* and *Control* firms had similar trends before the intervention. Similarly, for ROE,

all interaction terms are non-significant at a 5% level, suggesting no strong evidence of differential pre-treatment dynamics. The only year that may raise some concern is 2016, where the coefficient p-value is 0.06, slightly above the 5% significance level. This might point to a minor deviation that should be taken into consideration when interpreting the results, even though it does not formally violate the Parallel Trends Assumption.

These findings offer solid empirical evidence validating the use of a DiD methodology in the following stages of the analysis, ensuring that the estimated effects can be more confidently attributed to the intervention under study.

3.4. Differences-in-Differences Model

As in some previous studies (e.g. Matsa & Miller, 2013 and Dale-Olsen et al., 2013), regarding the implementation of gender quotas in other counties, this study implements the Differences-in-Differences (DiD) model. The DiD approach is a research design for estimating causal effects, most heavily used to estimate the effects of policy changes or interventions in empirical microeconomics (Lechner, 2010). This methodology helps to isolate the impact of policy changes or interventions by comparing the differences in outcomes over time between a treated group and a control group. It is also particularly valuable in accounting for unobserved, time-invariant heterogeneity between groups, improving the credibility of causal inference (Angrist & Pischke, 2008). These strengths make DiD a robust and reliable methodology for evaluating the impact of policy interventions, such as mandatory gender quotas.

To estimate the DiD model, the commonly used regression framework will be applied (Wang et al., 2024):

$$\mathbf{Y}_{g,t} = \kappa + \alpha_g + \alpha_t + \lambda TREAT_g + \beta POST_t + \delta(TREAT_g \times POST_t) + \gamma X_{g,t} + \varepsilon_{g,t}$$

Where $\mathbf{Y}_{g,t}$ represents the outcome variables, ROA and ROE, for group g at time t , α_g represents group fixed effects, time-invariant characteristics of *Treated* and *Control* groups, and α_t represents time fixed effects, which account for factors that affect all firms each year. $TREAT_g$ is a binary indicator for whether an observation is in the *Treated* sample, $POST_t$ is a binary variable indicating wheter the observation falls within the

post-intervention period (after the implementation of gender quotas), and $TREAT_g * POST_t$ is an interaction term capturing the differential impact of the quotas on the *Treated* samples during post-intervention period. $\gamma X_{g,t}$ represents a vector of control variables that account for other factors potentially affecting the outcome such as Size, Age, Total Assets, Liquidity, Solvency, and Indebtedness, and $\epsilon_{g,t}$ is the regression residuals.

Furthermore, the regression analysis will be conducted using a panel data model because it allows capturing both the cross-sectional and time-series variations in the data, with Random Effects (RE), after conducting a Hausman test to determine the most suitable model for this study. The results of the Hausman test can be found in the Appendix, Table I.

3.4.1. Descriptives

TABLE IV

DESCRIPTIVE STATISTICS OF THE TREATED GROUP

Variable	Mean	Std. Dev.	Min	Max
Treated Group				
Return on Assets	2.89	24.53	-291.18	159.95
Return on Equity	10.20	58.93	-488.98	554.24
Size	471.05	1813.19	1	11217
Age	39.04	37.15	4	230
Total Assets	19.67	1.75	14.65	24.12
Liquidity	1.19	1.70	0.009	17.29
Solvency	37.13	25.45	-80.43	97.27
Indebtedness	3.51	1.27	-2.09	6.22

Source: Own elaboration using data computed in Stata.

TABLE V
DESCRIPTIVE STATISTICS OF THE CONTROL GROUP

Variable	Mean	Std. Dev.	Min	Max
Control Group				
Return on Assets	3.19	19.95	-194.41	117.87
Return on Equity	-3.37	229.83	-2470.60	689.51
Size	629.71	1387.59	1	8756
Age	25.74	14.00	1	77
Total Assets	85.44	1.82	12.07	21.29
Liquidity	17.82	3.66	0.02	24.35
Solvency	4.86	26.27	0.12	97.90
Indebtedness	4.01	0.83	0.41	8.14

Source: Own elaboration using data computed in Stata.

Tables IV and V present a statistical overview of the financial and firm-specific variables, for both *Treated* and *Control Group*, respectively. This statistical analysis helps to understand the similarity between groups before the intervention and supports the accurate attribution of observed effects to the intervention, as previously verified by the Parallel Trends Assumption.

The performance results from the *Treated Group* reveal an average ROA of 2.89, slightly lower than the 3.19 of the *Control Group*, with both groups showing high variability in profitability, reflected in standard deviations of 24.53 and 19.95. The *Treated Group* presents higher average ROE of 10.20 compared to the *Control Group* value of -3.37, but both groups show a wide standard deviation of 58.93 and 229.83 which indicates extreme outliers mostly in the *Control Group*. The necessity of robustness checks is emphasised by the minimum negative values, which draw attention to performance heterogeneity.

Firm size is higher on average in the *Control Group*, with a mean value of 629.71 compared to 471.05 in the *Treated Group*. The *Treated Group* shows greater dispersion, with a standard deviation of 1813.19 compared to 1387.59 for the *Control Group*,

suggesting a skewed distribution likely influenced by a small number of very large companies, even though the *Control Group* presents a higher maximum value.

With an average age of 39.04 years, firms in the *Treated Group* are often far older than those in the *Control Group*, which average an age of 25.74 years. The higher standard deviation among the *Treated Group*, 37.15 years as opposed to 14 years, supports this distribution. The fact that younger companies frequently lack the maturity, the operational stability, and the regulatory compliance necessary for listing on the stock exchange market may help to explain this trend.

Total assets, expressed in logarithmic form to allow a normalised comparison, average 85.44 in the *Control Group* and 19.67 in the *Treated Group*. Although the standard deviation is similar, at 1.82 for *Control* firms and 1.75 for treated firms, these figures suggest that, on average, firms in the *Control* group are larger in terms of asset base.

When it comes to liquidity the *Control Group* have a significantly higher average liquidity ratio of 17.82 compared to the 1.19, as well as a higher standard deviation of 3.66 compared to the 1.70, indicating that firms in the *Control Group* have more accessible short-term resources to meet liabilities. This may reflect more prudent short-term financial management of the non-listed companies.

The average solvency rate for *Treated* companies stands at 37.13 which surpasses the *Control* group's value of 4.86 thus showing that non-listed firms typically require reduced debt financing support. The negative minimum value of -80.43 in the *Treated Group* reveals the existence of financially vulnerable organisations.

To level out extreme numbers, indebtedness is also expressed in logarithmic form. The *Control Group* has a slightly higher average of 4.01, with a standard deviation of 0.83 compared to 1.27 in the *Treated Group*, indicating a more uniform capital structure likely driven by market and regulatory factors.

Among these variables, the profitability (ROA and ROE) and the Indebtedness are relatively more similar across groups in terms of average values but have higher dispersion, while Size, Age, Total Assets, Liquidity, and Solvency shows some differences, reflecting different structural profiles between the companies. To account for heterogeneity and possible data limitations, the analysis will use a robust methodological approach to ensure the reliability and validity of the results.

4. RESULTS

4.1. Differences-in-Differences Results

TABLE VI

RESULTS OF THE DIFF-IN-DIFF ESTIMATIONS WITH RANDOM EFFECTS

Variable	ROA	ROE
POST	-0.338 (5.329)	-52.602 (48.170)
POST × TREATED	6.226* (3.590)	60.888* (32.319)
Size	-0.00056 (0.00078)	-0.00162 (0.00484)
Age	0.083* (0.045)	0.120 (0.284)
Total Assets	0.792 (0.773)	9.729* (5.028)
Liquidity	-2.323*** (0.751)	-2.827 (6.125)
Solvency	0.120** (0.051)	0.815** (0.374)
Indebtedness	2.971** (1.505)	12.102 (10.810)
Observations	492	492
R-squared (within)	0.080	0.043

Source: Own elaboration using data computed in Stata.

Pre-quota period: 2013 - 2017; Post-quota period: 2018 - 2022

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

The estimation results presented in Table VI stem from the Differences-in-Differences (DiD) model outlined in Chapter 3.4. focusing on two primary financial performance metrics: ROA and ROE.

The main coefficient of interest is the interaction term $POST \times TREATED$, that represents the impact of the gender quota policy on *Treated* firms in the post-intervention period. At a 10% significance level, both ROA and ROE show a positive and statistically significant coefficient. This then suggest that, as compared to the *Control* group, firms exposed to the quota system improved their financial performance after the policy was introduced. The magnitude of the coefficients also suggests a potentially considerable economic impact, particularly in the case of ROE (coefficient of 60.888). Although the results are only significant at the 10% level, this nonetheless implies a 90% confidence that the observed effect is not attributable to random variation. While this threshold is less stringent than the 5% and 1% levels, it still suggests a statistically meaningful association that merits consideration.

These findings are consistent with some of the research analysed in the literature review, Chapter 2.3, which applied the Differences-in-Differences methodology and noted positive results of gender quota policies on business performance. Matsa et al. (2013) noted improved stability in the long run, Post et al. (2011) discussed enhanced corporate social responsibility alongside stronger financial results, while Magnanelli et al. (2020) also documented better governance and financial results among family firms. The positive and economically meaningful coefficients in this study, particularly for ROE, support this trend.

Both the theoretical framework, which was previously discussed in Chapter 2.2, and the Portuguese demographic setting must be considered to completely comprehend these findings. Theories such as agency theory, which emphasises oversight, stewardship theory, which highlights collaborative leadership, and resource dependence theory, which views board diversity as a strategic asset, offer a useful lens through which to interpret the findings. In parallel, demographic data from PORDATA (2018) and INE (2018), analysing the 2018 talent pool, same year as the gender quota law came into effect, reveal that 36% of Portuguese women aged 25 to 64 held a university degree, compared to 26% of men. This gap is even more pronounced within the 25 to 34 age group, where 44% of

women have obtained a university qualification compared to 26% of their male counterparts. Such a pool of well-qualified female candidates likely eased the implementation of the quota law by providing a sufficient supply of qualified women for board positions, suggesting it did not constrain merit-based selection.

Looking also at firm-level characteristics, several covariates were included in the analysis to control for heterogeneity across firms. The estimation results in Table VI reveal no significant correlation between firm size and profitability metrics, revealing that size, as measured, does not critically influence profitability when accounting for other factors. Conversely, a positive relationship is observed between firm age and ROA at the 10% significance level, implying that older firms may leverage their operational experience and resource management effectively. This trend, however, is not mirrored in ROE, as no significance is found. Total assets display a positive and statistically significant relationship with ROE, implying that asset accumulation contributes meaningfully to equity returns. Liquidity, by contrast, shows a negative association with ROA at the 1% significance level, possibly reflecting that firms with excess liquid resources may be allocating capital less efficiently. This effect is not statistically significant for ROE. Significant at the 5% level, solvency has a positive correlation with both ROA and ROE, supporting the idea that companies with sound financial standing typically perform better. Additionally, at 5%, indebtedness has a positive and significant relationship with ROA, indicating that leverage can improve asset use.

4.2. Robustness Test

Although the Hausman test, conducted in Chapter 3.4, revealed that a Random Effects (RE) model was more appropriate, a Fixed Effects (FE) model was also estimated as a robustness check. The FE specification accounts for unobserved, time-invariant heterogeneity across firms, offering an additional layer of validation for the consistency of the results. This approach is supported by authors such as Greene (2020), that advocate for the use of both models, particularly when analysing panel data, to ensure that findings are not sensitive to model specification.

TABLE VII

RESULTS OF THE DIFF-IN-DIFF ESTIMATIONS WITH FIXED EFFECTS

Variable	ROA	ROE
POST	-43.165 (31.461)	230.021 (290.426)
POST × TREATED	6.141* (3.840)	36.143 (35.447)
Size	-0.0010 (0.0054)	-0.0948 (0.0497)
Age	5.115 (3.655)	-30.096 (33.742)
Total Assets	1.699 (2.678)	13.115 (24.722)
Liquidity	-2.768*** (0.860)	6.222 (7.938)
Solvency	0.195*** (0.073)	0.909 (0.676)
Indebtedness	8.074*** (2.408)	2.537 (22.225)
Observations	492	492
R-squared (within)	0.090	0.056

Source: Own elaboration using data computed in Stata.

Pre-quota period: 2013 - 2017; Post-quota period: 2018 - 2022

Robust standard errors in parentheses.

*** p<0.01, ** p<0.05, * p<0.1

Table VII presents the results of the DiD estimations using a FE specification for both ROA and ROE, and there were found a few similarities and differences between this model and the one that was previously estimated using RE.

The coefficient on the interaction term $POST \times TREATED$ for ROA is still positive and statistically significant at the 10% level in both specifications, 6.141 in the FE model and 6.226 in the RE model, indicating a moderate increase in profitability for *Treated* firms after the quota implementation. In contrast, the interaction effect for ROE is greater in the RE model, with a value of 60.888 and significance at the 10% level, but it becomes less significant under the FE specification, where the coefficient drops to 36.143 and loses statistical significance.

In the ROA estimation, liquidity, solvency, and indebtedness are the control variables that demonstrated statistical significance. Among them, liquidity has a consistently significant negative effect of -2.768, reflecting that more liquid firms may exhibit lower asset returns. Both solvency and indebtedness have positive significant impacts with coefficients of 0.195 and 8.074, respectively, suggesting that firms having better solvency position together with higher leverage tend to have greater returns on assets. In the ROE model, these control variables are not significant, highlighting differences in the determinants of returns on equity versus assets.

Overall, the FE estimations confirm the positive effect on ROA, reinforcing one of the main findings. In contrast, the effect on ROE loses statistical significance, suggesting that shareholder returns may be more sensitive to unobserved, time-invariant firm-specific factors.

5. DISCUSSION

5.1. Conclusions

This dissertation examined the financial impact of Portugal's gender quota law (Law No. 62/2017) on listed companies, with the main research question: *Do this mandatory gender quotas affected firms' financial performance?* In doing so, the study aligns with the United Nations Sustainable Development Goals (SDGs), particularly SDG 5 (Gender Equality) by evaluating a policy aimed at increasing female representation, SDG 8 (Decent Work and Economic Growth) by analysing if the measure improved financial performance, and SDG 10 (Reduced Inequalities) by assessing the effects of a policy that is intended to address gender disparities.

Using a Differences-in-Differences approach and a *Control* group of non-listed firms, the study found a positive and statistically significant impact on ROA, while the effect on ROE was less robust and lost significance under stricter model specifications. The results reveal that gender quotas, as applied in Portugal, do not negatively impact firm performance and may positively influence it, consistent with previous explored literature and supported by demographic evidence of a strong pool of qualified female candidates. Although there is some ambiguity due to ROE's susceptibility to firm-specific factors, the consistently favourable impact on ROA supports the idea that board diversity can create measurable value.

Moreover, the Portuguese experience provides a valuable case study for other countries contemplating similar measures. The binding rules applied, with clear targets, show how mandatory gender quotas can overcome the limitations of voluntary initiatives, while the positive effect on firm performance addresses the concerns about possibility of financial drawbacks.

In summary, the evidence presented supports that equity and performance are not opposing goals but are instead mutually reinforcing. When diversity is embraced as a strength, it changes not just boards but also translates into measurable value.

5.2. Managerial and Theoretical Implications

This study offers important implications both for corporate managers and for academic theory on gender diversity and firm performance.

From a managerial perspective, the findings endorse the importance gender-diverse boards, aligning with the studies of Carter et al. (2003) and Adams & Ferreira (2009), who claim that diversity leads to more efficient boards through enhanced decision-making and oversight. Specially, the positive impact on ROA indicates that adherence to gender quotas can enhance financial performance. These findings motivate companies to foster inclusive leadership environments and to adopt proactive measures for gender diversity beyond mere compliance, such as setting internal gender targets, ensuring unbiased recruitment and promotion processes, and fostering mentorship and sponsorship initiatives to support female talent.

From a theoretical perspective, this study contributes to the academic literature on board diversity and corporate performance by providing causal evidence between gender diversity and improved firm outcomes, with the results being in line with some of the prior research (Matsa & Miller, 2013; Post & Byron, 2015). Utilising a Differences-in-Differences approach with Random and Fixed Effects, the research also reinforces the application of quasi-experimental techniques and tackles prevalent endogeneity issues, thereby improving the reliability of the findings. It further expands theoretical understanding by exploring how the effectiveness of board gender quotas might be influenced by the national context, particularly with the presence of a highly educated female workforce.

5.3. Limitations

Recognising the limitations of this study is equally important as the insights it provides, particularly in consideration of the scope and broader applicability of the findings.

One major limitation is the small sample size, which is mostly caused by the small number of companies listed on the Portuguese stock exchange which affects how representative the study's conclusions are. While this analysis provides insightful

information about this specific market, its conclusions cannot be directly applied to larger, more diverse stock exchanges or economies due to the small data pool.

Beyond that, since this study is based on short-term data, no inferences can be made about long-term effects. It is not established whether these impacts on corporate performance will hold in the future. Rather, once firms have adjusted to a new law by systematically investing in a pool of female talent and ensuring the supply of female talent does not fall short of increased demand, women board members may not be distinguishable from male board members regarding the expertise and networks they bring.

Furthermore, the specific context of this study restricts how broadly its findings can be applied. Specifically, it is unclear whether the results hold true for situations where companies appoint female directors voluntarily, free from quotas, or for other quota laws in other countries. The gender quota examined is unique, forcing many firms to quickly add several women board members, which differs from organic board diversification that happens gradually.

5.4. Future Research

Building on the limitations of this study, there are still a number of avenues for further research, especially to motivate future studies that focus on endogeneity issues when examining the impacts of gender diversity.

First, this analysis relies exclusively on accounting-based measures of performance, ROA and ROE, which reflect firms' internal financial outcomes. Nevertheless, earlier research (Bennouri et al., 2018) has indicated that the effects of gender quotas might vary when evaluated through market-oriented metrics like Tobin's Q or stock performance, since these reflect investor views and market anticipations. Integrating these metrics in upcoming studies would offer a more detailed insight into the impact of gender diversity on firm value. Furthermore, including sustainability performance indicators could improve the study by documenting how gender diversity may also affect a company's environmental, social, and governance (ESG) results, which are becoming more relevant to stakeholders (Bear et al., 2010).

Second, it would be beneficial to include in the analysis the State-Owned Enterprises in Portugal. Since the gender quota law also affects public companies in the State Business Sector, contrasting their results with those of listed firms might show if the impacts of quotas are uniform across ownership types or influenced by variations in market exposure, governance frameworks, or regulatory conditions.

Third, this research spans a decade, five years preceding and five years following the law's enactment, offering perspectives on short and medium-term impacts. Nonetheless, earlier studies (Matsa & Miller, 2011) indicate that the effects of gender quotas might decrease or change as time progresses. Future research could examine extended periods to determine if the effects noted remain, diminish, or intensify over time, thereby enhancing the overall evaluation of the law's lasting consequences.

Finally, to fully understand the positive results from the DiD regression, future research could explore their underlying causes through qualitative analysis, focusing on changes in board dynamics, decision-making efficiency, and stakeholder perceptions.

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APPENDIX

TABLE I

HAUSMAN TEST RESULTS

Variable	Chi2	p-value
ROA	17.32	0.24
ROE	10.21	0.75

Source: Own elaboration using data computed in Stata.