

The Impact of Board Diversity on Corporate Profitability and Performance. A Comparison between Greek and German Companies

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Abstract

As boards become more diverse, the discussion about how to leverage the benefits of this diversity is becoming increasingly important. Board diversity, particularly gender diversity, generally contributes to improved financial performance through improved decision-making, better governance, increased innovation, and improved access to capital. While the extent of this effect may vary depending on the specific company and industry context, the evidence supports the view that board diversity leads to stronger, more sustainable financial results. As diversity continues to be a strategic priority for both investors and businesses, the financial benefits of diverse boards are likely to become even more pronounced. In order to investigate the effect of BoD diversity on form profitability and performance, a dataset of 143 Greek and 1040 German enterprises was used. Correlation and panel analysis results showed that Greek companies have a higher percentage of women on their Boards of Directors (BoD), nearly three times more than their German counterparts, despite being smaller in size. Greek Board members are generally older and hold more master's degrees, indicating a preference for formal qualifications. A positive and significant relationship between women's presence on the BoD and profitability exists in German firms but not in Greek ones. Age differences among board members do not significantly relate to profitability or performance. Cultural diversity appears to enhance profitability in both regions, albeit with varied effects on performance. Overall, the findings highlight the contrasting dynamics of BoD effectiveness in Greek and German companies, particularly concerning gender representation and educational qualifications.

Keywords

Board Diversity, Corporate Profitability, Corporate Performance

1. Introduction

Diversity is one of the most important issues of modern society and the business world. The main function of the Boards of Directors (BoD) is to create value in their businesses and in the social environment, of which the companies they manage are part. Therefore, it is very important that Boards of Directors demonstrate resilience, expertise and adaptability due to current and potential future challenges (Hakovirta et al., 2020).

There is a widespread and well-documented perception (Onyekwere & Bangida, 2021; Perrault, 2015; Carter et al., 2010) that a Board of Directors that is characterized by a fairly significant degree of diversity in terms of its composition, is able to provide significant added value to the company it represents, to the shareholders to whom it is accountable, but also to the society to which it contributes. These trends have significant implications for board composition, size, and training. Companies need boards with managers who have diverse backgrounds, as well as the skills and experience to oversee the expanding list of priorities. They need to have more robust onboarding programs for these new directors, as well as ongoing board training programs to ensure that the entire board does not rely on the expertise of a few directors but responds effectively to the growing list of issues that boards are expected to address (Spierings, 2023). Therefore, there is a growing interest in both academia and the market world in the diversity of boards and its impact on corporate performance.

However, measuring, or more correctly, estimating the degree of diversity of the Board of Directors in such a way that it attributes to the full extent, but also isolates the effect of this diversity on business operations is a challenge. The reasons that make this estimation difficult are related to the nature of the variable that researchers are trying to synthesize that will represent diversity in the Board of Directors. Diversity can extend to a wide range of characteristics of Board members such as race, gender, age, nationality, family relationships and education (DePamphilis, 2019). Also, other widely studied characteristics of the members of the Board of Directors are those related to the institutional structure of the Board of Directors itself and concern the independence of its members (director's independence), but also the existence of CEO duality (Adams et al., 2015). The independence of the members of the Board of Directors as well as female representation are the characteristics of diversity that have been studied the most in the literature, while the need for a more in-depth study of behavioral characteristics of diversity is obvious. This need is based on the fact that diversity is inextricably linked to human behavior and therefore cannot be fully represented by the models and methodologies so far (pseudovariables for female representation, educational level, etc.).

We see the diversity in the BoD not as a trend dictated by popular culture but as an essential concept for companies to encapsulate basic needs of development such being in touch with market trends, developing sales and efficiently managing an enterprise. Therefore, this research attempts to investigate the effect of BoD

diversity on both profitability and performance of a company, being the result of successful marketing, sales, and company management in general, hoping it will contribute another useful result plus methodology to a widely investigated subject.

2. Literature Review

2.1. Board Duties and Responsibilities

The Principles of Corporate Governance, as issued by the Organization for Economic Co-operation and Development (OECD), set out the OECD's vision of the responsibilities of the board. The corporate governance framework should ensure the strategic direction of the company, the effective oversight of management and the accountability of the board to the company and shareholders. This means that the board is expected to provide both supervisory and advisory services. In terms of its supervisory role, the board is expected to supervise management and ensure that it acts in the interests of shareholders. Specifically, the board hires and dismisses the CEO, measures corporate performance, evaluates management's contribution to performance, and awards appropriate compensation. In addition, it oversees legal and regulatory compliance, including auditing, reporting requirements for publicly traded companies, and industry-specific regulations (Samans & Nelson, 2022).

In its advisory capacity, the board works with management on the strategic and operational direction of the company, with particular attention to risk management and the risk-return trade-off. For example, (Kirkpatrick, 2009) analyzes the impact of failures and weaknesses in corporate governance during the global financial crisis, including risk management systems and executive compensation. The study concludes that the financial crisis can be largely attributed to failures and weaknesses in corporate governance arrangements that did not serve their purpose of protecting against excessive risk in some financial services companies. In addition, accounting standards and regulatory requirements proved inadequate in some areas, while remuneration systems in some cases were not related to the company's strategy and risk-taking and its long-term interests. The remuneration of boards and senior management also remains a highly controversial issue in many OECD countries. Board members are selected on the basis of skills, expertise, and any prior experience in a relevant industry or function, with the aim of contributing to effective oversight and advisory services. In order to meet its obligations, the board of directors relies on the legal advice of an external partner and other relevant professionals, such as external auditors, executive recruitment firms, compensation consultants, investment bankers, and tax advisors (Kolsi, Muqattash, & Al-Hiyari, 2021).

2.2. Diversity and Profitability

A McKinsey & Company study on the gender gap in senior management was conducted in 2014 and updated in 2017 and 2019. The original study found that companies in the top quartile for gender diversity in their management teams were

15% more likely to experience above-average profitability than companies in the fourth quartile. Three years later, this rate had increased by +21%, and in 2019 it had increased by +25% (Dixon-Fyle et al., 2020). Furthermore, more diverse companies are more likely to outperform less diverse companies in terms of profitability. Regarding ethnic and cultural diversity, in 2019, top quartile companies outperformed the bottom quartile by 36% in profitability, up from 33% in 2017 and 35% in 2014 (Dixon-Fyle et al., 2020). Therefore, the probability of outperformance is still higher for ethnic diversity than for gender.

According to the same research, higher management ratios are positively correlated with the growth rate of enterprise value and free cash flow per share. In addition, high capitalization shows a clear and statistically significant correlation with financial indexes of prosperity. As a result, diverse and inclusive organizations outperform the competition on key human resource metrics. Companies with inclusive cultures have 22% lower turnover rates, 22% higher productivity scores, and 83% higher engagement scores (Dixon-Fyle et al., 2020). Similarly, Mateos y Lago et al. (2023) research for BlackRock found that companies that increase female representation in their workforces will see a 2.4% reduction in turnover rates in the same fiscal year, -3.6% in the next fiscal year, and -4.6% in two years. As the gender gap closes and greater diversity is achieved, companies' portfolio returns will increase (Mateos y Lago et al., 2023; Dixon-Fyle et al., 2020).

DDI research (Neal et al., 2023) highlights a slight decline in female leaders at top-performing companies, from 30% in 2020 to 29% in 2023. In particular, in low-performing companies, there was a greater decline in female leaders, from 27% to 23%. Also, high-potential teams continue to have lower representation of women and minorities than their general leadership population. In 2020, on average, 14% of high-potential leaders are women. In contrast, at companies with top financial performance, women make up an average of 21%. The relationship between female representation and company performance suggests that diversity on boards is crucial. Specifically, according to Mateos y Lago et al. (2023), companies with low workforce diversity have an average financial performance of 16%, while companies with a high representation of women in their workforce (60% on average) have delivered top performance over the past decade. In addition, investing in companies with a more female-friendly culture can help boost performance. The more balanced a company's workforce is, the higher its Return on Assets (ROA). Among companies from the same industry group and the same country, the portfolio of the top quintile outperformed the portfolio of the bottom quintile (as ranked based on female representation) by 1.6 percentage points on average over the period 2013-2022. Over the period 2012-2021, female representation increased slightly in the top quintile portfolio, from 42% to 50%, and in the bottom quintile portfolio, from 23% to 25%.

Diversity on UK company boards has been a major area of focus over the past decade. This attention stems from the growing recognition that diverse leadership teams can lead to better decision-making, enhance innovation and more accu-

rately reflect companies' shareholders and customer bases. In 2001, the proportion of women on the boards of FTSE 350 companies with at least 1 woman was 24% and with at least 3 women was 2%. In 2019, the proportions increased to 99% and 44%, respectively. Similarly, in 2001, the proportion of women on the boards of FTSE 100 companies with at least 1 woman was 40% and with at least 3 women was 2%. In 2019, the proportions increased to 100% and 50%, respectively. Finally, in 2001, the proportion of women on the boards of FTSE 250 companies with at least 1 woman was 17% and with at least 3 women was 2%. In 2019, the figures increased to 99% and 43%, respectively (Akimoto et al., 2021). Akimoto et al. (2021) indicate that female representation, which stood at 14% in 2005, increased steadily to 27% in 2015, before falling to 25% in 2016. Thus, over the past 10 years, there has been a shift towards the inclusion of women in UK boardrooms. Similarly, it is reported that FTSE 350 companies with at least one woman on their board have, on average, 3 to 5 percentage points higher EBITDA margins over the next four years. Gender-diverse boards are more effective than those without women and support the "critical mass" theory, which states that benefits accrue once a minority group reaches a certain level of representation. For FTSE 350 companies, achieving critical mass can lead to 21% higher share prices, while for smaller FTSE 250 companies, the mass can be as small as one person, meaning that almost all FTSE companies benefit from increasing gender diversity. At the same time, the estimated potential negative impact associated with increasing gender diversity suggests that the challenges associated with having a gender-diverse board may have short-term and long-term implications. Long-term negative effects on stock returns. All companies therefore benefit from having at least one woman on the board, but further appointments require a change in board culture to yield additional benefits (Akimoto et al., 2021).

Gender diversity on corporate boards is developing slowly and has become increasingly stagnant over time. Over the entire period from 2004 to 2022, the proportion of women on German executive and supervisory boards increased by an average of around two to three percentage points per year. While the share of female board members in Germany was 10% in 2004, above the Western European average of 8%, it is now 30.8%, below the Western European average of 35.5%. In comparison, in France, the proportion of women increased from 6% in 2004 to 45.3% in 2022 (Martel & Zottis, 2022). Secondly, gender inequality is decreasing faster on supervisory boards than on management boards in Germany. In most countries, the share of women on supervisory boards is significantly higher than on executive boards. In addition, in 2022, the share of female CFOs in Germany was 28.6%, 12 percentage points higher than the Western European average (Martel & Zottis, 2022).

In Japan, the share of women in senior and middle management positions in 2019 was only 14.5%. Looking at other G7 countries, the share is usually close to or above 30% (40.7% in the United States, 36.8% in the United Kingdom, 35.1% in Canada, 34.6% in France, 29.4% in Germany and 23.3% in Italy) (ILO, 2025).

This shows that Japan's 2025 targets are lagging even the current situation in most other G7 countries and may not be ambitious enough. Compared to the G7 and East Asia and the Pacific countries in terms of gender inequality, Japan ranks 120th (Mizuta, 2022). Furthermore, Mizuta (2022) argues that Japan has failed to achieve its most recent target of increasing the proportion of women in leadership positions in all sectors of society to at least 30% by 2020 (as set in 2003). This lack of progress shows the real difficulties Japan faces in expanding women's representation in leadership (Mizuta, 2022).

3. Methodology

3.1. Research Hypotheses

Following the methodology of Braendle et al. (2020), we investigated the following research hypotheses:

H1: The relationship between the presence of women on BoD and profitability is positive.

H2: The relationship between the presence of women on BoD and performance is positive.

H3: There is a significant relationship between age diversity on BoD members and profitability.

H4: There is a significant relationship between educational level of BoD members and profitability.

H5: Cultural diversity is positively related to firm profitability.

H6: Cultural diversity is positively related to firm performance.

3.2. Data

The original dataset consisted of Greek and German companies, based on data availability from 2013 to 2023 that are listed on the stock exchange. The source of this data was Datastream and the dataset contained observations for the years 2013 and 2023. No sampling technique was applied, thus all returned results from DataStream were included producing an unbalanced final dataset. Of the total of 18 variables included in the dataset, 5 describe companies' financial data (Net Profit, Assets, Equity, ROA and ROE), 5 describe BoD size and composition, 5 describe company details and 3 variables are used as control variables (Table 1).

Activity sector is described in Table 2 and shows 1040 enterprises with their headquarters in Germany and 143 enterprises with their headquarters in Greece were included in the analysis. In total, there were 16,640 entries for Germany and 2288 for Greece. The sector of activity with the highest occurrence rate in Germany was the financial sector employing 51.06% of the total entries. This was followed by industry activities with a percentage equal to 21.06% and IT activities with a percentage of 6.92%, while all other activities had a lower occurrence rate. Regarding Greek businesses, the highest percentage was observed in industry equal to 30.07%, followed by sales (N% = 16.78%), finance (N% = 11.19%), IT (N% = 9.79%) and real estate (N% = 6.99%).

Table 1. Name and description of data variables.

N/A	Variable Name	Description
Business		
1	company	Company name
2	year	Year of observation
3	country	Country of activity
4	fsize	Company Size
5	industry	Industry sector
Board of Directors		
6	boardsize	BoD size (sum of members)
7	wboard	Women on BoD
8	wperc	Percentage of women on BoD
9	age	Individual age of Board Members
10	edu	Educational level of Board members
Profitability		
11	profits	Net Profit
12	assets	Assets
13	equity	Own funds
14	roa	ROA - Efficiency
15	roe	ROE - Profitability
Control variables		
16	lev	Leverage
17	rdintensity	R&D intensity
18	R&D	Internationalization

Table 2. Sector of activity of the examined companies by country.

	Germany			Greece		
	N	N*	N%	N	N*	N%
Administration	256	16	1.54	64	4	2.8
Industry	3.504	219	21.06	688	43	30.07
Agriculture	32	2	0.19	32	2	1.4
Real Estate	512	32	3.08	160	10	6.99
Mining	64	4	0.38	32	2	1.4
Education	16	1	0.1	---	---	---
Energy	256	16	1.54	64	4	2.8

Continued

Scientific Research	832	52	5	48	3	2.1
HORECA - Catering	---	---	---	16	1	0.7
IT	1.152	72	6.92	224	14	9.79
Construction	80	5	0.48	112	7	4.9
Sales	704	44	4.23	384	24	16.78
Transport	224	14	1.35	112	7	4.9
Health	160	10	0.96	32	2	1.4
Utilities	48	3	0.29	16	1	0.7
Financial	8.496	531	51.06	256	16	11.19
Entertainment	144	9	0.87	16	1	0.7
Other activities	160	10	0.96	32	2	1.4
Total	16.640	1.040	100	2.288	143	100

*Unique entries.

3.3. Methods

Although the first two hypotheses are common in this kind of research, we added age and educational level as part of board diversity. As regards to age, it is a measure of diversity which is used less frequently compared to inclusion of women to BoD and show mixed results which include positive (innovation, resources) and negative (conflict, differing values) effects, or no significant link, suggesting factors like industry and board dynamics matter more than age itself; however, many studies find a blend of younger and older directors can offer strategic benefits like new ideas and deep experience, though potential communication clashes exist (Gardiner, 2024; Talavera, Yin, & Zhang, 2018).

Educational level is even less frequently used either focusing on CEO (Nguyen & Nguyen, 2024) or specializing on their studies i.e. level, field and place of education (Al-Dubai, 2023). As in the investigation of age the relationship between board education level and profitability is mixed, with studies showing both positive (more education, better performance) and negative (more education, lower performance/transparency) impacts, often depending on context, country, industry, and board diversity, suggesting neither high nor low education guarantees profit; instead, optimal board composition balancing diverse skills, experience, and strategic insight is key for performance. Therefore it is clear that the first 4 hypotheses are evaluated mainly with bivariate correlations since it is an introductory step towards more robust relations described on H5 and H6.

The fifth research hypothesis originates from the study of Braendle et al. (2020) evolving Blau's cultural variety index (Blau, 1977) calculated as

$$\text{CULVAR}_i = 1 - \sum_{j=1}^n \frac{N_j(N_j - 1)}{N_i(N_i - 1)} \quad (1)$$

where

$CULVAR_i$ denotes the cultural variety of board i .

N_j denotes the absolute frequency of directors in the j -th category.

N_i shows the total number of directors of board i .

with $N_i > 1$, $N_j \geq 1$ and $N_i \geq N_j$.

$CULVAR_i$ values are equal to zero when $N_i = N_j$, which shows zero diversity on the BoD, and is equal to one if N_i includes N_j by units. This index is used in its percent form, that is it is multiplied by 100, but we argue that this, useful, index needs a large number of different observations to achieve its goals since the integer values of N_i and N_j might result repetitive values similar to ordinal variables, thus reducing index's statistical properties namely median and standard deviation, thus reducing the possibility of multi-pole or even precise calculations. In addition, its asymptotically behavior implies that if $N_i \gg N_j$ in some cases then $CULVAR$ might result in underestimations.

In accordance with the methods of Braendle et al. (2020) we used ROA, considered as profitability, and ROE, considered as efficiency, acting as the dependent variables in the panel regression models

$$ROA_{i,j} = CULVAR_{i,j} + Boardsize_{i,j} + CompanySize_{i,j} + Internationalization_{i,j} + Leverage_{i,j} + Industry_{i,j} + R\&DIntensity_{i,j} + \varepsilon_{i,j} \quad (2)$$

$$ROE_{i,j} = CULVAR_{i,j} + Boardsize_{i,j} + CompanySize_{i,j} + Internationalization_{i,j} + Leverage_{i,j} + Industry_{i,j} + R\&DIntensity_{i,j} + \varepsilon_{i,j} \quad (3)$$

The control variables used were leverage calculated as Total debt over Total assets, R&D intensity measured as the ratio of research and development (R&D) expenditures to total revenues, and internationalization expressed by R&D expenses. STATA V14 was used to conduct descriptives and inferential analysis under 5% alpha value.

Missing cases in any case, that is primary or calculated data, did not participate in calculation i.e. descriptive, correlation, and regression analyses as default parameters of Stata actions.

4. Results

4.1. Description of Board of Directors

Table 3 describes BoD related variables for Germany and Greece with the help of their mean and SD measures. As for German companies, an extremely high variability was noticed in the size of the enterprises with SD being 3 times greater than the average value (Mean = 10304.63, SD = 35729.43). The average size of their boards was equal to 12.59 with the standard deviation being approximately twice as large (SD = 23.89). The average value of men in the Board of Directors is equal to 2.15 ± 1.71 and of women 1.29 ± 0.74 . However, this ratio of 2:1 is not representative of the percentage of women in the Board of Directors with the average percentage being equal to $9\% \pm 18\%$ but it should be emphasized that there were

cases where the Board of Directors consisted of 100% women. The average age of the directors on the Board of Directors was equal to 50.61 ± 17.55 and varied between 40 and 81 years of age. Finally, there were only 16 cases of consultants holding a doctorate and 24 cases with a master's degree.

According to the same results, an extremely large variability in the size of the Greek enterprises was again found, with the standard deviation being again about 3 times greater than the average value (Mean = 1599.65, SD = 4285.69). The average size of the boards of directors examined was equal to 13.50 with the standard deviation being approximately equal (SD = 10.96). The average value of men in the Board of Directors is equal to 5.79 ± 3.04 and of women is equal to 2.06 ± 0.74 . The ratio of men to women was 2.5:1, which is still not representative of the percentage of women on the Board of Directors, with the average percentage being equal to $21\% \pm 0.19$ but unlike German companies the maximum percentage reached 84% and not 100%. The average age of the directors on the Board of Directors was equal to 53.85 ± 19.96 years and varied between 43 and 82 years. Finally, there were only 16 cases of consultants holding a doctoral degree but 288 cases with a master's degree.

Table 3. BoD description.

	Germany			Greece		
	N	Mean	SD	N	Mean	SD
Company Size	6483	10304.63	35729.43	1777	1599.65	4285.69
BoD size (number of members)	16,784	12.59	23.89	2352	13.50	10.96
Men on the Board	1676	2.15	1.71	2256	5.79	3.04
Women on the Board	384	1.29	0.74	1728	2.06	1.35
Percentage of women on the Board of Directors	1693	0.09	0.18	2256	0.21	0.19
Average age of Board members	1639	50.61	17.55	2080	53.85	19.96
Minimum age of Board members	1639	48.36	15.79	2080	46.62	17.33
Maximum age of Board members	1639	54.16	18.38	2080	66.78	19.48
Board Members with PhD	16	1	0	16	1.00	0.00
Board Members with MSc	24	1.87	2.07	288	5.50	7.72

4.2. Description of Profitability Variables

The description of profitability and performance variables for German and Greek companies is shown in **Table 4**. According to these results, a very large standard

deviation was found in the values of ROA (Mean = 2.14, SD = 15.28) and ROE (Mean = 3.49, SD = 55.97) for German companies. Similarly, R&D intensity had a standard deviation slightly more than 5 times higher than the mean (Mean = 6.99, SD = 39.22). The behavior of profitability and performance variables of Greek companies was similar compared to the aforementioned. Once again, a very large standard deviation was found in ROA (Mean = 1.48, SD = 9.59) and ROE (Mean = -1.34, SD = 49.47) as well as R&D intensity had a standard deviation 2.5 times higher than the mean (Mean = 3.54, SD = 8.25). In contrast to German firms, the standard deviations of assets (Mean = 1,4742,963, SD = 2.21E+07), net profits (Mean = 40471.42, SD = 158136.3) and equity (Mean = -1641.44, SD = 602319.4) were significantly higher than the mean.

Table 4. Profitability and performance for German and Greek companies.

	Germany			Greece		
	N	Mean	SD	N	Mean	SD
Assets	7135	1.40E+07	1.14E+08	2047	4,742,963	2.21E+07
Net Profit	6766	289127.80	1573183.00	1882	4,047,142	158136.3
Equity	7126	267237.40	1516394.00	2047	-1641.44	602319.4
ROA	7037	2.14	15.28	2044	1.48	9.59
ROE	6831	3.49	55.97	1936	-1.34	49.47
Leverage	6458	92.92	118.37	1768	129.99	156.66
R&D Intensity	2595	6.99	39.22	433	3.54	8.25

4.3. Relationship between Board Composition and Profitability

Pearson's correlations between BoD characteristics and profitability revealed the positive and weak influence of women on board both in Greek and German companies except ROE in Greek companies ($r = -0.005$). Still, only the percentage index was significant and only in German companies. Age difference revealed conflicting results between German and Greek companies. In specific, age distance had a negative and near zero relation on both ROA and ROE for Greek companies. German companies showed a positive relation, but the near zero strength of these correlations do not allow for clear interpretation or comparisons. Assuming that age difference expresses the conflict of ideas these results imply that German companies are more tolerant to new ideas compared to Greek ones. This notion is enhanced by the positive and significant, though weak, correlation of mean age to ROA implying the lead of more experienced executives, aided by younger ones. Interestingly, MSc holder in Greek companies showed a positive and significant association with ROA whereas German companies showed negative relations. This is the first innuendo of formalism in Greek businesses, something that will further analyzed again later in this research (Table 5).

Table 5. Pearson's correlation between profitability variables and board characteristics.

	ROA	ROE	WoB	WoB %	Age Diff.	Mean Age	MSc
ROA	1	0.052*	0.012	0.011	−0.035	−0.002	0.052*
ROE	0.642***	1	−0.005	0.011	−0.013	0.036	−0.044
WoB	0.105	0.016	1	0.538***	0.154***	−0.066**	0.796***
WoB %	0.058*	0.101***	−0.033	1	0.125***	−0.202***	−0.005
Age Diff.	0.052	0.039	−0.177***	−0.010	1	−0.005	0.503***
Mean Age	0.075**	0.028	0.130*	0.127***	−0.013	1	−0.222**
MSc	−0.095	−0.143	0.986***	0.188	0.488*	0.264	1

Lower diagonal: German companies. Upper diagonal: Greek companies. The significance of the relationship is denoted as follows: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. WoB: Women on Board. MSc: Number of MSc holders on BoD.

4.4. Effect of Cultural Variety on Profitability and Performance

To investigate the relationship between cultural diversity on profitability and performance, the methodology of Braendle et al. (2020) was used. For this reason, Pooled OLS regression model was initially constructed with ROA as the dependent variable to investigate the relationship between profitability and cultural diversity and then with ROE as the dependent variable to examine performance without clustering. The results for German companies are presented in table X and showed that the effect of cultural diversity has a positive effect on profitability ($b = 1.88$) but a negative effect on performance ($b = -10.53$) for German companies. The effect of internationalization on profitability was negative, indicating that in the presence of cultural distance, countries with high internationalization are expected to have lower profitability and lower performance. Sector of activity was not statistically significant, showing lack of effect when cultural variety is present.

The results for Greek companies showed that the effect of cultural variety has a positive effect on profitability ($b = 29.41$) and performance ($b = 120.14$). Both effects were statistically significant. The effect of internationalization on profitability was positive, which shows that in the presence of cultural distance, countries with high internationalization are expected to have greater profitability and performance. Sector of activity was not statistically significant, showing lack of effect when cultural variety is present (Table 6).

Table 6. The impact of cultural variety on profitability and performance.

	Germany		Greece	
	ROA	ROE	ROA	ROE
Culvar	1.89 (2.09)	−10.53 (7.88)	29.414** (10.28)	120.14** (40.00)
Board size	0.04 (0.02)	0.22 (0.13)	0.100 (0.09)	−0.24 (0.42)
Company Size	−7.62E−06 (1.14E−05)	−0.0000262 (4.92E−05)	0.001 (0.0003)	0.01*** (0.001)
Internationalization	−4.49E−07 (5.09E−07)	−2.39E−06 (2.02E−06)	9.29E−05 (8.85E−05)	3.52E−04 (3.17E−04)

Continued

Leverage	−0.02*** (0.002)	−0.067*** (0.008)	−0.02*** (0.003)	−0.07*** (0.01)
Industry	−0.07 (0.24)	−1.53 (1.43)	−0.09 (0.16)	−0.45 (0.73)
Intensity R&D	−0.14*** (0.16)	−0.41*** (0.03)	−0.040 (0.063)	0.06 (0.22)
Constant	4.99 (3.35)	35.22 (1.726)	−25.007 (10.08)	−108.298** (38.97)
n	2515	5521	367	368
Groups	221	221	39	39
R ²	0.137	0.113	0.215	0.165
X ²	190.99	250.97	53.32	87.61
p	<0.001	<0.001	<0.001*	<0.001

Effect of cultural diversity (Culvar) on profitability (ROA) and efficiency (ROE) for companies based on Germany and Greece. Robust standard errors in parentheses. Significance of regression coefficients noted as: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5. Discussion

It's hard to argue with the idea that board effectiveness is more important than ever. Companies are bigger, the pace of global disruption seems to be increasing, and the challenges facing businesses are increasingly complex. Board composition has changed dramatically over the past decade as boards have become more diverse. That alone would be reason enough to leverage the skills that research suggests are needed to manage diverse groups in the future, such as better collaboration skills, openness to ideas, conflict management techniques, and so on. But in addition to the challenge of becoming more diverse, boards often face a set of social, geopolitical, technological, and business events that require new skills.

Diverse boards that truly reflect the makeup of their stakeholders are better able to understand and address their needs. This creates a positive feedback loop that is particularly important in relation to monitoring recent trends, information and consumer priorities. In some cases, board diversity can even lead to greater transparency and, as a result, trust among stakeholders. For example, diverse boards appear to be more effective in monitoring management decision-making, resulting in reduced earnings management practices and greater financial reporting transparency (Nguyen & Nguyen, 2024; Nguyen, Ntim, & Malagila, 2020).

According to the results of the descriptive statistics, it was found that while Greek companies are smaller in size, compared to German companies, the percentage of women on the Board of Directors was much higher; almost three times higher. It was also found that the Board of Directors of Greek companies had members of a higher average age and more executives who held a master's degree. This fact implies that formal qualifications are of great importance in Greek companies, which can also be interpreted as an attachment to the formal and not the practical value of the Board members. Chytis, Tasios, and Filos (2020), note that this disanalogy of women on board is explained by the family-based companies in Greece which include family members despite their experience, knowledge or po-

tentials. In addition, [Arvanitis et al. \(2022\)](#) refer to the mandatory law of 4706/2020 on corporate governance which impose a 25% ad-hoc female presentation on boardrooms, a number close to the equivalent 21% of this study.

From the comparison between Greece and Germany, it was found that German companies have greater profitability index. Similarly, they carry out research and technology activities with greater intensity and leverage activities with less enthusiasm compared to Greek companies. Finally, it was also found that Greek companies were less efficient compared to German companies, as well as that the average efficiency of Greek companies was negative.

The relation between presence of women on the Board and profitability is indeed positive and statistically significant in German companies whereas in Greek companies were not significant and almost zero though positive in direction in general. [Yami, Alshurafat, and Shaaban \(2025\)](#) relying on solely US firms also confirm this result in consistency with other similar results ([Shohaieb, Elmarzouky, & Albitar, 2022](#); [Moussa, Allam, & Elmarzouky, 2023](#); [Allam, Moussa, & Elmarzouky, 2024](#)).

Age range, measured by age differences, of the Board members did not present any statistically significant relationship with either profitability or performance variables of German or Greek companies. These relationships were positive for German companies and negative for Greek companies implying a more efficient BoD for German companies when experience and innovation coexist whereas Greek companies have not yet exploited this trait, and in consistency to [Talavera, Yin, and Zhang \(2018\)](#) report, age difference could act as conflict factor in the decision-making process. At the same time, a positive relationship was found between the average age of the board members and profitability, which implies that the experience of the executives plays an important role on German companies. This result is also endorsed by [Akisimire et al. \(2016\)](#) who additionally report 35 years of age as a barrier between profitable (>34 years of age) and non-profitable (≤ 34 years if age) boards.

The educational level of the Board members, measured by the number of MSc holders, has a positive and statistically significant relationship with profitability, but only for Greek companies. However, beyond this, it was found that the occurrence of executives with a master's degree is greater among women. Finally, cultural diversity showed a consistently positive effect on profitability in both Greek and German companies. In the case of performance, a positive relationship was found in Greek companies but a negative one in German ones. This result partially confirms the fifth research hypothesis and shows that cultural diversity is positively related to company performance. Many research results confirm this positive effect of cultural variety of profitability and performance ([Magnanelli, Pao-lucci, & Pirolo, 2021](#); [Valentowitsch, Kindig, & Burr, 2024](#)). Still, on possible interpretation of the negative sign on efficiency for German companies, except from numerical imposition, could be conflicting work styles and norms or even slower decision making ([Eyiah et al., 2025](#); [Martin, 2014](#)).

6. Conclusion

Regarding the investigated hypotheses, the results confirmed that the presence of women on board will affect positive both firm profitability and performance. Still, this was more evident in German companies compared to the Greek ones. Age diversity is expected to contribute to firm profitability, but only in German companies that invest in both innovation and experience and are led by more experienced executives, since age is positively related to profitability. On the other hand, age range plays a negative role both in profitability and in performance. The educational level of BoD members, with regard to MSc holders, revealed a wider inclusion and a more profitable composition for Greek companies. Still, both in German and Greek companies, MSc holders are significantly associated with women on board implying that the inclusion of women on BoD depends more on their studies compared to men BoD members. Finally, cultural variety did show a positive effect on profitability for Greek and German companies. This result contrasts with the negative effect of cultural variety on performance for German companies.

As expected, there were mixed results, although the notion of a more profitable BoD composition when women are included was more or less clear for both German and Greek companies. If nothing else, these behaviors indicate, once more, that each country has its own rules of management which, if not dictated, at least guided by domestic cultural styles.

7. Limitations

Two limitations were identified in this research. The first one was the non-removal of outlying values. This neglect allowed the existence of large dispersion both in Greek and German firms. To our defense, the limited number of observations that included BoD details, especially in Greek companies, did not allow for this kind of adjustment. The second limitation is found again in data records which describe PhD and MSc holders. The number of these records was quite low, imposing limitations both in calculations as well as the accuracy of the results.

Data Availability

Data available on request due to privacy/ethical restrictions.

Author Contributions

K.A.: Supervision; S.T.: Conceptualization & Writing; P.D.: Analysis & Writing.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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