RBGN REVISTA BRASILEIRA DE GESTÃO DE NEGÓCIOS
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ISSN 1806-4892
e-ISSN 1983-0807

OPEN ACCESS

ARTICLE

Financial performance and diversity on boards of directors in Brazil

Claudia Emiko Yoshinaga[1]
Taís Heidemann Freitas[1]
Gustavo Andrey de Almeida Lopes Fernandes[2]

Received on:
Oct/31/2023
Approved on:
May/29/2025

Responsible Editor:
Prof. Dr. Jorge Scarpin

Reviewers:
Larissa Pacheco; Sandro Vieira Soares

Evaluation process:
Double Blind Review

This article is open data

Abstract

Purpose – This study examines how different dimensions of board diversity influence the financial performance of non-financial Brazilian companies, focusing on Brazil's institutional and cultural particularities.

Theoretical framework – The study combines Resource Dependence Theory (RDT), Agency Theory, and Upper Echelons Theory to emphasize the mechanisms through which board diversity may affect organizational performance.

Design/methodology/approach – This is an empirical, longitudinal study that analyzes data from 367 companies listed on the B3 between 2011 and 2021. We applied panel data regression models with fixed effects, and we constructed diversity variables using indices such as Blau's, as well as dummy variables.

Findings – The results indicate statistically significant associations between some dimensions of diversity and financial performance, highlighting the positive impact of academic background diversity and previous board experience, as well as negative effects associated with female participation and positive effects from family ties.

Practical & social implications – This research offers important recommendations for improving governance practices in Brazil, suggesting that diversity should be promoted strategically and effectively to overcome tokenism and align with national contextual specificities.

Originality/value – The study contributes to the literature by conducting a comprehensive analysis of board diversity in Brazil, incorporating multiple dimensions beyond gender, such as academic background, experience, independence, and family ties, based on an unprecedented dataset for Brazil.

Keywords: Diversity, board of directors, corporate governance, financial performance, Brazil.

1. *Fundação Getulio Vargas, Escola de Administração de Empresas de São Paulo, Departamento de Contabilidade, Finanças e Controle, São Paulo, SP, Brasil*
2. *Fundação Getulio Vargas, Escola de Administração de Empresas de São Paulo, Departamento de Gestão Pública, São Paulo, SP, Brasil*

How to cite:
Yoshinaga, C. E., Freitas, T. H., & Fernandes, G. A. A. L. (2025). Financial performance and diversity on boards of directors in Brazil. *Revista Brasileira de Gestão de Negócios*, *27*(2),e20230125. https://doi.org/10.7819/rbgn.v27i02.4298

Revista Brasileira de Gestão de Negócios

https://doi.org/10.7819/rbgn.v27i02.4298

1 Introduction

In recent years, the topic of diversity on boards of directors has gained prominence in academic and business discussions. In 2022, 72% of new directors of S&P 500 companies were from historically underrepresented groups, including women, racial and ethnic minorities, and LGBTQIA+ individuals (SpencerStuart, 2022c). According to 2020 figures, women accounted for 11.5% of board seats in Brazil, which is a 4.3 percentage point increase compared to 2015 (SpencerStuart, 2020).

Despite its undeniable relevance, the topic remains relatively unexplored, especially in the Brazilian context. While characteristics such as gender, age, and independence are often documented in corporate reports, other dimensions, such as sexual orientation, ethnicity, and level of education, still lack adequate research. This gap hinders a more comprehensive understanding of the impact of diversity on companies' financial performance. In fact, although there is ample international literature examining the relationship between board diversity and financial results, few studies have investigated these interactions in Brazil, a country with unique cultural and economic characteristics.

In addition, the lack of standardization in Brazilian companies' reference forms hinders the collection of detailed information on board members' basic characteristics. This limitation contributes to the predominance of studies focusing on specific aspects of board composition, such as gender and independence, while other dimensions remain relatively unexplored.

On the other hand, analyzing board diversity in Brazil is important because of its unique institutions and culture, which differ from those of developed countries. As Bezuidenhout et al. (2021) point out, concentrated ownership structures, different regulations, and unique social norms in emerging markets make it difficult to generalize findings from countries such as the US and Europe. In Brazil, boards often consist of members connected to controlling families or the state, which limits diversity and influences agency conflicts. The low presence of women and the absence of gender quotas reinforce structural and cultural barriers to diversity (SpencerStuart, 2022a). Even regulatory advances, such as the 2016 Brazilian Corporate Governance Code's recommendation to increase independence, still face limitations imposed by organizational culture and high levels of power distance.

Furthermore, despite its growing global importance, Brazil is poorly represented in the governance literature (Bezuidenhout et al., 2021). The combination of state influence, institutional gaps, and the limited role of capital markets underscores the importance of diversity on boards. Directors with political connections or international experience can add strategic value in contexts such as Brazil (Hearn, 2015; Jiang et al., 2023). Therefore, the Brazilian institutional scenario, which is characterized by changing governance and low diversity, provides a crucial context for examining the impact of diversity on organizational performance.

Thus, this article seeks to answer the question of how the different dimensions of diversity on the board of directors influence the financial results of Brazilian non-financial companies. This study provides robust support for the literature by carrying out a longitudinal analysis spanning eleven years and exploring multiple dimensions of board diversity, including variables such as academic background, area of specialization, family ties, and previous board experience.

From a methodological point of view, this article reexamines and expands upon previous studies on the impact of diversity, using a comprehensive database and a rigorous literature review to assess the validity of the primary findings in a Brazilian context. The study is both empirical and exploratory. Ethiraj et al. (2016) emphasize the importance of replication in strategic management for advancing a cumulative body of knowledge. Bettis et al. (2016) point out that replication studies favor the generalization of research findings to different contexts and increase the robustness of practical implications.

Our results make relevant contributions by demonstrating the impact of a more diverse board of directors' composition on financial indicators such as ROA, ROE, and Tobin's Q, helping companies align their governance practices with growing market demands. In addition, this study enriches the existing literature by providing empirical data on the evolution of board member characteristics in Brazilian companies. It incorporates little-explored indicators, such as level of academic training, area of specialization, family or management ties, and CEO duality, among others.

The article prioritizes studies that analyze the relationship between board of directors' characteristics and company financial performance. Without attempting to be exhaustive, it includes empirical research that explores dimensions such as gender, age, independence, educational

diversity, and experience on other boards. The main goal was to include widely recognized international studies, as well as national studies addressing the particularities of the Brazilian context.

2 Literature review

The concept of diversity can be analyzed based on a broad set of dimensions, including race, gender, language, culture, social norms, sexual orientation, education, skills, and neurodiversity, among others (Berkeley, 2022). From a theoretical standpoint, this article draws on three complementary theories – Resource Dependence Theory (RDT), Agency Theory, and Upper Echelons Theory – to investigate the causal influence of board diversity on a company's financial performance.

RDT views the board of directors to be a mechanism that expands the company's boundaries by helping it secure essential external resources and reduce uncertainty in its environment (Drees & Heugens, 2013). Diverse boards can connect the company to a wider range of information, networks, and capital. For example, companies may appoint directors with extensive social and human capital, such as industry expertise or international experience, to gain access to resources, legitimacy, and advice (Jiang et al., 2023). In short, RDT posits that the diversity of directors' backgrounds (skills, connections, experiences) enables companies to obtain valuable resources and opportunities that directly bolster financial performance.

On the other hand, Agency Theory emphasizes control and monitoring. In the classic principal-agent structure, the board of directors monitors managers (agents) on behalf of shareholders (principals) to prevent managerial opportunism (Williamson, 1993; Shapiro, 2005). From an agency perspective, certain types of diversity can strengthen board oversight. For example, having a higher proportion of independent (non-executive) directors is expected to reduce conflicts of interest and prevent executives from acting selfishly (Shapiro, 2005). Diversity of perspectives (e.g., gender or professional background) can also mitigate "groupthink" and collusive behavior, leading to more effective questioning of management. Thus, Agency Theory posits that a more diverse and independent board will impose greater discipline and alignment with shareholder interests, ultimately resulting in lower agency costs and better financial performance.

Upper Echelon Theory offers a third cognitive lens, claiming that organizational outcomes are partially predicted by the characteristics of the key decision-makers (Hambrick, 2007). Originally focused on top management teams, the theory posits that executives' experiences, values, and personalities influence their interpretation of situations and subsequent strategic decisions (Hambrick, 2007). Similarly, a board of directors with diverse demographics and areas of expertise will process information and advise management in various ways, thereby affecting the company's decisions. A heterogeneous board brings a variety of mental models. For example, directors from different functional backgrounds or ages may assess risks and opportunities differently, which can enhance creativity and lead to more robust decision-making.

Together, these theories describe a causal chain in which the diversity of the board of directors directly influences how the company is governed and how its strategy is conducted. Access to external resources, the quality of supervision, and the richness of decision-making processes impact organizational performance. Thus, this theoretical framework suggests clear causal relationships, not just mere correlation: more diverse boards tend to secure vital resources, align management with shareholder interests, and enrich strategic deliberations (Drees & Heugens, 2013; Shapiro, 2005).

In this context, it is important to observe how diversity manifests in different markets. Table 1 summarizes the main characteristics of board of director compositions in various regions of the world, highlighting aspects such as female participation, independence, and board size.

Studies exploring board of director diversity adopt different empirical perspectives. Some studies take a broad approach to diversity (Rossignoli et al., 2021; Anderson et al., 2011; Nisiyama & Nakamura, 2018). Within this broader concept, Rossignoli et al. (2021) structured their analysis in stages, evaluating aspects such as experience and training separately. In contrast, Anderson et al. (2011) and Nisiyama and Nakamura (2018) developed a heterogeneity index based on the characteristics identified in the companies. Other studies have focused on specific dimensions of diversity to achieve a more detailed analysis (Wang & Oliver, 2009; Alabede, 2016; Taljaard et al., 2015).

Professional experience is one of the indicators that is treated differently in the literature. One approach refers to experience working in specific sectors, such as law firms, banks, accounting firms, and universities

Table 1
Characteristics of Boards of Directors around the World

	United States (S&P500)	England	Hong Kong	Switzerland	Brazil
	2022	2021	2021	2021	2020
Female participation	32%	39%	13.9%	27%	11,5%
At least one female director	100%	100%	72%	100%	57%
Age	63.1*	59.9	61	60.5	57
Independence	86%	93%	45%	90%	41%
Size	10.8	10	11.3	10.9	8.4

*Average age represents only independent directors.
Source: SpencerStuart (2020, 2021a, 2021b, 2022b, 2022c).

(Rossignoli et al., 2021). Additionally, experience can be analyzed from the perspective of areas of knowledge, such as business, finance, or law, or by previous experience on other boards of directors (Anderson et al., 2011; Nisiyama & Nakamura, 2018). Conversely, indicators such as gender, age, and independence are quite similar, as shown in Table 2.

Based on the variables, the calculation measures generally focus on percentages of the total, dummies for binary analyses, and the coefficient of variation for the age variable. For variables with a wider range of results, the Blau or Herfindahl indices can be applied to measure heterogeneity. The Blau index is calculated using the formula $1-\sum_{i=1}^{k} p^2$, where p is the proportion of the analysis group and k is the number of categories. The Herfindahl index is calculated in a similar way but does not require subtracting the value 1 from the sum.

2.1 Board of directors' composition and its impact on organizational results

The board of directors plays a fundamental role in organizations. It is responsible for essential functions such as selecting and monitoring the Chief Executive Officer (CEO), monitoring financial results, deliberating on major strategic decisions, supervising strategic guidelines, evaluating performance, and ensuring legal and ethical compliance. According to Paine and Srinivasan (2019), concerns have been raised about the impact of short-term decisions and the fundamental role of the board in ensuring companies' sustainability and longevity.

In their study of Chinese companies, Khan et al. (2022) presented evidence of a positive association between the innovation index and the presence of young and female directors. Similarly, Balsmeier et al. (2014) identified a positive relationship between outside directors and patent activities in innovative corporate environments. Conversely, other studies have reported a negative relationship between director diversity and research and development investment intensity (Xie & O'Neill, 2013).

Regarding gender and ethnic diversity, Upadhyay and Triana (2021) examined the effects of the Sarbanes-Oxley Act (SOX) on a sample of American companies by analyzing periods before and after the implementation of the regulation. Although the main aim of the legislation was not to promote diversity, the study revealed a positive association between the introduction of SOX and increased diversity among board members.

According to Ezeani et al. (2023), there is a positive relationship between gender diversity and financial leverage regarding capital structure. Similarly, the diversity index, which considers characteristics such as gender, age, academic background, and level of education, showed a positive association with companies' level of indebtedness (Nisiyama & Nakamura, 2018).

Regarding companies' financial results, a positive relationship was found with business-related academic training and characteristics associated with strategic consulting (Rossignoli et al., 2021), as well as with director independence (Berezinets et al., 2019; Wang & Oliver, 2009). However, some studies have found no evidence linking board composition to company value (Frick & Bermig, 2009; Rashid et al., 2010). Some research points to a negative relationship between female participation and financial results (Soare, Detilleux, & Deschacht, 2022).

Although board diversity is widely recognized as a factor that can add value to companies, recent studies have shown that its impact can vary significantly depending on the institutional context and governance practices adopted. In addition, there is a growing consensus that

Table 2
Variables and Diversity Measures

Variables	Rossignoli et al. (2021)	Anderson et al. (2011), Nisiyama and Nakamura (2018)	Wang and Oliver (2009)	Alabede (2016)	Taljaard et al. (2015)
	Italy	**United States; Brazil**	**Australia**	**England**	**South Africa**
Educational level	Low degree level	Degree level			
Educational area	Education in business, law, political science, and others	Area of education			
Experience	Functional: number of different areas of activity	Functional: on other boards			
Family ties	Existence of family ties				
Executive board	Number of seats in other positions in the organization		Participation of executive board members		
CEO experience		Members who carry out or have carried out the activity			
Independence	Independent members		Independent members	Independent members	
Age	Age of board members	Age of board members			Age of board members
Female gender	Female participation	Female participation		Female participation	Female participation
Nationality	Participation of foreign members				
Ethnicity / Race		Participation of different ethnicities			Participation of different races

new methodological approaches are needed to capture the more subtle and complex effects of this diversity (Koutoupis et al., 2022).

Several studies have investigated the impact of specific characteristics of boards of directors on companies' financial indicators using Brazilian companies as subjects. Rodrigues (2020) analyzed the impact of board member gender, finding a positive association with Tobin's Q, though no statistical significance was identified in relation to return on equity (ROE) or return on assets (ROA). Similarly, Nisiyama and Nakamura (2018) found a positive relationship between board diversity – considering aspects such as independence, gender, age, nationality, education, and experience – and corporate debt management. Studies on Brazilian boards of directors are still predominantly based on Agency Theory and produce inconsistent results regarding the impact of diversity and other demographic characteristics of directors on company performance (Parente & Machado, 2020). This heterogeneity may reflect the strong shareholder concentration and high prevalence of family businesses in Brazil, which require tailored approaches to assess the effects of corporate governance.

Based on Agency Theory, Wang and Oliver (2009) investigated the relationship between board independence and variation in company performance (risk) in the Australian context. They identified a negative relationship between the presence of executive directors on the board and risk variation. However, they found no significant relationship between affiliated and independent directors. In Brazil, Mesnik (2018) found that the proportion of independent board members increased significantly between 2010 and 2016. He also found a strong relationship between companies with independent directors and the Tobin's Q indicator. However, the same result was not observed for the performance variables ROE and ROA.

2.2 Hypotheses

Based on the gathered data, and in line with the complementary objective of this research, further study is needed into the relationship between diversity and boards of directors. This study aims to test whether there is a positive relationship between board diversity and companies' financial results. Previous studies have proposed the broad hypothesis that board diversity positively correlates with company financial performance. In this paper, we refine this proposition into specific hypotheses for each analyzed dimension of diversity – gender, educational background, professional experience, independence, family ties, age, and leadership structure – each of which is based on the theories discussed above. Formulating individual hypotheses allows us to test which aspects of diversity drive performance and the underlying theoretical foundations.

- H_A (Gender Diversity): Boards with greater female representation tend to perform better financially.

Women directors can enrich the board by offering new perspectives, skills, and greater sensitivity toward stakeholders. According to Upper Echelons Theory (Hambrick, 2007), gender diversity expands the board's collective cognitive base, encouraging innovation and better problem-solving. According to Agency Theory (Shapiro, 2005), more diverse boards avoid groupthink, promoting greater vigilance and strengthening monitoring. According to Resource Dependency Theory (Jiang et al., 2023), the presence of women on boards can facilitate access to new resources and strengthen legitimacy with stakeholders, thereby positively influencing organizational performance.

- H_B (Diversity of Academic Background): Boards with members from different academic backgrounds tend to perform better financially.

A diversity of academic backgrounds (e.g., finance, engineering, law, science) broadens the board's range of knowledge and strategic approaches. Through RDT, directors with different backgrounds gain access to various networks and information (Jiang et al., 2023). According to Upper Echelons Theory, different backgrounds promote cognitive diversity, which is essential for making robust strategic decisions (Hambrick, 2007). Therefore, it is expected that educational heterogeneity will be positively associated with financial performance.

- H_C (External Experience on Other Boards): Boards with a higher proportion of members who also serve on other boards tend to perform better financially.

Individuals with experience on multiple boards (interlocking) accumulate governance knowledge and broaden inter-organizational connections, facilitating the exchange of information and resources (Drees & Heugens, 2013). In addition, they build a reputation that motivates them to be diligent monitors (Shapiro, 2005). Therefore, we expect a positive association between multiple appointments and financial performance.

- H_D (Board Independence): Boards with a higher proportion of independent members tend to perform better financially.

Board independence is central to Agency Theory. Independent directors are more effective at monitoring management and protecting the interests of minority shareholders (Shapiro, 2005). In emerging markets such as Brazil, independence contributes valuable external perspectives (Rossignoli et al., 2021), favoring better decision-making and performance. Thus, the greater the proportion of independent directors, the greater the diversity tends to be.

- H_E (Family Ties on the Board): Companies with more directors who are family members tend to perform worse financially.

Conversely, the presence of family members on the board may compromise its autonomy by favoring particular interests over the general interests of shareholders. The risk of conflicts of interest, less objective decision-making, and fewer diverse perspectives justifies the hypothesis of a negative association between family ties and firm performance.

- H_F (Insider Participation): Companies whose CEOs also chair the board tend to perform worse financially.

Concentrating power in the hands of the CEO undermines the board's independence, reducing its capacity for control and oversight (Shapiro, 2005). Separating positions promotes balance and autonomy in strategic decisions. Therefore, dual roles are expected to impact performance negatively.

Similarly, boards with a higher proportion of members who also hold executive positions tend to perform worse financially. Internal directors may have conflicts of interest and may be unable to supervise management objectivity. According to Agency Theory, boards dominated by insiders are less effective at containing agency costs. Therefore, a negative relationship is expected between the presence of inside directors and financial performance.

- H_G (Age Diversity): Boards with a greater range of ages among their directors tend to perform better financially.

The combination of generations fosters a balance between experience and innovation. Older directors contribute strategic judgment, and younger directors contribute new ideas and awareness of emerging trends (Hambrick, 2007). Age diversity promotes a more balanced strategic vision, which improves corporate performance. In summary, each of these hypotheses corresponds to a specific dimension of board diversity. They are based on well-established theories. While gender, education, experience, and age mainly derive from RDT and Upper Echelons Theory, dimensions such as independence, family ties, and leadership structure are supported by Agency Theory. Testing these hypotheses helps us identify which aspects of diversity are most relevant to business performance, especially in the Brazilian context, where certain governance practices are evolving.

3 Methodology

After reviewing the literature, we collected the relevant data for the Brazilian case to meet the study's objective. The data on directors was then systematized and tabulated using the ComDinheiro platform, with the reference forms provided by the companies serving as the primary source. Next, we analyzed, classified, and standardized all the variables for all the directors in the sample. Based on this structured, standardized database, we developed the research to present, through descriptive data analysis, an overview and evolution of the descriptive characteristics of the directors, as well as providing support for testing the central hypothesis (Supplementary Data 1 – Dataset and Supplementary Data 2 – Variables Codebook).

3.1 Sample

This study focuses on companies listed on the B3 from 2011 to 2021, excluding those in the financial sector. Companies in the financial sector were excluded due to the specificities that impact the financial indicators used in the analysis, such as ROE, ROA, and Tobin's Q. For the analysis of boards of directors, only full members were considered in each period, excluding substitutes. Table 3 summarizes the number of companies and directors each year.

3.2 Dependent variables

We collected the dependent variables from the Economatica database, and we calculated the indices using the original information from the official financial statements. We applied logarithmic transformation to adjust the behavior of the variables and ensure greater adherence to the statistical assumptions of the analyses. Table 4 shows a summary of the different specifications used.

3.3 Variables of interest

The independent variables in this study correspond to the characteristics of the permanent members of the board of directors of the companies analyzed, as defined in Table 5 and according to the hypotheses raised in subsection 2.2. To test the central hypothesis, we applied a filter in the sample to include only effective members

Table 3
Number of companies and directors assessed

Year	Companies	Directors
2010	240	1797
2011	252	1924
2012	254	1950
2013	260	2008
2014	263	2122
2015	266	2045
2016	267	2092
2017	279	2103
2018	291	2193
2019	302	2187
2020	341	2463
2021	365	2387
Total unique individuals	367	4664
Base	3380	25271

Table 4
Dependent Variables

Indicator	Variable	Definition	Reference
Tobin's Q	ln(QTobin)	(Market value + Liability value) / Asset value	Rossignoli et al. (2021), Rodrigues (2020).
ROE	ln(ROE+1)	Return on Equity (%)	Rossignoli et al. (2021), Rodrigues (2020).
ROA	ln(ROA+1)	Return on Assets (%)	Rossignoli et al. (2021), Rodrigues (2020).

Table 5
Independent variables

Indicator	Variable	Reduced variable	Description	Reference
Educational level	Educational level Blau index	Educational level	Educational level Blau index grouped into: o High school o Technical o Completed undergraduate degree o Postgraduate degree and MBA o Master's degree o Doctorate	Rossignoli et al. (2021), Nisiyama and Nakamura (2018).
Area of education	Area of education Blau index	Area of education	Area of education Blau index grouped into: o Agriculture and veterinary science o Social sciences, business, and law o Science, mathematics, and communication o Education o Engineering, production, and construction o Humanities and arts o Health and social welfare o Services	Rossignoli et al. (2021), Nisiyama and Nakamura (2018). Associação Brasileira de Mantenedoras de Ensino Superior (2022).
Experience on other boards	% members +1 board	Mem	Percentage of members with experience on the boards of other companies	Nisiyama and Nakamura (2018).
	Dummy +1 board	MemD	Dummy = 1 if at least one member of the board has experience in other companies	
Family ties	% with family ties	Fam	% of members who have family ties to the company	Nisiyama and Nakamura (2018).
	Dummy 1 family	FamD	Dummy = 1 if at least one member of the board has family ties	Rossignoli et al. (2021)
Executive board	% executive board	Ex	% who also sit on the executive board	Nisiyama and Nakamura (2018)
CEO	Dummy CEO	CEOD	Dummy = 1 if the CEO is a member of the board	Nisiyama and Nakamura (2018)
Independent	% independent	Ind	% of independent members	Rossignoli et al. (2021).
Board member age	Age coefficient of variation	Age	Coefficient of variation of the age of the members	Rossignoli et al. (2021), Nisiyama and Nakamura (2018).
Female gender	% F	Fem	% of women on the board	Rossignoli et al. (2021), Nisiyama and Nakamura (2018).
	Dummy F	FemD	Dummy = 1 if at least one member of the board is female	

Source: The authors.

(excluding substitutes) to ensure the inclusion of directors with practical participation on the board. We collected data from the ComDinheiro platform based on information provided in the companies' reference forms (Formulário de Referência). Due to the lack of standardization in some fields, we performed some additional manual adjustments and defined parameters on this consolidated database.

Through a joint analysis of the "profession" and "professional experience" fields on the companies' reference forms, we collected and classified the variables "educational level" and "area of training". Also, "area of training" was defined based on the board members' major course and grouped by area of knowledge, following the classification proposed by ABMES (Associação Brasileira

de Mantenedoras de Ensino Superior, 2022). Based on these classifications, we calculated the Blau index for each company. The Blau index has been applied to measure heterogeneity in the literature. For example, Nisiyama and Nakamura (2018) used it for some variables in the process of constructing a general diversity index.

We obtained the age variable from the corresponding field on the reference form. In cases where the "date of birth" field had zero values, we analyzed each of the "description" field to supplement the data. We calculated the board member's age by cross-referencing the date of birth with the corresponding year of the reference period. The "gender" variable was initially classified using software based on the "name" field. In ambiguous cases, the classification was supplemented by analyzing the description of professional experience when it was available and identifiable.

The variable "experience on other boards" was assigned based on an evaluation of board of directors members' participation in similar positions at other companies in the same year or prior years, considering the period from 2010 to 2021. Therefore, the study does not include experiences prior to 2010, the initial year of the database, nor experiences on the boards of companies not included in the research sample. This is a limitation of the research.

The "independence" variable was classified based on the directors' position. The "family ties," "CEO duality," and "executive board member" variables were obtained from the companies' reference forms. In cases where sufficient information was unavailable to establish a classification, the corresponding fields were recorded as null.

3.4 Control variables

We collected the control variables through the Economatica data platform and identified them based on similar studies mentioned in the literature, as shown in Table 6. The number of effective directors was obtained from the same source as the independent variables to ensure consistency in the data analyzed.

3.5 Statistical methods

To test the hypothesis, we used a panel data model with clustered standard deviations, considering companies as observation units over the years, as described by Greene (2007). The models included fixed effects to control for the companies' specific, time invariant characteristics and dummies to capture year-to-year variations (Supplementary Data 3 – Stata Script). The model specification is presented in Equation 1:

$$Y = A_0 + A_1 X + A_2 Z + \varepsilon \quad (1)$$

where Y is the dependent variable, X is a vector of independent variables, and Z is a vector of control variables.

In cases where companies had negative net equity, the values were set to zero to provide a more accurate ROE calculation. In addition, outliers were treated in the dependent variables due to the significant discrepancy observed in the tails of the distributions. For the top and bottom 5%, the values were replaced with the previous year's results.

When investigating the relationship between the composition of the board of directors and financial results, it is important to note that the time frame between director participation and its impact on results is significantly complex. In addition, this study could not capture a number of explanatory variables, which is a recognized limitation of the research application.

Two approaches were used to analyze the variables "female participation," "experience on other boards" and "family ties." The first approach involved calculating the percentage of representativeness and multiplying it by 100 to facilitate visualization and interpretation of the results. The second approach used a dummy variable to consider the presence of at least one member of the board of directors with these characteristics.

Table 6
Control Variables

Indicator	Variable	Definition	Reference
Company size	ln(Assets)	Total Assets	Rossignoli et al. (2021).
Financial indebtedness ratio at book value	Debt/ (NE+Debt)	Financial Debts/ (Financial Debts + Net Equity)	Nisiyama and Nakamura (2018), Rodrigues (2020)
Board size	Size	Number of permanent directors	Rossignoli et al. (2021).
Segment	Seg	Segment fixed effect	Rossignoli et al. (2021).
Year	Year	Year fixed effect	

4 Results

4.1 Descriptive statistics

As shown in Table 7, there has been a significant increase in the number of observations over the years, reaching stability in 2016. The mean and median age of the board members are fairly close, around 56 years, with a standard deviation of about 12 years. No significant variations in the behavior of this variable were identified over the period. The distribution of board members' ages is normal. Around 80% of the data are between 39 and 73 years old, and 90% are between 35 and 77 years old.

Figure 1 at the top illustrates female representation on the board. This variable has increased year over year, reaching its highest percentage, 14.7%, in 2021. Figure 1 at the bottom shows that, despite this progress, around 40% of companies still had no female representatives on their boards of directors in 2021.

As shown in Figure 2, the level of education of board members' education is predominantly concentrated between the undergraduate and postgraduate levels. Over the years, the percentage of board members with higher levels of academic training has increased, especially those with postgraduate and master's degrees. This indicates a trend toward higher qualifications among board members.

Table 8 shows that the most common courses for board members are engineering, economics, law, and administration. Over the years, the representation of the first three has decreased, while the administration course has shown continuous growth. In addition, the number of board members trained in information technology, medicine, and accounting has increased, indicating a diversification in the educational backgrounds of board members.

The courses were grouped by educational area according to the ABEMS classification system. The social sciences, business, and law areas stand out as the most representative, followed by engineering, production, and construction. Together, these two areas account for approximately 94% of directors' academic backgrounds, reflecting their predominance on boards of directors.

Table 9 shows a slight reduction over the years in the percentage of dual CEOs on boards, as well as in the participation of executive board members. On average, they are represented in the database at 6.1% and 10.6%, respectively. Conversely, the percentage of independent directors and directors with experience on other boards has increased, reaching 24.6% and 37.4%, respectively.

Joint analysis of the independent variables is useful for identifying general patterns and behaviors within the database. As shown in Table 10, 4.6% of women simultaneously hold the position of CEO and are members of the board, which is approximately 6 percentage points below their representation in the entire study database.

Table 11 continues to analyze the gender variable and shows that males predominate in engineering courses, while females are more represented in economics and law courses. There were no significant differences between the genders in terms of level of education.

We analyzed the field and level of education variables alongside the family ties, executive member, CEO duality, experience on other boards, and independence variables. Table 12 shows that, compared to the database as a whole, directors with experience on other boards and independent directors have a higher level of academic training.

In terms of educational background, directors who are members of the executive board or are CEOs are even more prevalent in engineering courses. Conversely, independent members and those with previous experience are proportionally more represented in economics courses compared to the general sample.

Table 7
Descriptive Statistics for the Age Variable

Age	2010	2015	2021	Base
Number of observations	1,144	1,810	2,362	22,041
Minimum	20	25	21	20
Median	55	56	57	56
Maximum	91	93	97	97
Mean	56	56	57	56
Standard deviation	11.8	12.6	12.4	12.4

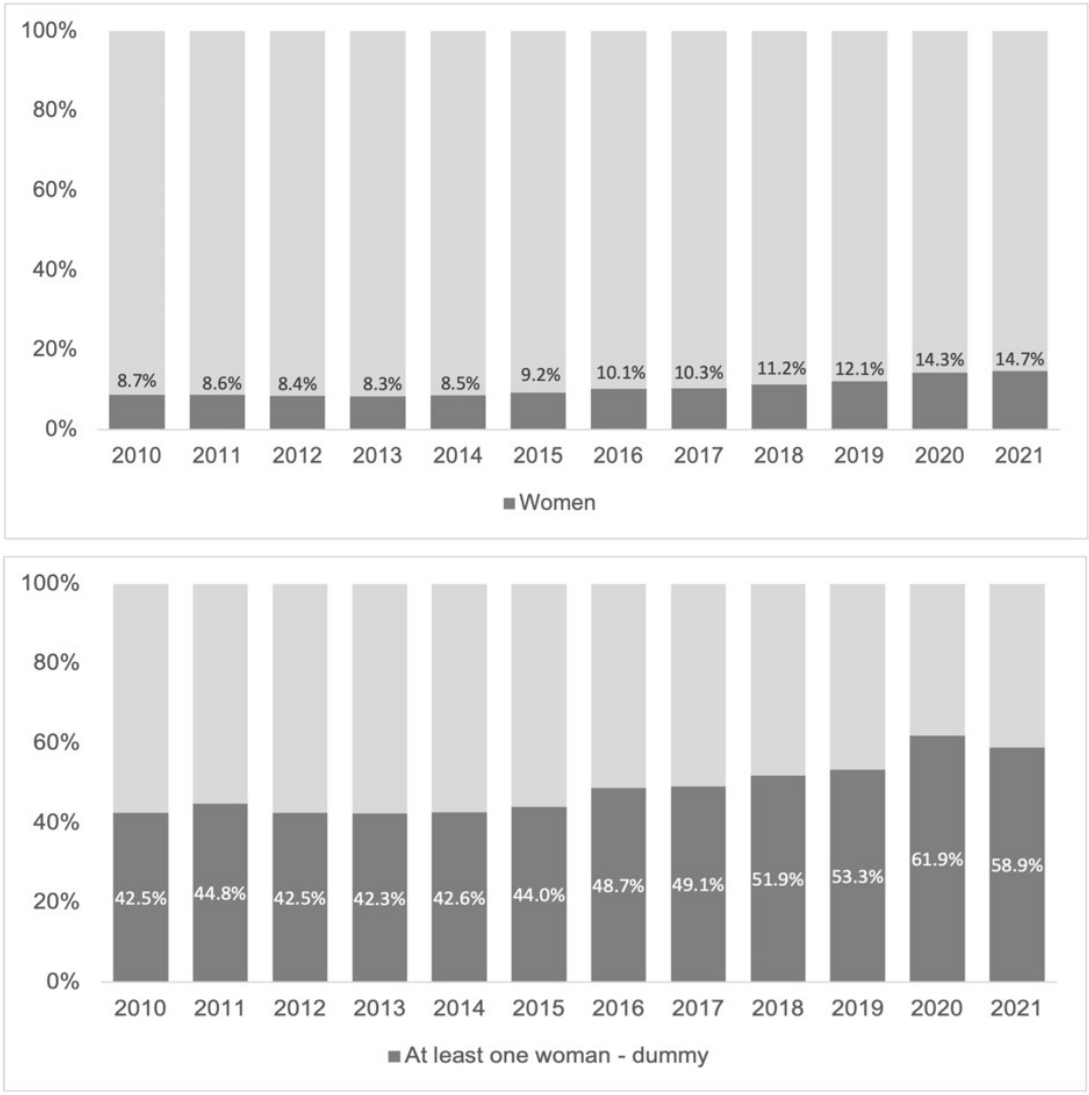

Figure 1. Female Participation in the Board

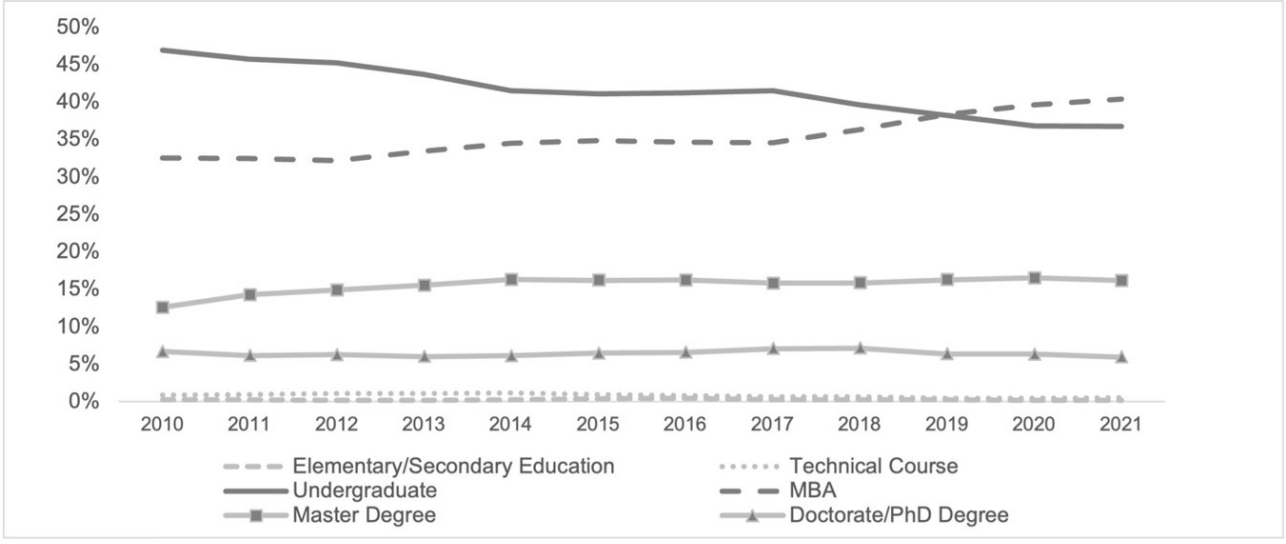

Figure 2. Evolution of Educational Level

Table 8
Descriptive Statistics for the Educational Area Variable

	2010	2015	2021	Base
Total observations	1,644	1,906	2,266	23,628
Engineering	35.8%	33.1%	32.0%	33.7%
Administration	22.6%	24.3%	29.7%	25.6%
Economics	17.8%	17.6%	15.0%	16.5%
Law	14.0%	14.5%	11.6%	13.7%
Accounting	3.2%	4.1%	3.9%	3.8%
Medicine	1.0%	0.8%	1.8%	1.1%
Information technology	0.4%	0.7%	1.3%	0.8%
Other	5.2%	4.9%	4.8%	4.9%

Table 9
Descriptive Statistics for the Other Variables

	Base	Family Ties	2010	2015	2021	Total Base
Family ties	Directors	% with family ties	10.4%	9.8%	10.1%	10.0%
	Companies	Dummy minimum 1 member with family ties	45.0%	45.1%	40.3%	44.1%
CEO	Directors	% CEOs	7.3%	5.5%	5.8%	6.1%
	Companies	Dummy CEO	50.8%	42.1%	36.2%	43.3%
Executive boar	Directors	% executive board	11.9%	10.3%	10.3%	10.6%
	Companies	% executive members	61.3%	59.0%	51.2%	57.5%
Independence	Directors	% Independent directors	13.5%	23.2%	32.0%	24.6%
	Companies	Dummy minimum 1 independent member	38.3%	57.5%	69.3%	58.1%
Experience on other boards	Directors	% Experience on other boards	31.2%	38.1%	41.4%	37.4%
	Companies	Dummy minimum 1 member with experience on other boards	71.7%	79.7%	82.2%	79.1%

Table 10
Descriptive Statistics for Gender and Other Independent Variables

Gender	General database	Executive member	Family ties	CEO duality	Experience on other board	Independence
Female	10.5%	9.3%	11.9%	4.6%	10.0%	9.3%
Male	89.5%	90.7%	88.1%	95.4%	90.0%	90.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 11
Descriptive Statistics for Educational Level and Areas by Gender

Area of Education	General Database	Female	Male	Educational Level	General Database	Female	Male
Engineering	33.7%	17.8%	35.4%	High school diploma	0.3%	0.0%	0.3%
Administration	25.6%	26.2%	25.5%	Technical	0.9%	0.4%	0.9%
Economics	16.5%	19.8%	16.1%	Undergraduate degree	46.9%	42.1%	41.1%
Law	13.7%	18.4%	13.2%	Postgraduate degree and MBA	32.6%	35.1%	35.6%
Accounting	3.8%	2.6%	3.9%	Master's degree	12.6%	16.5%	15.6%
Medicine	1.1%	0.9%	1.1%	Doctorate	6.7%	5.8%	6.5%
Information technology	0.8%	0.9%	0.8%				
Other	4.9%	13.4%	3.9%				
Total	100.0%	100.0%	100.0%	Total	100.0%	100.0%	100.0%

Some results stand out when evaluating the experience on other boards variable together with the board member, CEO duality, and independence variables (Table 13). Notably, 51.6% of independent members and 26.8% of CEOs have experience on other boards.

Table 14 shows the descriptive statistics for the regression variables. The coefficient of variation for board age ranges from 0 to 0.491, with an average of 0.170. This result is similar to that of a study of Italian companies, which showed an average of 0.205 and a maximum coefficient of 0.407 (Rossignoli et al., 2021). However, it differs from the results of a study of American companies, which had an average of 0.124 and a maximum coefficient of 0.335 (Anderson et al., 2011).

Regarding female participation on boards, the average observed in this study is similar to the average reported in studies of American companies (Anderson et al., 2011). However, it differs from the averages reported in Italian and Belgian companies, which are 0.26 and 0.17, respectively (Rossignoli et al., 2021; Soare et al., 2022).

The Blau index for the directors' level of education in this study is approximately 0.09 higher than the Blau index for field of education, with relatively similar standard deviations of around 0.2. In contrast, a study of American companies revealed greater heterogeneity, with indices of 0.541 for educational level and 0.590 for area of training (Anderson et al., 2011). Regarding board independence, the results show indices of 0.416 for Australian companies (Wang & Oliver, 2009) and 0.425 for Italian companies (Rossignoli et al., 2021; Soare et al., 2022). These values indicate representativeness that is around 20 percentage points higher than that of Brazilian companies.

Table 12
Descriptive Statistics for Area and Level of Education with Other Variables

Educational level	General database	Experience on other boards	Independence
High school diploma	0.3%	0.3%	0.0%
Technical	0.9%	0.4%	0.2%
Undergraduate degree	46.9%	36.0%	32.3%
Postgraduate degree and MBA	32.6%	35.7%	37.7%
Master's degree	12.6%	19.1%	19.0%
Doctorate	6.7%	8.5%	10.9%
Total	100.0%	100.0%	100.0%

4.2 Association between diversity and financial performance

The association between board member characteristics and Brazilian companies' financial results was assessed using the regressions shown in Table 15. Columns 1, 3, and 5 test the dependent variables in relation to ROA, ROE, and Tobin's Q, respectively. Columns 2, 4, and 6 replace the percentage of female participation, family ties, and experience on other boards variables with dummy variables to maintain the focus on analyzing associations. Sector and year fixed effects were applied to carry out the tests.

The study considered the area of training and experience on other boards as representations of the directors' areas of knowledge and practical background. The training

Table 13
Descriptive Statistics for the Experience on Other Boards Variable and Other Variables

	Experience on other boards - Vertical					Experience on other boards - Horizontal			
	Dummies	**0**	**1**	**Subtotal**		**Dummies**	**0**	**1**	**Total**
Executive member	0	87.8%	92.2%	89.4%	Board Member	0	61.4%	38.6%	100.0%
	1	12.2%	7.8%	10.6%		1	72.4%	27.6%	100.0%
	Total	100.0%	100.0%	100.0%		Subtotal	89.4%	10.6%	100.0%
CEO duality	0	92.8%	95.6%	93.9%	CEO Duality	0	61.9%	38.1%	100.0%
	1	7.2%	4.4%	6.1%		1	73.2%	26.8%	100.0%
	Total	100.0%	100.0%	100.0%		Subtotal	93.9%	6.1%	100.0%
Independence	0	80.9%	66.1%	75.4%	Independence	0	67.2%	32.8%	100.0%
	1	19.1%	33.9%	24.6%		1	48.4%	51.6%	100.0%
	Total	100.0%	100.0%	100.0%		Subtotal	75.4%	24.6%	100.0%

Table 14
Descriptive Statistics for Independent, Dependent, and Control Variables

	Number of Firms	**Mean**	**Minimum**	**Maximum**
Independent variables				
Age	367	0.170	0	0.491
Female	367	0.112	0	1.000
Female dummy	367	0.493	0	1
Area of education	367	0.392	0	0.741
Level of education	367	0.488	0	0.792
Board experience	367	0.367	0	1.000
Board experience dummy	367	0.791	0	1
Family	367	0.113	0	1.000
Family dummy	367	0.441	0	1
CEO dummy	367	0.433	0	1
Executive board	367	0.132	0	1.000
Independence	367	0.224	0	1.000
Dependent variables				
Ln(Tobin'sQ)	367	-0.751	-5.611	3.654
ln(ROA+1)	363	-0.007	-4.186	0.658
ln(ROE+1)	367	0.050	-4.653	1.693
Control variables				
ln (Assets)	365	14.527	0	21.665
Debt/(NE+Debts)	342	0.490	0	1
Size	367	7.477	1	31

Blau index reflects the variability in the academic training of a company's directors. The results indicate that an increase in the training Blau index is associated with an increase in ROA, reaching statistical significance at the 1% level. However, as in the study by Rossignoli et al. (2021), no significant relationship was identified between the level of education and the Tobin's Q indicator.

The variables participation in more than one board and the dummy indicating the presence of at least one experienced participant both show a positive relationship with Tobin's Q, which is particularly interesting considering how little these variables have been explored in previous studies. This highlights its relevance in analyzing board composition. Anderson et al. (2011) and Nisiyama and

Table 15
Results for the Association between Diversity and Financial Results

	1	2	3	4	5	6
	Ln(ROA+1)		Ln(ROE+1)		Ln(Tobin'sQ)	
Educational level	0.079	0.093	-0.054	-0.043	-0.233	-0.203
	[0.062]	[0.065]	[0.080]	[0.078]	[0.175]	[0.182]
Educational background	0.181***	0.176***	0.083	0.077	0.101	0.084
	[0.062]	[0.062]	[0.094]	[0.092]	[0.216]	[0.224]
Board experience	0.072		0.043		0.671***	
	[0.047]		[0.084]		[0.233]	
Family ties	0.077		-0.040		0.708***	
	[0.050]		[0.092]		[0.222]	
Executive board	-0.008	-0.015	0.012	0.017	0.252	0.160
	[0.126]	[0.126]	[0.151]	[0.151]	[0.285]	[0.295]
CEO dummy	0.024	0.024	-0.011	-0.012	-0.038	-0.038
	[0.027]	[0.027]	[0.027]	[0.028]	[0.064]	[0.065]
Independence	-0.070	-0.063	-0.056	-0.051	0.014	0.044
	[0.051]	[0.051]	[0.072]	[0.071]	[0.166]	[0.168]
Age	-0.132	-0.144	0.031	0.026	-0.553	-0.610
	[0.151]	[0.151]	[0.215]	[0.217]	[0.489]	[0.519]
Female gender	-0.033		-0.195**		-0.408*	
	[0.077]		[0.096]		[0.245]	
Total assets (log)	-0.025	-0.022	0.040	0.041	-0.094**	-0.083**
	[0.051]	[0.050]	[0.025]	[0.025]	[0.038]	[0.039]
Debt/(debt+NE))	0.000	0.000	-0.080	-0.080	-0.004***	-0.004***
	[0.000]	[0.000]	[0.171]	[0.171]	[0.001]	[0.001]
Board size	-0.001	-0.001	-0.007	-0.006	0.008	0.002
	[0.002]	[0.002]	[0.004]	[0.004]	[0.010]	[0.010]
Board experience dummy		-0.029		0.032		0.213**
		[0.020]		[0.051]		[0.096]
Family ties dummy		0.031**		0.014		0.192**
		[0.015]		[0.034]		[0.083]
Female gender dummy		-0.014		-0.036		-0.079
		[0.013]		[0.025]		[0.058]
Constant	0.302	0.297	-0.291	-0.341	0.930	0.854
	[0.732]	[0.725]	[0.368]	[0.369]	[0.591]	[0.609]
Year dummies	x	x	x	x	x	x
Fixed effects	x	x	x	x	x	x
N	3073	3073	2676	2676	2599	2599

*p<10%; **p<5%; ***p<1%. Standard error in brackets.

Nakamura (2018) included this indicator in their studies as part of the construction of their diversity indices. In both cases, the diversity indices showed a positive relationship with companies' financial performance, corroborating the findings of this study.

We analyzed the gender variable using both the percentage of female participation (columns 1, 3, and 5) and by the presence of at least one female director through a dummy variable (columns 2, 4, and 6). In the model studied, the percentage of female participation showed

a negative relationship with Tobin's Q, aligning with the findings of Soare et al. (2022) for Belgian companies and Yang et al. (2019) for Norwegian companies. However, it contradicts the results observed by Alabede (2016) in England and by Costa, Sampaio, and Flores (2019) in a study of Brazilian companies, or even inconclusive results, such as those of Singh and Dwesar (2022).

The family ties variable is rarely addressed in most studies in the available literature. In this study, however, it showed a positive, statistically significant relationship with Tobin's Q at the 1% level. This differs from the findings of Rossignoli et al. (2021), who conducted an Italian study focusing on a sample of family-owned companies. The discrepancy in the results may be explained by the difference in sample composition, since the present study adopts a broader approach without focusing exclusively on family businesses.

In contrast, we found no significant relationship for the independence variable, which corroborates the results of studies on Australian companies. However, this finding differs from those obtained with English companies, where a positive association was identified (Alabede, 2016). As the descriptive analysis of the variables shows, the percentage of independent directors has more than doubled in the last 11 years, driven by several factors, including the recommendation of the Brazilian Governance Code, which sets a minimum of one-third independent directors. This volatility in the data over the period analyzed may be one factor that contributed to the lack of a significant association observed in this study.

The variables indicating executive board member participation and CEO duality did not produce significant results in the sample analyzed. This finding is in line with the results obtained by Frick and Bermig (2009), who also failed to identify statistically significant associations in their studies.

Although the relationship between diversity and companies' financial performance has been widely explored in research, especially in the last 15 years, most of these studies have focused on specific variables, such as gender, and to a lesser extent, characteristics such as director independence. This study broadens this perspective by analyzing a more diverse set of board member characteristics in Brazilian companies. The goal is to examine each variable individually in relation to financial performance, highlighting its relevance in a specific context while avoiding excessive generalizations.

Based on the research results, a market that is still maturing was identified, characterized by changes in the representative behavior of certain variables over time and by extremes in certain dimensions evaluated. Although discussions about diversity have become more widespread and relevant in various sectors, it is still far from being a reality in senior management, such as boards of directors, as discussed in this article.

Due to the complexity of obtaining the data and the non-standardized availability of the information, occasional distortions cannot be disregarded, even with a rigorous checking process to guarantee the integrity of the data. This is a possible limitation of the research. While this article sought to explore the diversity-related variables as thoroughly as possible, it acknowledges that aspects such as nationality, sexual orientation, ethnicity, and race were not addressed. These topics present promising opportunities for future research. In addition, studies that evaluate or compare with companies in the financial sector, which were excluded from this analysis, represent an important line of research for the future.

5 Discussion

5.1 Discussion of results and practical implications

The results of this study prompt relevant theoretical and practical reflections on corporate governance in Brazil. Regarding H_A, a central finding is the negative correlation between gender diversity on the board and company market value (Tobin's Q). At first glance, this result contradicts the assumptions of Resource Dependence Theory and Upper Echelons Theory, which posit that the presence of women in strategic positions is beneficial. One plausible explanation is tokenism: many Brazilian companies have only one woman on their boards, limiting their influence and rendering their participation merely symbolic (Grant, 2017; Mensa & Mueller, 2024). In this scenario, the expected benefits of diversity do not materialize.

Although the results showed a negative relationship between gender diversity and market value (Tobin's Q), other studies indicate that more gender-diverse boards can improve the quality of non-GAAP financial information disclosure, especially in terms of consistency and comparability (Ranasinghe et al., 2024).

In addition, cultural factors and biased investor perceptions may suggest that these appointments are motivated

by external pressures rather than merit, which compromises the perceived value of the firm. Underperforming companies may also use the appointment of women as a sign of change, distorting the observed relationship. Therefore, the issue is not the causal effect of a female presence on performance, but rather the dependence on factors such as organizational culture, critical mass, and effective inclusion. Studies show that diversity management in Brazil is still in its infancy and faces internal resistance, highlighting the importance of ongoing inclusion initiatives and support from senior management to sustain these advances (Jabbour et al., 2011).

The effects of diversity of training (H_B) and experience (H_C) were discrete. Regarding H_B, the results showed a positive association between diversity of academic background and ROA, though not with Tobin's Q or ROE. These findings suggest that educational heterogeneity can lead to more effective operational decisions and better use of internal resources, in line with RDT, which highlights the relevance of diverse knowledge to expand an organization's strategic capacity (Jiang et al., 2023). However, the lack of effect on market value indicators may reflect investors' lower immediate perception of the benefits of this form of diversity, or it may even indicate that its impact occurs more indirectly and gradually. Another possibility is the relative homogeneity of the sample with regard to this dimension: directors in large companies are highly qualified. Regarding H_C, previous experience on other boards showed a significant positive correlation with Tobin's Q, indicating that this characteristic can be a relevant factor in value creation within companies. This result corroborates RDT, which highlights that directors with substantial social capital and governance experience can facilitate access to strategic information, expand relationship networks, and bolster the company's legitimacy with stakeholders (Drees & Heugens, 2013). These professionals can add greater sophistication to strategic decisions, positively affecting the market's perception of the company's valuation potential.

The absence of notable effects related to board independence (H_D), CEO/chairperson duality, and the presence of internal executives (H_F) is also noteworthy. These practices are still new in Brazil and are often adopted due to regulatory requirements; however, they may lack real effectiveness. In companies with concentrated shareholder control, independent directors tend to play a limited role, which diminishes their impact. Therefore, formalizing independence does not guarantee its effectiveness.

Another relevant finding is the positive correlation between the family ties on the board and company performance (H_E). Although this result contradicts traditional Agency Theory, which highlights the risk of conflicts of interest, it can be understood in the light of Stewardship Theory (Davis et al., 1997), which views family members as guardians of corporate value. These directors tend to have in-depth knowledge of the company, a long-term vision, and strong alignment with shareholder interests. In environments of concentrated ownership, such as in Brazil, these characteristics may favor more prudent and agile decision-making. This suggests that mixed governance, combining family supervision with professional management, can be advantageous in certain contexts.

In turn, age diversity (H_G) can influence aspects such as innovation and adaptability more than short-term financial indicators. These findings reinforce the idea that the impact of diversity depends on the institutional context and the culture of the board, as well as the effective valuation of members' skills.

Theoretically, the results are mixed. Resource Dependence Theory is partially confirmed in that not all potential resources automatically translate into performance. Agency Theory is validated by demonstrating that monitoring depends on the actual authority of the board members. Upper Echelons Theory is corroborated by demonstrating that board composition matters, though ineffective management can limit the benefits of diversity.

Therefore, it can be concluded that the effects of diversity are conditional upon factors such as an inclusive culture, adequate incentives, critical mass, and the effective valuation of skills. Certain types of diversity, such as having diverse experiences on boards, have clear positive impacts. However, others, such as gender diversity or independent and external directors, reveal more complex and contextual patterns. These findings underscore the importance of a strategic and context-sensitive approach to corporate governance. Recent studies have shown that the relationship between board diversity and financial performance is stronger in companies with robust corporate governance structures, which may explain variations in the results observed (Mgammal, 2022).

From a practical standpoint, this study's findings offer valuable recommendations for companies, regulators, and governance institutions in Brazil. Boards and executives should promote diversity strategically, focusing on inclusion and alignment. Profiles with complementary experience, such as serving on multiple boards, have shown positive impacts and should be valued.

Multiple qualified appointments, mentoring programs, and integration initiatives are essential to overcome tokenism in the context of gender diversity. When family members possess professional skills, their presence can add value, suggesting that family-controlled companies can benefit from balancing tradition with professionalization. While not showing significant effects, separating the CEO from the board chairperson remains a good governance practice.

For regulators such as the CVM and B3, the focus should extend beyond the mere presence of diversity to its actual effectiveness. The lack of impact of independence suggests the need to strengthen the role of independent directors through stricter selection criteria, training programs, and greater transparency. Measures such as disclosing board composition (gender, age, skills) and adopting voluntary diversity targets could stimulate concrete progress.

Institutions such as the IBGC and investor groups also have an important role to play. They can promote good inclusive practices, provide training for diverse board members, and help companies improve their board composition. Promising avenues include encouraging the use of diverse talent pools and aligning the board's profile with corporate strategy. These actions strengthen corporate governance and increase the likelihood that, when effectively included and valued, diversity will become a competitive advantage on Brazilian boards.

5.2 Original contribution and limitations

In line with the extended replication proposal (Ethiraj et al., 2016; Bettis et al., 2016; Eden, 2002; Bergh et al., 2024), our article revisits and extends the results of previous research on the impact of diversity on financial performance. Rather than replicating a single study, however, we adopted a multidimensional and longitudinal approach using 11 years of data on Brazilian boards. We analyzed various dimensions of diversity, such as gender, age, education, experience, independence, family ties, and executive participation, to assess their relative contributions. Including little-explored variables such as academic background and family ties resulted in unprecedented findings, such as the positive effect of experience on multiple boards on company performance.

Methodologically, using a panel with fixed effects allows us to control for heterogeneity and capture changes, such as the advancement of independence after 2016. Thus, our study responds to calls for research combining replication and theoretical extension in new contexts (Ethiraj et al., 2016; Bettis et al., 2016). Three main theoretical findings emerge: a negative association between gender diversity and market value, which is consistent with studies in similar contexts (Soare et al., 2022); a positive effect of family ties, which suggests contextual benefits that are not predicted by Agency Theory (Rossignoli et al., 2021); and an absence of impact from board independence, which reinforces the idea that its effect depends on institutional factors and the actual power of directors. Taken together, this evidence contributes to the refinement of existing theories on diversity and corporate governance.

Like all research, this study has limitations. First, the analysis was restricted to attributes available on public databases. This made it impossible to assess aspects such as ethnicity, nationality, leadership style, and organizational culture. Also, we did not examine the internal processes of the boards, treating diversity as a structural variable. In addition, focusing on Brazilian non-financial publicly traded companies limits generalization to other contexts. Our performance indicators are financial and short-term, excluding long-term or non-financial impacts such as innovation and ESG factors. Future research employing qualitative methods and richer data can overcome these restrictions, deepening the understanding of the effects of diversity.

6 Conclusion

The discussion about diversity on boards of directors has gained global relevance. This study contributes to the debate by analyzing the evolution of certain dimensions of diversity and their relationship with the financial performance of Brazilian companies. The results show gradual progress in the qualifications and participation of women on boards, although it is still modest compared to other countries. The study also found a growing emphasis on business administration degrees and a reduction in profiles from engineering, economics, and law backgrounds.

The results revealed positive relationships between variability in academic background and performance, and between family ties on the board and the ROA and Tobin's Q indicators. In contrast, female representation was negatively associated with market value, perhaps due to the minimal presence of women, while board independence showed no significant relationship. While these findings do not indicate causality, they reinforce the need to examine diversity in a contextual and strategic manner, encouraging effective inclusion and standardization

in the dissemination of data to increase the potential for analysis and the formulation of more effective policies.

From a practical point of view, the results suggest that companies should strive for a balanced composition of their boards. Previous experience on other boards can enhance strategic decision-making and positively impact market value. Diversity in academic backgrounds also shows promise for operational gains, though the results suggest that its effects may be more indirect and long-term. The presence of family members on boards, which is traditionally viewed with skepticism, has shown positive potential in the Brazilian context, especially in family-owned companies or those with strong influence from controlling shareholders.

To drive advances in Brazilian corporate governance, regulators and market players are encouraged to expand initiatives that strengthen effective inclusion on boards. Adopting practices that go beyond minimum quota compliance, such as mentoring programs, talent networks, and actions to combat tokenism, can encourage more significant participation by historically underrepresented groups.

Finally, this study highlights the importance of governance that is sensitive to Brazil's institutional and cultural context. It suggests that diversity, when accompanied by effective inclusion practices that value board members' skills, can lead to better financial and strategic results for companies.

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SUPPLEMENTARY MATERIAL

Supplementary Data 1 – Dataset
Supplementary Data 2 – Variables Codebook
Supplementary Data 3 – Stata script
Supplementary material to this article can be found online at https://doi.org/10.7910/DVN/RUD4RU

Financial support:
There are no funding agencies to report.

Open science:
Yoshinaga, Claudia Emiko; Freitas, Taís Heidemann; Lopes, Gustavo Andrey de Almeida, 2025, "Financial Performance and Diversity on Boards of Directors in Brazil", https://doi.org/10.7910/DVN/RUD4RU, Harvard Dataverse, V1, UNF:6:JE2+og0TeOVJE9GashRfEw== [fileUNF]

Conflicts of interest:
The authors have no conflicts of interest to declare.

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Authors:
1. Claudia Emiko Yoshinaga, DSc. in Business Administration, Universidade de São Paulo, São Paulo, Brasil.
E-mail: claudia.yoshinaga@fgv.br
2. Taís Heidemann Freitas, Master in Competitiveness Management, Fundação Getulio Vargas, São Paulo, Brasil.
E-mail: taisheidemann@gmail.com
3. Gustavo Andrey de Almeida Lopes Fernandes, PhD in Economics, Universidade de São Paulo, São Paulo, Brasil.
E-mail: gustavo.fernandes@fgv.br

Authors' contributions:
1st author: definition of research problem; development of hypotheses or research questions (empirical studies); development of theoretical propositions (theoretical work); literature review; definition of methodological procedures; data collection; data analysis and interpretation; critical revision of the manuscript; manuscript writing.
2nd author: definition of research problem; development of hypotheses or research questions (empirical studies); development of theoretical propositions (theoretical work); literature review; data collection; statistical analysis; data analysis and interpretation; manuscript writing.
3rd author: development of theoretical propositions (theoretical work); literature review; definition of methodological procedures; statistical analysis; critical revision of the manuscript.