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CEO DUALITY AND CORPORATE PERFORMANCE: EVIDENCE IN THE BRAZILIAN CAPITAL MARKET

CEO DUALITY E DESEMPENHO ORGANIZACIONAL: EVIDÊNCIAS NO MERCADO BRASILEIRO DE CAPITAIS

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ABSTRACT

CEO duality is the practice in which the Chief Executive Officer (CEO) has both the presidency of the company as the chairman of its Board of Directors. The literature so far shows the positive and negative impact on organizational performance when this happens. The approach of the Agency theory suggests that these two functions should be exercised by different people. Therefore, this study aimed to verify the relationship between CEO duality and the corporate performance of companies listed on the Brazil Index (IBrX100) in the 2008 to 2013 period. The sample comprised 70 companies, totaling 420 observations in a balanced panel data. To investigate the relationship proposed by this study, two statistical strategies were used: the method of Ordinary Least Squares and Probit. The results showed that the duality did not affect the organizational performance when compared to the other explanatory variables. However, the performance was affected by the boar size and by the share concentration, as they were the only significant variables, meeting the findings of Daily and Dalton (1997) and Moscu (2013). This result confirms the premise that when duality exists, decisions generally tend to be centralized to avoid loss of control by managers.

Keywords: *CEO duality, corporate performance, corporate governance.*

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RESUMO

CEO duality é a prática em que o Chief Executive Officer (CEO) exerce tanto a função de presidente da empresa quanto a de presidente do seu Conselho de Administração. A literatura existente até então mostra aspectos positivos e negativos de impacto no desempenho organizacional quando isso acontece. A abordagem da Teoria da Agência sugere que estas duas funções devem ser exercidas por pessoas diferentes. Nesse sentido, este estudo teve como objetivo verificar a relação existente entre a CEO duality e o desempenho das empresas listadas no IBrX100 no período de 2008 a 2013. A amostra contou com 70 empresas, totalizando 420 observações em um painel de dados balanceado. Para verificar a relação proposta pelo presente estudo foram utilizadas duas estratégias estatísticas: o Método dos Mínimos Quadrados Ordinários e o Probit. Os resultados mostraram que a dualidade não afetou o desempenho organizacional quando comparado com as demais variáveis explicativas. Porém, o desempenho foi afetado pelo tamanho do conselho e pela concentração acionária, pois foram as únicas variáveis significativas, indo ao encontro dos achados de Daily e Dalton (1997) e Moscu (2013). Tal resultado confirma a premissa de que quando existe a dualidade, geralmente as decisões tendem a ser centralizadas para evitar a perda do controle por parte dos gestores.

Palavras-chave: *CEO duality, desempenho corporativo, governança corporativa.*

1 INTRODUCTION

The Board of Directors plays an important role in organizations by being responsible for making strategic decisions essential to the development of companies. The role of this advice is addressed in the Agency Theory, set forth by Jensen and Meckling (1976), which addresses the issue of the separation of ownership and control at the corporate level, so that existing conflicts of interest may pose a threat to the achievement of objectives organizations. In this sense, Silveira, Barros, and Famá (2003) point out that the Board of Directors is one of the main mechanisms for aligning interests between shareholders and managers in a corporate governance system of a company. Thus, how firms have the Board of Directors and manage their strategies can significantly impact their governance practices and expected results.

Uadiale (2010) explains that corporate governance continues to receive considerable attention from academics, market participants and regulators in recent years because the theory still provides conflicting views regarding primarily the impact of the Board structure on control and performance of firms, since the empirical evidence is inconclusive in this sense. The Board of Directors also has an important function, which is to supervise the management on behalf of the shareholders. In order to avoid possible conflicts of interest and to protect the interests of shareholders, it is assumed that the performance and effectiveness of the Board are influenced by factors such as the qualification of its members, the number of its members, the duality of functions as Chief Executive Officer (CEO) and Chairman of the Board, the presence of people who have no direct relationship with the company, among other factors (BRENNAN, 2006).

Krause, Semadeni and Canella Junior (2014) define CEO duality, or duality of functions, as the practice in which a single person performs both the role of CEO and the Chairman of the Board of Directors, and emphasize that this is a theme which has aroused the interest of academics for some decades, although research generally has not reached conclusive results regarding the impact that this practice may actually have on organizations. Baliga and Moyer (1996) explain that interest in duality has emerged mainly because it is assumed to have significant implications for organizational performance and corporate governance. The authors also point out that advocates of duality argue that it can lead to superior performance since it would allow clear leadership for strategy formulation and implementation.

However, there is no clear consensus on this issue, since some studies in the international literature, such as that by Fama and Jensen (1983) and Jensen (1993), suggest that duality increases the agency cost and can a few negative implications for corporate performance. In Brazil, studies that explore these themes are still scarce. In this way, we propose to investigate in greater depth how duality can impact organizational performance, in order to promote greater understanding about the variable's representative of this phenomenon and how they may be related to duality in a more direct way.

In this context, the objective of this study is to verify the relationship between CEO duality and the performance of public companies listed in the IBrX100 index in the years 2008 and 2013. In order to achieve this objective, key characteristics that are related to CEO duality, such as company size, leverage and ownership, and management structure, are analyzed according to Moscu (2013). Thus, we have the following research problem: how the CEO duality is related to the organizational performance of public companies in Brazil?

2 LITERATURE REVIEW

2.1 The role of Corporate Governance

Corporate governance addresses the ways in which corporate investors or funders can secure a return on what has been invested (SHLEIFER; VISHNY, 1997). Sometimes investors wonder about ways to ensure that they will have an effective return by trusting their resources to be managed by someone else and not invested in bad projects, for example. Corporate governance is important in providing such guarantees and mechanisms that can minimize possible agency conflicts and informational asymmetries that may exist between investors and managers. Arruda, Madruga and Freitas Junior (2008) argue that to minimize the agency problem, management must be surrounded by a management control system, in which controls must be done in an integrated and unified manner.

Discussions from issues related to ownership structure relationships and conflicts of interest make up an important aspect when it comes to corporate governance. People generally have divergent interests, influenced by their cultural baggage and personality, which gradually shape the desires and yearnings of individuals. In the organizational sphere it is not different, that is, the people, although they are present to fulfill the organizational objectives, also have their own objectives and see in the organization a means to reach them. Rodrigues (2013) points out that the relationship between the owner and the manager is influenced by the behavioral presuppositions since these involve the possibility of opportunism and the limited rationality of the man, which allow this relationship to be guided by mistrust.

Jensen and Meckling (1976) emphasized in their work the theory of property structure and hitherto little explored aspects of agency theory and that, in a way, served as a kick-start for the subject, guiding several later studies. These authors define the agency relationship as a contract under which one or more persons, the principal(s), employs another person, the agent, to perform on their behalf a service that involves the delegation of some decision-making power. However, if both parties set out to maximize their own usefulness, then the agent will not always act in the interest of the principal, which may lead to a potential conflict of interest.

Shleifer and Vishny (1997) point out that in countries that have strong corporate governance systems backed by effective legal protection, such as the United States, the United Kingdom, Germany, and Japan, problems such as agency conflicts are likely to be minimized. Claessens and Yurtoglu (2013) point out that in emerging countries, as well as Brazil, changes in governance systems are extremely necessary for the face of the unstable political and legal environment and the large concentration of ownership that sometimes favors large shareholders and entrepreneurs, who are interested in promoting only their own interests. Claessens and Yurtoglu (2013) also point out that a series of reforms need to be made in emerging countries, covering political and legal aspects, in which the role of governance, Boards of Directors, codes of good corporate governance practices, with stakeholders and transparency should, in general, be reviewed for the promotion of a stable environment that inspires confidence to investors and all parties involved with organizations, even impacting on better economic development for those countries.

Reinforcing this idea, La Porta et al. (2000) suggest that a reform with a focus on legal and functional convergence should be carried out, but with a certain caution, especially in countries with weak legal protection, there is no point in wanting to impose different norms if the country is not able to comply or seeks to promote only the interests of dominant political groups. The authors point out that investor protection stimulates the financial market and countries that protect their shareholders have stronger stock markets (LA PORTA et al., 2000). Consequently, financial development can accelerate economic growth and improve the allocation of a country's resources. Hence the relevance of thinking about corporate governance not only as a mechanism that can only benefit the company, but which impacts the macroeconomic environment.

Caixe and Krauter (2013) emphasize the Brazilian context in which the high concentration of ownership in the shareholding structure can culminate in the overlapping of ownership and management of the firms, a fact that would increase the possibility of expropriation of minority shareholders. However, Holanda and Coelho (2014) observed that in the light of the temporal scenario, there has been a slight reduction in the concentration of ownership in Brazil, in recent years, which can be explained mainly by the Brazilian stock exchange (Brasil, Bolsa, Balcão or B^3) initiative to institute special listings of firms that explicitly differentiated practices of corporate governance and adoption of measures to protect minority shareholders. In this sense, considering the Brazilian history, it is relevant to study the relation of the duality of functions in the top management of the firms and their organizational performance.

2.2 CEO Duality and Firm's Performance

Boards of Directors are important to organizations and to corporate governance and can bring innumerable benefits to meeting organizational strategies if the composition of the Board and the performance of board members are effective. According to Dutra and Saito (2002), one of the basic objectives of academics, professional associations, and multilateral organizations within this theme is to analyze the profile of the members of these bodies and identify the ideal compositions for these councils, in order to make their supervision. Andrade et al. (2009) emphasize that among the activities of the Board of Directors are the monitoring of the decisions and the supervision of the management, hiring, firing and defining the executive compensation. Thus, the way in which the board functions and carries out its duties can significantly impact organizational performance.

Xie, Davidson, and DaDalt (2003) define CEO duality as the situation in which the same person performs the functions of both the CEO and Chairman. Fama and Jensen (1983) argue that the duality of CEO positions, that is, executive director of the company and Chairman of its Board, represents a conflict of interests between ownership and management of which agency theory deals. This, in turn, would impede a board's ability to effectively oversee a CEO's decisions, leaving greater opportunities for the CEO to promote his own personal interests, in order to generate potential losses to the company's shareholders.

In Brazil, the Brazilian Institute of Corporate Governance (IBGC, 2009), through its Code of Best Practice for Corporate Governance, indicates some desirable paths and brings important points so that organizations can achieve better levels of governance reflected in their practices. In relation to CEO duality, more specifically, the code suggests that the same person should be prevented from acquiring the functions of Chairman and CEO by the same person, because the duties of the Chairman are different and complementary to those of the executive director and that there is no concentration of power, to the detriment of proper management supervision. In addition to the recommendations on duality, it is interesting to note that other aspects can also significantly influence corporate governance practices. Silveira, Barros, and Famá (2003) emphasize that greater participation of independent members in the board and an adequate number of members are also recommended governance practices and can be achieved through adequate governance structures.

Moscu (2013) explains that the duality of functions can be a problem because the people who are responsible for the performance of the company are the same ones that should evaluate its efficiency. In this way, performance evaluation is compromised and can lead to underperforming the company in the long run. Moreover, the concentration of power in the hands of only one executive can mean an excess of responsibility in the hands of that person, which can lead to organizational inefficiency. Moscu (2013) clarifies that according to the Agency Theory, the most appropriate would be the separation between the two positions to avoid any kind of conflict. However, Anderson and Anthony (1986, apud IYENGAR; ZAMPELLI, 2009) argue that the CEO duality provides a single focal point for the firm's leadership, thus creating an image of firm stability, building trust in company management, and fostering better communication between the administration and the Board of Directors.

Donaldson and Davis (1991) and Rodrigues (2013) cite the Stewardship Theory, which contrasts with the indication of Agency Theory, since it suggests that organizational performance would improve by giving greater flexibility to manage and corporate governance practices, so that it is more appropriate to have the command in the hands of a single person, because managers seek to align their interests with those of shareholders to avoid conflicts that endanger their reputation. In Brazil, Amaral-Baptista, Klotze, and Melo (2011) found signs that in firms where the CEO and the Chairman are the same person performed significantly better in 2008. Peng (2004), in a study with 405 listed companies in the Shanghai and Shenzhen Stock Exchange, reported a positive and statistically robust impact of CEO duality on the firm's performance as measured by ROE.

Chen, Lin, and Yi (2008) found no significant evidence that CEO duality affects the performance of listed companies in the S&P500 index from 1999 to 2003. Iyengar and Zampeli (2009), using ROA as a proxy for performance, have found results that suggest that duality did not maximize firm value. The Uadiale (2010) study, when analyzing the impact of the board structure on the organizational and financial performance of Nigeria's companies, revealed a negative association between ROE and CEO duality. The author also suggests from his findings that it would be better to maintain a council with large numbers of people and external members, as this could contribute to the improvement of the financial performance of companies.

Based on this context, we can see that the evidence about the reflection of the duality of functions in the management and performance of companies is still conflicting. In Brazil, specifically, studies that address this theme are still scarce, with emphasis on the study of Amaral-Baptista, Klotze and Melo (2011), analyzing only the year 2008. Thus, this study becomes relevant, considering the approach of a period of six years, from 2008 to 2013, seeking to clarify this relationship in the Brazilian market. Thus, from Amaral-Baptista, Klotze, and Melo (2011), the following research hypothesis is suggested:

H_1: The CEO duality is positively associated with the firm's performance.

In this way, this study uses methodological procedures that support the establishment of relationships between these phenomena, which are detailed below.

3 DATA AND METHOD

This study is developed as exploratory-descriptive research, with a quantitative approach, using secondary data from the period 2008 to 2013. For the analysis of the present study, the companies that serve as a sample are those belonging to the IBrX100 index, referring to the theoretical portfolio corresponding to the period from September to December 2014. The firms were surveyed in the first half of December 2014. The choice of the firms belonging to the IBrX100 index is justified because it is composed of the 100 most traded and most liquid securities of B[3]. As one of the variables used in this study refers to the firm's market value, this criterion is important to ensure that the value of companies is more robust.

Among the companies that make up the index, those that did not present information on at least one of the variables used in the model during the analyzed period were excluded. We justify the exclusion of incomplete data in the face of the goal of finding a balanced dashboard and improving inference in the results. It is worth noting the fact that some of the firms that make up this portfolio have two shares under negotiation and that, in this case, remained only the one that offered the most liquidity. We obtained a sample composed of 70 companies, over 6 years, making a total of 420 observations. The firms that made up the sample are shown in Figure 1.

Figure 1 – Companies that compose the sample.

AES Tiete	CPFL Energia	Gol	MMX Mineração	Souza Cruz
All America Latina Logística	Cyrela Realt	Hypermarcas	MRV	Sul América
Ambev S/A	Duratex	Iguatemi	Multiplan	Suzano Papel
Arteris	Eletrobras	Itausa	Odontoprev	Taesa
B2W Digital	Eletropaulo	JBS	Oi	Telefônica Brasil
BM&FBovespa	Embraer	Klabin S/A	Pão de Açúcar	Tim Part. S/A
BR Malls	Energias BR	Light S/A	PDG Realty	Totvs
BRF S/A	Eneva	Localiza	Petrobras	Tractebel
Brookfield	Estácio Part.	Lojas Americanas	Porto Seguro	Ultrapar
CCR	Even	Lojas Renner	Raia Drogasil	Usiminas
Cemig	Eztec	M. Dias Branco	Randon	Vale
Cesp	Fibria	Marcopolo	Rossi Residencial	Valid
Cia Hering	Gafisa	Marfrig	Sabesp	Via Varejo
Copel	Gerdau	Minerva	Sid Nacional	Weg

Regarding the classification of the above-mentioned companies in sectors, it was followed by the classification of Economatica Database, as shown in Table 1, and it is possible to verify that the majority of the sample is made up of firms in the electric energy sector, and also those that do not fall into any of the classifications, set forth here as "Other."

Table 1 - Companies of the sample by sector.

Sector	Amount
Chemistry	2
Construction	8
Electricity	12
Finance and Insurance	3
Food and drinks	6
Industrial machines	1
Mining	2
Oil and Gas	1
Others	12
Paper and Cellulose	3
Software and Data	1
Steel and Metallurgy	3
Telecommunications	3
Textile	1
Trade	5
Transportation and Services	4
Vehicles & Auto Parts	3
Total	**70**

The data were collected from the Economatica Database, the Reference Forms provided by the companies to the Brazilian Securities and Exchange Commission (CVM) for the period from 2008 to 2013 and the information available on the websites of the firms in the area of Investor Relations. Information was also consulted on B[3]'s electronic address.

3.1 Definition of models and variables

To answer the research problem, the empirical analysis to verify the relationship among the variables was performed through multiple linear regressions and statistical confirmation tests. Two methods were used for the regression analysis: the Ordinary Least Squares (OLS) method and the Probit method. Based on the hypothesis that Return on Assets (ROA) and Return on Equity (ROE) can be written as a function of CEO duality (DUAL), presence of institutional investors (INST), highest concentration of ownership (CONC), company size (SIZE), company leverage (LEV) and board size (BSIZE), a model was estimated using the OLS method. For the available data, we can construct a vector of regressors that can interfere in the result of the dependent variable Y, according to Equation 1. In which, Y is the dependent variable that measures the performance of the company, represented primarily by ROA and in a second model by ROE; and $X_{(1..k)}$ represent the independent variables.

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k + \varepsilon \quad (1)$$

On the other hand, Moscu (2013) stresses that to test the relationship between the dependent variable that indicates the CEO duality, it is necessary to use a Probit model. Probit-type models are non-linear, and the dependent variable is binary. In this study, the Probit model is estimated according to Equation 2.

Pr (Y=1/X)= Pr (Y= 1/$X_1, X_2, \ldots, X_n$*)*

$$Y^* = \alpha + \sum X \beta + \varepsilon \qquad (2),$$

$$\text{In which, } Y = \begin{cases} 1 \text{ if } Y^* > 0 \\ 0 \text{ otherwise} \end{cases}$$

In which, P_r denotes probability and the other parameters were presented in Equation 1. The dependent variable for the Probit model becomes the CEO duality (DUAL), which assumes the value 1 if the CEO and the Chairman of the Board of Directors are the same person, and 0 otherwise. Thus, ROA is not considered in Equation 2. Table 2 shows the dependent and independent variables, with their respective descriptions and estimation form.

Table 2 - Description of the variables of the OLS model.

Dependent Variables	
ROA	Return on Assets
ROE	Return on Equity
Independent Variables	
DUAL	CEO and Chairman of the Board of Directors are the same person. If these functions are performed by only one person the dummy assumes value 1, or 0 otherwise.
INST	The largest shareholder is an institutional investor.
CONC	The dummy variable that assumes a value of 1 in the case of firms with a concentrated shareholding (the first three shareholders own more than 50% of the shares of public companies), and 0 in the case of companies with dispersed shareholdings.
SIZE	The size of the company is measured by the logarithm of its market value.
LEV	The ratio of total gross debt to shareholders' equity. It represents a measure of leverage.
BSIZE	The number of effective members of the Board of Directors.

Source: Adapted from Moscu (2013).

The model used is an adapted version of the one used by Moscu (2013), when studying the same research object in firms in Romania, where the dependent variables were the ROA and the ROE to measure the impact of performance on the explanatory variables. ROA and ROE are measures widely used as dependent variables in surveys that seek to relate corporate performance to other variables and are widely employed in studies that seek to verify the relationship between performance and CEO duality (LAM, LEE, 2008, AMARAL-BAPTISTA, KLOTZE and MELO, 2011).

Concerning the question of the relationship between CEO duality and the existence of institutional investors, Moscu (2013) explains that in firms where CEO duality exists, their greater participation may be common, in addition to greater financial leverage, indicating a more intense external monitoring, which may be necessary to reduce the agency problem. The question of concentrated shareholding may explain the fact that the higher the concentration, the greater the chance of duality of functions, suggesting that there is a fall in company performance (Moscu, 2013).

Regarding the firm's size, according to Holtz et al. (2013), studies indicate that the firm's size interferes with its administrative choices. Silveira, Barros, and Famá (2003) point out that some researchers believe that the effectiveness of the Board decreases once it exceeds a certain number of members. Pizetta and Costa (2013) list some factors that contribute to the integrity of the Board and one of these factors is the Board's size as it interferes with the agility and confidence of the decisions made. In addition, the IBCG's Code of Best Practice for Corporate Governance itself recommends that the number of directors is between 5 and 11, that is, a negative relationship is expected between the ROA/ROE and BSIZE variables, since the higher the number of members, the lower would be company's performance.

4 RESULTS

The descriptive statistics are presented in Table 3. On average, the duality of functions was observed in about 17.6% of the companies in the sample. Regarding corporate performance, the average Return on Assets (ROA) was 5.6%, and the average Return on Equity (ROE) was around 14.0%. It is still possible to notice that, despite the balance of the data panel, there are companies with considerably different results, when observing the minimum and maximum values of Table 3.

We observe that around 30.5% of the firms belonging to the IBrX100 index have the characteristic of a high concentration of ownership. In this case, the property is considered concentrated when the three largest shareholders own more than 50% of the firm's shares. In addition, on average, 22.3% of firms are controlled by institutional investors. We also note that the average size of the Board of Directors in the period studied was 8.91, and the minimum number was 5.00, according to the recommendations of the IBGC's Code (2009).

Table 3 - Descriptive Statistics. 2008-2013.

Statistics	ROA	ROE	DUAL	INST	CONC	SIZE	LEV	BSIZE
Average	5.619	13.996	0.176	0.223	0.305	15.797	98.784	8.909
Median	5.250	15.235	0.000	0.000	0.000	15.706	68.900	9.000
Maximum	38.900	76.560	1.000	1.000	10.000	19.756	1,044.000	17.000
Minimum	-38.900	-98.880	0.000	0.000	0.000	11.838	-1.339.500	5.000
Standard deviation	7.740	19.358	0.381	0.417	0.782	1.254	149.953	2.342
Asymmetry	0.117	-1.340	1.699	1.325	8.323	0.405	0.162	0.901
Kurtosis	8.866	9.003	3.889	2.756	98.503	3.976	31.918	4.050

Note: in which, ROA is the Return on Assets, DUAL is the dummy variable for the existence of CEO duality, INST is the dummy variable for the existence of the largest shareholder being institutional investor, CONC is the dummy variable to represent the case of firms with a concentrated or unincorporated shareholding, SIZE represents the size of the company, LEV stands for leverage and BSIZE refers to the number of members on the Board.

We verified that the year 2008 presented the largest proportion of companies in which the functions of CEO and Chairman of the Board were exercised by the same person (a total of 22.86%), as shown in Table 4. Except for the year 2010, which showed small growth in relation to the previous year, a phenomenon of reduction in the following years is perceived. The finding of a decrease in the presence of duality over the period studied is in line with the results of the study by Holanda and Coelho (2014), which indicate a small reduction in the concentration of property in Brazil. Such a consideration is relevant to corroborate with the assertion of Caixe and Krauter (2013) that a high concentration of ownership could increase the possibility of expropriation of minority shareholders and the occurrence of dual roles in top management.

Table 4 – CEO Duality. 2008-2013.

Duality	2008	2009	2010	2011	2012	2013
CEO and Chairman of the Board - same person	16	13	14	12	11	9
CEO and Chairman of the Board - a different person	51	57	56	58	59	61
Companies in which CEO Duality occurs (%)	22.86%	18.57%	20.00%	17.14%	15.71%	12.86%

Table 5 shows the correlation matrix between the variables, in order to verify the degree of association between each of the variables. The variable duality of functions (DUAL) is negatively correlated with the variable concentration of ownership (CONC), firm's size (SIZE), leverage (LEV) and size of the board (BSIZE). According to Brooks (2008), this matrix only indicates the multicollinearity problem when the correlation between variables is higher than 0.8. Thus, it is verified that, in general, multicollinearity does not affect the estimated models, since the variables are not strongly correlated.

Table 5 - Correlation matrix between the explanatory variables of performance. 2008-2013.

Variables	DUAL	INST	CONC	SIZE	BSIZE	LEV
DUAL	1.000					
INST	0.037	1.000				
CONC	-0.005	0.031	1.000			
SIZE	-0,166***	-0,231***	0.037	1.000		
BSIZE	-0,104**	-0.043	-0.034	0.077	1.000	
LEV	-0.046	0,104**	0.022	-0.046	0.043	1.000

Note: in which, DUAL is the dummy variable for the existence of duality, INST is the dummy variable for the existence of the largest shareholder being an institutional investor, CONC is the dummy variable to represent the case of firms with a concentrated or unincorporated shareholding, SIZE represents the size of the company, LEV stands for leverage, and BSIZE refers to the number of members on the Board. ** is significant at 5% level and *** at 1% level.

From these results, the first model was estimated by OLS, with ROA as the dependent variable. According to Table 6, it can be verified that the coefficient of determination of the model (R^2) was 0.093, indicating that about 9.3% of ROA variations can be explained by the estimated model and that there may be other factors that do not those that can contribute to a better specification of the model. This result is like the Moscu (2013) model, which served as the basis for the construction of this study.

The model was statistically significant at the 1% level, given its F statistic (7.067). The Durbin-Watson statistic was close to 2, indicating that there is no correlation between the residues. As for the variables, the variable SIZE showed a positive and significant relationship with the organizational performance (1.683), while the BSIZE presented negative and significant relation (-0.658). The other variables were not statistically significant.

On the expected relationships, the negative result of the Size of the Board corroborates the findings of Silveira, Barros, and Famá (2003), indicating that the larger the number of members, the smaller the organizational performance tends to be, in cases where there are duality functions. Regarding the DUAL variable, the lack of significance of its relationship with the ROA suggests that the accumulation of functions did not affect the performance of Brazilian companies, at least not the performance measured by this variable, in line with Daily and Dalton (1997) and Moscu (2013). However, the Brazilian market presents some different characteristics of developed markets, such as the weak legal protection of investors and the lower level of corporate governance. These aspects may explain the unexpected relationship.

In addition, we concluded that the performance, measured by the ROA, is negatively related only to leverage (LEV), with coefficient -0.004, and to the Board's Size (BSIZE), with coefficient -0.658. The coefficients are significant only for the variables that relate to the size of the company and the size of the Board since the *p*-values are less than 0.05.

Table 6 - Results of regression to ROA as dependent variable (OLS). 2008-2013.

Variables	Coefficient	Standard Error	*t* Statistic	Prob.
Constant	-15.07257	4.855729	-3.104080	0.0020
DUAL	0.834551	0.967182	0.862868	0.3887
INST	0.213286	0.915165	0.233057	0.8158
CONC	0.489344	0.465446	1.051344	0.2937
SIZE	1.683668	0.307500	5.475349	0.0000
LEV	-0.003897	0.002453	-1.588439	0.1130
BSIZE	-0.658349	0.165977	-3.966498	0.0001
R Square	0.093112			
Adj. R Square	0.079937			
F Statistic	7.067271			
Prob(F Statistic)	0.000000			
Durbin-Watson	1.942153			

The empirical results show that, for the analyzed firms, it was not observed that the duality of functions leads to high organizational performance, considering that the sign of the regression coefficient is positive. However, as the *p*-value is greater than 0.05, the results were not significant, corroborating with the findings of Chen, Lin, and Yi (2008) and Iyengar and Zampeli (2009). Regarding the analysis considering ROE as a dependent variable, Table 7 shows that the value of the coefficient of determination (R^2) was 0.111, that is, approximately 11.01% of the ROE variations can be explained by the suggested model. Thus, when comparing the models with different dependent variables (ROA and ROE), it is possible to verify that the explanatory variables have a higher degree of explanation of ROE, as reported by Peng (2004).

Regarding the expected relationships, the *p*-value for the CEO duality (DUAL) in the estimated model for the ROE was still not significant and kept the signal positive and not significant, indicating that the duality did not impact the performance. However, unlike the results shown in Table 6, the variable for CONC was significant and showed a negative sign (-5.080), when expected was positive, in line with what was suggested by Moscu (2013). which suggests a drop in performance when the stock concentration is higher.

Table 7 - Results of regression to ROE as dependent variable (OLS). 2008-2013.

Variables	Coefficient	Standard Error	*t* Statistic	Prob.
Constant	−45.0343	13.7565	−3.2737	0.0012
DUAL	3.52789	2.10889	1.6729	0.0952
INST	5.18517	2.64006	1.964	0.0503
CONC	−5.08026	2.49976	−2.0323	0.0428
SIZE	−1.32915	0.358088	−3.7118	0.0002
LEV	−0.39742	1.31769	−0.3016	0.7631
BSIZE	4.47061	0.86688	5.1571	<0.0001
R Square	0.111073			
Adj. R Square	0.097074			
F Statistic	6.622418			
Prob(F Statistic)	0.000000			

Table 8 shows the results of the estimation when the duality becomes a dependent variable in the Probit model. Gujarati (2006) points out that low R^2 should not be a cause for concern in the case of non-linear models of qualitative responses with dichotomous regressors, such as Probit since this is not the appropriate measure to evaluate it.

Analyzing the coefficients of the new model, all variables are negatively related to CEO duality, but only the variable concerning the Board's Size is significant. This corroborates the premise that the greater the duality, or when there is duality, the smaller the number of members in the Board of Directors, that is, confirming that when there is duality generally decisions tend to be centralized in few people to avoid the loss of control by managers, as Moscu (2013) explains. In this estimation, besides the Board's Size (BSIZE), the size of the company (SIZE) presented significant results, thus corroborating with the statement of Holtz et. al. (2013), which point out that the size of the company interferes with performance.

Table 8 - Results of regression to Duality (Probit). 2008-2013.

Variables	Coefficient	Standard Error	*z* Statistic	Prob.
Constant	0.753590	0.979656	0.769239	0.4418
INST	-0.014974	0.180130	-0.083129	0.9337
CONC	-0.056298	0.112408	-0.500831	0.6165
SIZE	-0.048883	0.064052	-0.763179	0.4454
LEV	-0.000544	0.000486	-1.119787	0.2628
BSIZE	-0.097299	0.033753	-2.882693	0.0039
McFadden R Square	0.034196			

It can be said, then, that the results showed that the CEO duality did not affect the organizational performance when compared to the other explanatory variables, being affected by the Board's Size, since it was the only significant variable at a level of 5% meeting the findings of Daily and Dalton (1997) and Moscu (2013).

5 CONCLUSION

One of the main issues when it comes to Corporate Governance is the Agency Theory and the conflicts that may exist when there is no separation of ownership and control. The way organizations are managed, as well as the layout of the management structure, are important because they have a direct impact on strategic decision making and, consequently, on the direction, the organization will take in the short and long term. From the agency's perspective, regarding the issue of COE duality, codes of best practices for corporate governance around the world often indicate that the functions of Chief Executive Officer and Chairman of the Board of Directors are performed by different people.

The present study sought to identify the relationship between the CEO duality and the corporate performance of the public companies listed on the B^3 that make up the IBrX100 index, being the 100 companies with the most liquid and most traded stocks among the others listed. The final sample consisted of 70 of the 100 companies. For that, the data referring to the Boards of Directors, shareholding composition and capital structure of the companies that composed the sample were analyzed. Empirical studies on this theme usually diverge in their results, and it is not possible to infer in a more general way the impact that this practice can have on organizations.

The results showed that, on average, about 17% of firms are composed of people who act as both CEO and Chairman, a fact that characterizes duality. However, it has been noted that these numbers have been decreasing over the years, meeting the recommendations of IBGC in its Code of Best Practices for Corporate Governance.

By means of the estimates using the OLS and Probit methods it was not possible to verify the impact that duality can give to the organizational performance, considering that the results were not significant for the variables selected in the study, as well as in Chen, Lin, and Yi (2008) and Iyengar and Zampeli (2009). As for the Board's Size, we found that when there was the COE duality, the number of members was smaller. In addition, larger companies showed positive performance in one of the estimates.

Boone et al. (2007), when studying the determinants of Board's size and composition, have also obtained inconclusive results and suggest that idiosyncratic factors affect many of the individual characteristics of Boards of Directors and contribute to the lack of clear explanation of the results found, a fact that characterizes a limitation of the study. Although the researches, in general, have not reached conclusive results, with respect to the impact that the practice of duality can actually cause to organizations, this study contributes with a greater understanding about its influence on the organizational performance in the Brazilian scope, that is little explored in this sense.

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