RETURN ON SHARE AND THE INFLUENCE OF CORPORATE SOCIAL RESPONSIBILITY

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Purpose: This research aimed to analyze the influence of Corporate Social Responsibility (CSR) practices on the return on shares of Brazilian companies.

Theoretical framework: Stock market investors analyze the behavior of companies when making decisions (Ball & Brown, 1968).

Method/design/approach: It was used the Propensity Score Matching methodology to match companies engaged and not engaged in CSR, by criteria of similarity.

Results and conclusion: The findings showed a positive relationship between CSR and the return on share, which demonstrates that the fact that companies engage in CSR, specifically in environmental-related actions, influences the higher market performance in terms of returns of shares.

Research implications: It contributes in social terms, by motivating companies to engage in CSR, and in economic terms, by demonstrating that CSR has a positive impact on company value.

Originality/value: This result contributes by showing that the environmental pillar of CSR positively impacts the capital market, which can be useful for companies when deciding on their investments in CSR and for shareholders because they understand that CSR creates value even in an emerging scenario like Brazil.

Keywords: Corporate Social Responsibility, Stock Return, Asset Valuation, Brazil.
INTRODUCTION

Since seminal studies of financial accounting, such as Ball and Brown (1968), it is well known that stock-market investors look at financial information in making their decisions. According to Gonçalves, Barbosa, Barroso, and Medeiros (2015), this information demand by investors has evolved, and currently, in addition to the financial information required, investors are looking for non-mandatory information to decide on their investments.

Within this scope of non-mandatory information, social and environmental information stands out, which according to Gonçalves et al. (2015), represent a way for companies to relate to and demonstrate a commitment to their stakeholders, including shareholders and investors. This relationship can be explained by the stakeholder theory proposed by Freeman (1994), who supports the idea that companies use their stakeholders to create value and, in return, must invest and commit to socially responsible practices.

The fact that companies invest and disseminate corporate social responsibility (CSR) practices, to Dalmacio and Buoso (2016) may represent for some investors an expectation of future benefits for the company. On the other hand, according to Groening and Kanuri (2013), some investors are not satisfied when they receive information on CSR practices, which stems from the understanding that such actions may be unnecessary or even harmful to the organization's financial health. The understanding that CSR practices may pose a "threat" to the company's financial health was exposed by Friedman (1970), the author responsible for sustaining the shareholder theory. This theory, unlike stakeholder theory, explains that values, intended for social practices, are perceived by shareholders and investors as costs and not as investments since they aim at social promotion rather than the efficiency of activities.

Assuming these two views may exist, it is understood that some investors in the stock market may apply their resources to socially responsible companies since according to Dalmacio and Buoso (2016), they understand that CSR practices represent an expectation of generating value future. On the other hand, there may be investors who perceive CSR practices as unnecessary expenses that undermine corporate profits (Groening & Kanuri, 2013). Such insights have been empirically proven by Chen and Gavious (2015), who found that CSR practices have different implications for different investors. In this sense, it is noticed the preference for CSR information can influence the decisions of the investors to apply or not to a particular company, and consequently, the investors' preferences can impact the share price (Doh, Howton, Howton, & Siegel, 2010). This understanding assumes share prices behave according to market demand, if there is a greater demand for the shares of certain companies, so they tend to appreciate it.

The empirical results revisited in the literature on the return on share and the CSR information show divergent findings. In the international scenario, it was observed that most parts of the studies showed a positive relation between CSR and the return on share (Vergalli, & Poddi, 2009; Dhaliwal, Li, Tsang, & Yang, 2011; Becchetti, Ciciretti, Hasan, & Kobeissi,
A few studies showed that CSR information negatively reflects the share price (Campos & Lemme, 2009; Meng & Zhang, 2022; Luo, 2022). In Brazilian investigations, the study of Boente, and Cavalcanti (2012) and Souza, Junior, Andrade e Fernandes (2019) are highlighted, which did not show any association between CSR practices and the return on share; the research by Salgado, Silva, and Araújo (2015) found a negative relation between the themes, and Dalmacio and Buoso (2016) and Hopata, Ribeiro, and Gerigs (2020) evidenced a positive relationship between CSR and return on share.

Motivated by the Brazilian context of divergent results on the relationship between CSR engagement and stock return, the objective of this research is to analyze the influence of CSR practices on stock return in Brazilian companies. It is expected companies engaged with social and environmental practices have a higher return on actions than the others. The positive relationship between CSR and stock returns is based on the premise of stakeholder theory, which explains that such practices aimed at external users are valued by them (Freeman, 1994).

In Brazil, limitations in terms of proxies used to measure CSR may have led to divergent results on the relationship. According to Brooks and Oikonomou (2018), different metrics, contexts, and industries analyzed are what have led to divergent results when the relationship between CSR and stock returns is investigated. For the authors, when the general scenario is observed and the limitations of contexts and proxies are considered, there is a prominence of results that show an appreciation of investors on shares of companies involved in social and environmental disclosure, which have expectations of higher future profitability (Dalmacio & Buoso, 2016).

Regarding the limitations of Brazilian research about the use of CSR proxies, this is the first study to consider social and environmental pillars when measuring CSR in Brazilian companies. While previous research has focused on investigating the participation of Brazilian companies in the Corporate Sustainability Index (ISE) or Carbon Efficient Index (ICO2) using a categorical variable (Boente, & Cavalcanti, 2012; Dalmacio & Buoso, 2016; Salgado, Silva, & Araújo, 2015; Souza et al., 2019; Hopata, Ribeiro, & Gerigs (2020), the CSR measure used in this research includes dimensions related to community, human rights, workforce, environmental innovation, resource use, and emissions. All these CSR dimensions were aggregated into a social and environmental dimension and are defined by an internationally recognized database.

In addition, the Latin American context is adequate when dealing with this problem. It is observed that in the Latin American context, more specifically Brazilian, according to Cazeri, Anholon, Silva, Ordenez, Quelhas, Leal Filho, and Santa-Eulalja (2018), CSR practices are still in stages development contexts, unlike developed country contexts, where the largest number of studies identified in the literature were concentrated. Therefore, it is understood as relevant to analyze a country where practices are still being inserted into the daily business, and if these practices can influence market performance in terms of share returns.

The findings of this research have implications for Brazilian companies since the findings have shown that the socially responsible behavior of organizations, especially those related to environmental issues, is valued by investors, and reflects on the greater return on share. Besides, this research contributes to the literature by providing additional evidence and considering an aggregate CSR metric not yet investigated by the previous literature and thus, overcoming the previous limitations that were based on the analysis of categorical variables (listing in ISE or ICO2). Finally, this research advances previous knowledge, showing that different dimensions of CSR have a different impact on the Brazilian capital market.
2 LITERATURA REVIEW

This section presents a literature review on CSR, the dimensions that involve its conceptualization, and its connection with two theoretical lenses: stakeholder theory and shareholder theory. Subsequently, the studies that address the relationship between CSR and the return on share are presented, listing different empirical findings capable of supporting the two existing theoretical lenses.

2.1 Corporate Social Responsibility

The process of globalization has generated for companies the need to make their information transparent to the various stakeholders, including social and environmental information (Tai & Chuang, 2010). The emphasis on disclosure of information on corporate social responsibility (CSR) practices was highlighted in the last decade when companies began to focus their efforts on adopting socially responsible practices and disseminating them to society, government, shareholders, customers, and suppliers (Servaes & Tamayo, 2013).

Carroll (1979) was pioneered the idea of CSR, or corporate citizenship, as it is also called. The author has looked at the fact that the activities of organizations go beyond their profitability and that the community at large, and all stakeholders expect contributions or attitudes that aim to minimize negative externalities.

Due to many stakeholders, Carroll (1998) argues that the concept of socially responsible behavior can be seen on four different faces, the first of which is the question of whether the company is profitable, that is, responsibility. The second aspect concerns the fulfillment of legal responsibilities, the third is that of meeting ethical responsibilities and, finally, participating in philanthropic contributions.

In addition, Carroll (1998) also identified some strategic purposes by which firms decide to invest in socially responsible practices. The author identified the main motivations of the companies for the disclosure of this information and how the disclosure would be manifested to the interested parties. Thus, the author brought to the literature the idea that companies use and disclose information about CSR to obtain greater legitimacy, competitiveness, and concern for social externality.

According to Tai and Chuang (2010), CSR is the set of initiatives that companies carry out to protect, promote and maximize the benefits of stakeholders and people as a society. For Chapple and Moon (2005), CSR can be understood as a means of relationship between organizations and society and can be perceived in several ways, such as codes and budgets for CSR, through corporate communication through websites, reports, and corporate branding.

For stakeholders, the socially responsible behavior of companies has been seen as one of the main components of corporate strategy (Becchetti et al., 2012), since it allows stakeholders and society in general to know and understand the business environment (Freeman, 1994). Stakeholder theory explains why CSR information is available to respond to the demand for stakeholder information (Becchetti et al., 2012; Freeman, 1994).

For companies, CSR practices can be undertaken to improve customer satisfaction, purchase from a socially responsible organization, enhance their social and environmental reputation, and strengthen their competitiveness (Tai & Chuang, 2010). Also, organizations are investing in CSR, because according to Dalmacio and Buoso (2016) this is a way of showing the market, as a sustainable company with a greater possibility of future value generation.

However, it has been shown in the literature that not all stakeholders believe that socially responsible companies can generate value, rather, they believe that actions, practices, and investments in social issues are unnecessary and may even undermine the financial health of
the company. This view comes from Friedman's (1970) shareholder theory, which sees social actions as a way of social promotion at the expense of shareholders. The author maintains the premise that the resources available for social issues are perceived as costs rather than as investments since they aim at the social promotion of the company and not at its efficiency.

This perspective can be seen in the study by Salgado, Silva, and Araújo (2015), that the investments made by Brazilian companies in CSR issues had a negative influence on value creation, that is, the more companies invest in social issues its capacity to generate value decreases. In this way, it is possible to notice that the literature presents two opposite theoretical currents, one that affirms that CSR is something beneficial for the companies and that the interested parties aim for this information (Freeman, 1994), and another, that understands CSR like something evil for the company and shareholders, since it minimizes economic wealth (Friedman, 1970).

The research by Chen and Gavious (2015) has brought the perspective that there are different stakeholders with different preferences, so for some of them, information on CSR is important and attractive, and for others, it is not. The authors classified investors in three types: marginal, institutional, and trading off the share exchange. Evidence has shown that marginal investors value the socially responsible behavior of firms, and on the other hand, the other two types of investors are not interested in the social behavior of organizations.

It is based on the different positions evidenced by the literature that this study sought to analyze if CSR practices are valued by investors in Brazilian companies. To this end, the next chapter is devoted to the discussion of stock returns as a measure that reflects the valuation of the company, if investors who hold the view that CSR practices will generate future benefits in terms of return, will invest in socially responsible companies, and consequently, the stock price of these companies will be valued. On the contrary, if investors have the view that CSR practices are detrimental to the company's profit, they will not invest in socially responsible companies, which may devalue the value of a company's stock or simply have no impact.

2.2 Relationship between Corporate Social Responsibility and Return on Share

Several studies have found empirical support for the two views of CSR. At the international level, a study by Yang and Baasandorj (2017), which investigated the influence of CSR on financial performance (measured by ROA and Tobin's Q), analyzed a sample of air transport companies from different countries during the years 2006 to 2015 and found that both the overall CSR dimension and the environmental and social dimensions positively influence financial performance.

Similarly, Maqbook and Zameer (2018) verified the relationship between CRS and financial performance in commercial banks in India during the period 2007 to 2016. As a result, the authors demonstrated a positive influence of CSR practices on financial performance, which suggests that socially responsible behavior can be an integral aspect of a company's business strategies aimed at maximizing its profits.

In Brazil, Boente, and Cavalcanti (2012) investigated the companies included in the ISE, from 2008 to 2010, to verify if these companies had higher average returns and lower risks. However, the findings returned to the fact that the companies in the sample do not offer benefits of return and risk minimization when compared to companies that are not members of the index. Therefore, it is noted that the share price was not affected by the organization's participation in ISE.

Salgado, Silva, and Araújo (2015) analyzed the relationship between value creation, financial performance, and CSR in Brazilian ISE companies, from 2005 to 2010. The authors found that the more companies invest in socially responsible practices, the lower the value
creation. Besides, they verified that the socially responsible behavior of the Brazilian organizations did not always provide a greater return to the shareholders.

Recently, Roy, Rao, and Zhu (2022) found that companies with higher CSR scores benefited from better long-term market valuations, in addition to showing greater market liquidity. In an emerging country, Xu, Chen, Li, and Xia (2020) identified the disclosure of CSR information adds incremental value to companies, especially private companies that are market-oriented. Finally, inserting the impact of COVID-19 in the analysis of the relationship between CSR and stock price, Boubaker, Liu, and Zhan (2022) found that companies with high CSR scores have abnormal cumulative returns higher than other companies, which helped them overcome the negative impacts of the pandemic.

On the other hand, Meng, and Zhang (2022) found the disclosure of environmental information in China harms investor response in terms of cumulative stock return and this impact is even greater in companies with high pollution and institutional participation. Similarly, Luo (2022) showed United Kingdom companies with higher environmental, social, and governance engagement scores have lower stock returns.

In Brazilian companies, Dalmacio and Buoso (2016) analyzed the capital market in the years 2006 to 2012 based on the comparison between the companies that participated in the ISE and the performance. The authors' findings showed that the companies participating in the index obtained higher share returns and greater profitability of the asset, that is, it is observed that in this sample of companies and in that period, the socially responsible behavior of the organizations was reflected in the valuation of the shares.

In the same way, Degenhart, Mazzuco, and Klann's (2017) research showed that during the years 2011 to 2015, information on CSR, as measured by ISE and IBASE, influenced the greater relevance of accounting information in Brazilian companies. The authors concluded that CSR information is perceived as relevant information by investors when making their share buying and selling decisions.

Recently, Souza et al. (2019) identified that Brazilian companies participating in the ICO2 on the Brazilian stock exchange (B3) did not show a higher share return than companies that did not join the ICO2. However, ICO2 companies showed lower sensitivity to market risk than the others, which means that organizations less sensitive to market risk are more likely to be part of ICO2, but this membership does not mean greater returns in financial terms. Hopata, Ribeiro, and Gerigs (2020) identified Brazilian companies in the financial industry participating in the ISE showed a significant increase in stock returns during the period from 2010 to 2015. However, the participation of companies in the Carbon Efficient Index (ICO2) did not demonstrate a significant impact on stock returns.

It is observed that in the Brazilian scenario there are studies that did not identify the influence of CSR practices on the stock price (Boente & Cavalcanti, 2012; Souza et al., 2019), which identified negative influence (Salgado, Silva & Araújo, 2015) and positive influence (Dalmacio & Buoso, 2016; Hopata et al., 2020). Still, there is research by Degenhart et al. (2017) who found that investors consider information on CSR to be relevant information but did not analyze its effect in terms of market performance.

Linked to the evidence in a Brazilian scenario, it was considered the literature review performed in an international scenario by Brooks and Oikonomou (2018), which highlighted several studies in different contexts that support a positive relationship between market performance and CSR practices. Therefore, the authors conclude that despite the variability of results about the financial impacts of CSR practices, the general conclusion is that there is a positive association between the themes. However, this association depends on the metrics used as CSR, the different types of actions analyzed, different sectors, countries, and periods.
Considering the divergences of results found in a Brazilian scenario that investigated the relationship between market performance and CSR practices and considering the limitations of the previous studies that used the listing of companies in the ISE as a CSR metric, it is believed that there is a positive relationship between the return of share and CSR practices, measured by an aggregate CSR metric, provided by an internationally accepted database. Based on this, we have as a research hypothesis:

H1 - CSR practices positively influence the return on shares of Brazilian companies.

3 METHODOLOGICAL PROCEDURES

The study population is composed of publicly Brazilian firms available in the Refinitiv Eikon database in November 2018, when data collection was carried out. The research sample was delineated by the companies that had the necessary information to calculate the return on shares (ordinary shares) because it was the dependent variable. Besides, companies that did not contain the necessary information for controlling variables and those belonging to the financial sector were excluded because they had peculiar characteristics of capital structure. It should be noted that companies that did not have information on the CSR variables were intentionally retained in the sample to represent the control group.

The final sample comprised 166 companies that totaled 1,162 observations, as represented by Table 1.

Table 1 – Research sample

<table>
<thead>
<tr>
<th>Year</th>
<th>Companies with CSR</th>
<th>Companies without CSR</th>
<th>Total companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>50</td>
<td>116</td>
<td>166</td>
</tr>
<tr>
<td>2012</td>
<td>56</td>
<td>110</td>
<td>166</td>
</tr>
<tr>
<td>2013</td>
<td>57</td>
<td>109</td>
<td>166</td>
</tr>
<tr>
<td>2014</td>
<td>61</td>
<td>105</td>
<td>166</td>
</tr>
<tr>
<td>2015</td>
<td>62</td>
<td>104</td>
<td>166</td>
</tr>
<tr>
<td>2016</td>
<td>63</td>
<td>103</td>
<td>166</td>
</tr>
<tr>
<td>2017</td>
<td>63</td>
<td>103</td>
<td>166</td>
</tr>
<tr>
<td></td>
<td>Total observation</td>
<td>412</td>
<td>750</td>
</tr>
</tbody>
</table>

Source: Prepared by the authors.

It was observed in Table 1 that the largest number of observations is present in the group of companies that do not have information on CSR. Therefore, to minimize the selection bias, the Propensity Score Matching test was used, responsible for selecting an equivalent number of companies that contain information of CSR and that does not contain, through criteria of similarity.

This method represents a way of analyzing the companies in a balanced way, approaching similar companies in terms of the defined criteria (in this research, it was used the size and the sector, like criteria of selection of the companies). According to the authors who developed the test, Rosenbaum, and Rubin (1983), "matching" is a sampling method that generates a "modest" size control group, in which the distribution of covariates is like the distribution of the group treated.

It is also emphasized that using the Propensity Score Matching test, the number of 1,162 observations is reduced to 814 because the 412 observations of companies that have information about RSC (treatment group) are related to 412 observations of companies that have no RSC (control group) information, but which are similar in size and sector.

Seven years were determined as a period of analysis based on the availability of data, and the information about CSR began to be disseminated with a greater intensity only as of...
2011 (in Brazil), which limits to a certain extent the surveys in periods before this. The search variables are presented in Table 2.

Table 2 – Search variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Description</th>
<th>Calculation</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Return on Share (RS&lt;sub&gt;t&lt;/sub&gt;)</td>
<td>It represents how much a share has been valued over a period.</td>
<td>Share price&lt;sub&gt;t&lt;/sub&gt;, less the share price&lt;sub&gt;t-1&lt;/sub&gt; divided for the share price&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>Yang and Baasandorj (2017); Maqbool and Zameer (2018)</td>
</tr>
<tr>
<td>Independent variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Community (CSR_Soc)</td>
<td>It measures the company's commitment to protecting public health and respecting business ethics.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Human right</td>
<td>It measures the effectiveness of a company in complying with fundamental human rights conventions.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Workforce</td>
<td>Measures the company's effectiveness in keeping the workplace healthy and safe, as well as managing employee satisfaction while maintaining diversity and equal growth opportunities.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Resource use</td>
<td>Measures the company's performance and ability to reduce the use of materials, energy, or water, and find more eco-efficient solutions by improving supply chain management.</td>
<td>Score from 0 to 100, available by the database of Refinitiv Eikon</td>
<td></td>
</tr>
<tr>
<td>Emission</td>
<td>Measures the company's commitment and effectiveness in reducing the emission of pollutants in the operational and production processes.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Innovation</td>
<td>Measures a company's ability to reduce environmental costs and costs for its customers and create market opportunities through new environmental technologies and processes or eco-designed products.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Overall dimension (CSR)</td>
<td>It measures corporate social responsibility in general, by the average social and environmental dimensions.</td>
<td>CSR_Soc + CSR_Env / 2</td>
<td>Yang and Baasandorj (2017)</td>
</tr>
<tr>
<td>Independent control variables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size (SIZE&lt;sub&gt;t&lt;/sub&gt;)</td>
<td>Natural Logarithm of Total Assets</td>
<td>NL of Total Assets</td>
<td>Yang and Baasandorj (2017); Maqbool and Zameer (2018)</td>
</tr>
<tr>
<td>Age (AGE&lt;sub&gt;t&lt;/sub&gt;)</td>
<td>The period from the date of foundation of the company to the year of analysis</td>
<td></td>
<td>Yang and Baasandorj (2017); Maqbool and Zameer (2018)</td>
</tr>
<tr>
<td>Leverage (LEV&lt;sub&gt;t&lt;/sub&gt;)</td>
<td>Financial Leverage</td>
<td>Total Liabilities / Total Equity</td>
<td>Yang and Baasandorj (2017); Maqbool and Zameer (2018)</td>
</tr>
</tbody>
</table>

Legenda: NL: Natural Logarithm.
Source: Prepared by authors.

Concerning the share-dependent variable, it was based on the calculation used by Yang and Baasandorj (2017) and Maqbool and Zameer (2018), which consists of the difference between the last return of a given period (t) and the first return of a given period (t-1), divided by the first return of a given period (t-1). Thus, the stock return reflects the stock price variability over a while, positive values (in the event of an increase in the share price) and negative values (in case of a decrease in the share price).

Regarding the independent variables of CSR, it was used measures provided by the database of Refinitiv Eikon. The database, utilizing its methodology, evaluates "criteria" served or not by a certain company, for each criterion served, the database considers as "true" and for
each criterion not met, as "false". For example, "Does the company have the policy to reduce the use of natural resources?" If yes, true, if not, false. Besides, there are some criteria evaluated numerically, such as how much the company spent on electricity each year. Based on these different criteria, the base formulates a final score, which can vary from 0 (if the company did not meet any criteria) to 100 (if the company met all the criteria).

The separation of the dimensions proposed by Refinitiv Eikon was due to social or environmental characteristics. The dimension that represents the criteria related to community, human rights, and the workforce was called the social dimension of CSR (CSR_Soc), while the use of resources, emission of pollutants, and environmental innovation was called the environmental dimension (CSR_Env).

Within the social dimension of CSR, there are the sub-dimensions of community, human rights, and workforce. The 28 criteria that determine the score for the community include whether the company has: "policy against bribery and corruption", "policy on business ethics", "fair competition policy", among others. In addition to these, monetary values are considered, such as the amounts destined for donations. Finally, the final score that measures the company's commitment to the community is generated.

The 11 criteria that determine the human rights score comprise whether the company has: "child labor policy," "forced labor policy," "ethical trade ", " human rights policy ", among others. The 48 criteria that determine the workforce score include whether the company has or does not have: "employee health and safety policy", "supply chain health and safety policy", "health and safety policy", " training policy and development ", " skills training policy. " In addition to these, the labor force is measured by monetary criteria, such as, for example, the rate of employee turnover, the number of women in the employee group, among others.

Within the environmental dimension of CSR, there are sub-dimensions of resource use, emission of pollutants, and environmental innovation. The 31 criteria that determine the resource use score include whether the company has: "water efficiency policy", "resource reduction policy", "energy efficiency policy", "resource reduction targets", and monetary criteria, such as total value disbursed in energy expenditures. The 40 criteria that determine the pollutant emission score include whether the company has: "emission targets", "carbon credit compensation", "emission policy", "particle reduction" and monetary criteria, such as the total emitted in CO₂.

Finally, the 24 criteria that determine the environmental innovation score include whether the company has "hybrid vehicles", "environmental products", "noise reduction policy", "eco-design products", "minimum impact products "And monetary items, such as the amount invested in environmental research and development. Therefore, based on these 6 scores (community, human rights, labor force, resource use, pollutant emission, and environmental innovation), the general CSR indicator, used as the main independent variable, was obtained.

Regarding the control variables, it was based on the research by Maqbook and Zameer (2018) that used size, company age, and indebtedness as explanatory variables for the companies' market performance. For the authors, the larger, longer-operating companies have broader capabilities and greater ability to achieve higher returns. Besides, the authors used the degree of financial leverage as a measure of indebtedness, which tends to impact the return on equity.

For the data tabulation, a Microsoft Excel spreadsheet was used, which also served as a basis for the operationalization of the calculation of stock returns. Later, to analyze the influence of the CSR on the return of the actions, it was used the statistical technique of multiple linear regression with robust standard errors, as well as the Propensity Score Matching test.
which used as a selection criterion size and sector. The operation was performed using Stata software, according to equation 1.

\[
RS_{it} = \beta_0 + \beta_1 CSR_{it} + \beta_2 SIZE_{it} + \beta_3 AGE_{it} + \beta_4 LEV_{it} + FixedEffect_{Year} \\
+ FixedEffect_{Industry} + \epsilon_{it}
\]

It is emphasized that the data normality assumption can be relaxed as a function of the number of observations, which is supported by the Central Limit Theorem. The possible problems of heteroscedasticity were minimized using robust standard errors in all regressions. Finally, the multicollinearity between the variables was tested by the Variance Inflation Factor (VIF) and the autocorrelation of the residues was tested by the Durbin Watson test. Both tests (VIF and Durbin Watson) were presented in the results tables.

4 ANALYSES OF RESULTS

This section is intended to present the results and discussions. Initially, the descriptive statistics and the correlation matrix of the research variables are presented, followed by the multiple linear regression (OLS) and Propensity Score Matching results. The descriptive analysis of the variables can be verified in Table 3.

Table 3 - Descriptive analysis of the variables

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>SD</th>
<th>P. 25</th>
<th>Med.</th>
<th>P. 75</th>
<th>Mean</th>
<th>SD</th>
<th>P. 25</th>
<th>Med.</th>
<th>P. 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>RSit</td>
<td>0.06</td>
<td>0.48</td>
<td>-0.24</td>
<td>0.00</td>
<td>0.30</td>
<td>0.04</td>
<td>0.55</td>
<td>-0.30</td>
<td>-0.04</td>
<td>0.27</td>
</tr>
<tr>
<td>CSRit</td>
<td>55.47</td>
<td>18.74</td>
<td>40.37</td>
<td>58.63</td>
<td>71.92</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CSR_ENVit</td>
<td>52.86</td>
<td>20.77</td>
<td>34.89</td>
<td>54.86</td>
<td>69.66</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>CSR_SOCit</td>
<td>58.07</td>
<td>21.21</td>
<td>41.89</td>
<td>63.39</td>
<td>74.33</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>AGEit</td>
<td>31.96</td>
<td>22.16</td>
<td>13</td>
<td>27</td>
<td>48</td>
<td>41.43</td>
<td>30.59</td>
<td>14</td>
<td>39</td>
<td>58</td>
</tr>
<tr>
<td>LEVit</td>
<td>1.11</td>
<td>7.45</td>
<td>0.48</td>
<td>0.59</td>
<td>0.73</td>
<td>1.05</td>
<td>2.70</td>
<td>0.51</td>
<td>0.66</td>
<td>0.85</td>
</tr>
<tr>
<td>Obs.</td>
<td>412</td>
<td>750</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: RS: Return on shares; CSR: Corporate social responsibility aggregated measure; CSR_ENV: Corporate social responsibility environmental dimension; CSR_SOC: Corporate social responsibility social dimension; SIZE: Size; AGE: Age; LEV: Leverage; Obs.: Observations; SD: Standard deviation; P.25: 25th percentile; Med.: Median; P.75: 75th percentile.

Source: Research data.

Based on Table 3, it can be noted that the average return on shares is slightly higher for the group of companies that engage in CSR practices, moreover, using percentiles and medians, it is observed that the group of companies that invest in CSR have negative returns up to the 25th percentile, while the group of companies that do not invest has negative returns to the median, which indicates a larger number of companies with negative returns in the group of companies that do not disclose CSR actions.

It is observed that the companies that practice CSR actions are, on average, bigger and of greater age. Regarding indebtedness, it can be observed that the average of the group of companies that have CRS is higher than the average of the group that does not have CRS, however, when analyzing the percentiles and the median, it is observed that the indebtedness shows for companies that do not engage in CSR practices.
Regarding the group that discloses CSR, it is observed that the average disclosure serves about 55% of the items analyzed by the database and that companies invest and divulge more items on social issues since this dimension has average and percentiles with values compared to the environmental dimension of CSR. In Table 4, the correlation matrix between each search variable is presented.

Table 4 - Correlation matrix between the research variables

<table>
<thead>
<tr>
<th></th>
<th>RS_{it}</th>
<th>CSR_{ENV_{it}}</th>
<th>CSR_{SOC_{it}}</th>
<th>CSR_{it}</th>
<th>SIZE_{it}</th>
<th>AGE_{it}</th>
<th>LEV_{it}</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS_{it}</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR_{ENV_{it}}</td>
<td>0.0381</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR_{SOC_{it}}</td>
<td>0.0190</td>
<td>0.9261*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSR_{it}</td>
<td>0.0287</td>
<td>0.9798*</td>
<td>0.9828*</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE_{it}</td>
<td>0.0396</td>
<td>0.5860*</td>
<td>0.5975*</td>
<td>0.6032*</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>AGE_{it}</td>
<td>0.0905*</td>
<td>-0.1298*</td>
<td>-0.1168*</td>
<td>-0.1254*</td>
<td>-0.0153</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>LEV_{it}</td>
<td>-0.0548</td>
<td>-0.0271</td>
<td>-0.0113</td>
<td>-0.0192</td>
<td>-0.2416*</td>
<td>-0.0533</td>
<td>1</td>
</tr>
</tbody>
</table>

Obs: 1,162

Note: * Significance at 5%; RS: Return on shares; CSR: Corporate social responsibility; CSR_{ENV}: Corporate social responsibility environmental dimension; CSR_{SOC}: Corporate social responsibility social dimension; SIZE: Size; AGE: Age; LEV: Leverage; Obs.: Observations

Source: Research data.

It is observed that between the two dimensions of CSR, the environmental one presents a greater correlation with the variable of return of the actions, and, that none of the dimensions presented statistical significance. Among the other variables, only the variable age was significantly correlated to the dependent variable, which represents that companies that are more time in the market, are correlated to higher stock returns. Regarding the other values, no variable is highly correlated, except for the dimensions of CSR, which was expected. The variable of size and CSR have a higher correlation than the other variables, which confirms the idea that larger companies are correlated with higher CSR indices.

Table 5 shows the results of equation 1, operationalized by multiple linear regression (OLS) with robust standard errors, and by the Propensity Score Matching test, since there is a disparity in the sample between companies that engage in practices of CSR, as already shown in Table 1.

Table 5 - Results of the influence of CSR on share returns

<table>
<thead>
<tr>
<th>Variables</th>
<th>Coefficient</th>
<th>t</th>
<th>Coefficient</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-0.0218782</td>
<td>-0.04</td>
<td>0.0377356</td>
<td>0.07</td>
</tr>
<tr>
<td>CSR</td>
<td>0.0003379</td>
<td>0.41</td>
<td>0.0034695**</td>
<td>2.37</td>
</tr>
<tr>
<td>SIZE</td>
<td>-0.0034411</td>
<td>-0.14</td>
<td>-0.0042355</td>
<td>-0.18</td>
</tr>
<tr>
<td>AGE</td>
<td>0.0013078*</td>
<td>1.73</td>
<td>0.0013989</td>
<td>1.23</td>
</tr>
<tr>
<td>LEV</td>
<td>-0.0041465*</td>
<td>-1.70</td>
<td>-0.0040063*</td>
<td>-1.80</td>
</tr>
<tr>
<td>Treat</td>
<td>-0.2371907**</td>
<td>-2.46</td>
<td>Size and Industry</td>
<td></td>
</tr>
</tbody>
</table>

R²: 23.84 45.16
Significance: 0.0000* 0.0000*
Year FE: Yes Yes
Industry FE: Yes Yes
Maximum VIF: 2.76
DW: 1.91
Observations: 1,162 824

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Based on Table 5, it can be noted that in the OLS regression analysis, the coefficient of determination ($R^2$) explains 23.84% of the stock return, and, for the Propensity Score Matching test 45.16%, which means that other variables could help explain the occurrence of the dependent variable. Compared to the other studies, Yang and Baasandorj (2017) obtained an $R^2$ of 65.2% when they observed the relationship between CSR and Tobin Q 130 observations, and Maqbool and Zammer (2018) obtained $R^2$ of 21% when analyzing the relationship between CSR and stock returns in 280 observations. Both studies had relatively lower observations than this one, which means the coefficient of determination of both the OLS regression and the Propensity Score Matching characterizes models with good explanatory power.

It is noted in the OLS regression, the CSR variable did not show statistical significance, whereas, in the Propensity Score Matching test, CSR was positively and significantly related, at the level of 5%, with the return of shares. It should be noted that, as highlighted in Table 1, about 64% of the observations correspond to companies that do not have CSR levels, which can lead to a sample selection bias. As a result, the Propensity Score Matching test was used, which equated 412 observations from companies that had some level of CSR disclosure, and 412 observations from companies that did not disclose information about CSR, using criteria of similarity of size and industry. Thus, a similar sample of 824 observations was reached, as shown in Table 5.

It is understood the adequacy of the Propensity Score Matching test to make inferences about the results of this research, since the characteristics of the sample reveal the need to equate the companies with and without the CSR information, to make the coherent analysis, since companies are equated by the similarity of size and industry. Thus, there is a positive and statistically significant relationship between the CSR variable and the stock return, which reveals the socially responsible behavior of Brazilian companies is responsible for positively influencing share returns. Based on this, H$_1$ is not rejected.

Besides, for this test (Propensity Score Matching), it is observed the coefficient of determination ($R^2$) is now 45.16%, which means that when the observations are compared in companies of similar size and industry, it becomes possible to improve the explanation of the dependent variable. Regarding the control variables, it is observed that the age variable (AGE) was positively related to the returns of the actions for the OLS regression, which was not confirmed in the Propensity Score Matching test. On the other hand, the indebtedness presented a negative and significant relation both to the OLS regression and to the Propensity Score Matching test, which allows inferring that the higher indebtedness leads to lower stock returns.

As a complementary analysis, it was performed two new regressions, like the one presented in equation 1. For this analysis, the CSR variable was replaced in the first regression by the variable CSR_Env, and in another regression by the variable CSR_Soc. The objective of this complementary analysis was to verify if both dimensions (social and environmental) influence in the same way in the return of the actions. The results of this analysis are shown in Table 6.

### Table 6 - Results of the influence of CSR dimensions on the return on shares

<table>
<thead>
<tr>
<th>Variables</th>
<th>Return on Share OLS</th>
<th>Return on Share PSM</th>
<th>Return on Share OLS</th>
<th>Return on Share PSM</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coeff.</td>
<td>t</td>
<td>Coeff.</td>
<td>t</td>
</tr>
<tr>
<td>Const.</td>
<td>-0.0009568</td>
<td>-0.00</td>
<td>-0.0156396</td>
<td>-0.03</td>
</tr>
</tbody>
</table>

[Rev. Gest. Soc. Ambient. | São Paulo (SP) | v.16 | p.01-18 | e02856 | 2022]
In the second and third columns of Table 6, it was presented the analysis whose main independent variable was the environmental dimension (CSR_Env), while in the fourth and fifth columns, the social dimension (CSR_Soc) of the RSC is considered as an independent variable. Regarding the RSC variables, it was observed that the environmental dimension (CSR_Env) was positively related to the return of actions at a 5% level, only in the Propensity Score Matching test. The social dimension (CSR_Soc), in turn, was not shown to be significantly related to the return of the actions, in both the OLS regression and the Propensity Score Matching test.

As in the previous analysis, it is understood that the Propensity Score Matching test is adequate since it is supported by similar observations, which give greater consistency in terms of comparability between companies with and without CSR practices. Therefore, it is inferred that environmental practices are responsible for maximizing the return of Brazilian companies’ actions, as opposed to social practices, which did not demonstrate statistical significance.

5 DISCUSSIONS

The findings of this study show in a Brazilian scenario the socially responsible behavior of companies is capable of positively influencing share returns, which means that CSR information is considered in investors’ purchase decisions. Such evidence complements the findings in the Brazilian scenario of Dalmacio and Buoso (2016) and Hopata, Ribeiro and Gerigk (2020), but is contrary to Boente and Cavalcanti (2012), Salgado, Silva, and Araújo (2015) and Souza et al. (2019).

Both the research by Boente and Cavalcanti (2012) and Salgado, Silva, and Araújo (2015) analyzed the ISE as a metric to identify socially responsible companies and analyzed periods that vary from 2005 to 2010. Similarly, Souza et al. (2019) analyzed ICO2 as a metric to identify CSR companies, and recently, Hopata, Ribeiro, and Gerigk (2020) analyzed ISE and ICO2 as a CSR metric and just found significant results when considered ISE proxy but did not find any significant result when considered ICO2 proxy. Thus, it was found differences between this research and the prior research since this study analyzed CSR by an aggregate measure and comprised the years 2011 to 2017, which means that both the measurement and the period may have led to different results.
As well as in this research, Dalmacio and Buoso (2016) found a positive relationship between CSR and market performance, analyzed the participation of companies in ISE as a measure of CSR behavior, during the period from 2006 to 2012. What differentiates the research of Dalmacio and Buoso (2016) from the research of Boente and Galvancanti (2012) and Salgado, Silva and Araújo (2015) is the period of analysis since the measure of CSR was the same one used by the three studies. This suggests perhaps the period of the analysis is responsible for generating different results, and therefore, this research complements the previous findings in the Brazilian scenario, generating evidence of a recent time.

More than that, the recent paper in Brazilian companies from Hopata, Ribeiro, and Gerigk (2020) showed financial institutions participating in the ISE had higher stock returns than those that did not. Again, what differentiates this result on CSR and its benefits in terms of return on shares from the studies by Dalmacio and Buoso (2016) and Boente and Galvancanti (2012) is the industry of analysis. This confirms what was exposed by Brooks and Oikonomou (2018) about different results in different industries and proxies. This research expands on previous findings by investigating publicly traded Brazilian companies belonging to 10 different industries, which makes it possible to generalize the results beyond the analysis of specific sectors, as done by Hopata, Ribeiro, and Gerigk (2020).

Besides, based on the empirical evidence of this study, the findings of Degenhart et al. (2017) are expanded, which showed that investors consider information about CSR relevant to decision making. However, the authors did not analyze whether the fact that this information is considered relevant to investors causes companies with socially responsible behavior to have higher returns, which was confirmed empirically in this research.

It is also perceived the evidence of this research corroborates with the results of research at the international level, listed by Brooks and Oikonomou (2018). The authors, through a review of the studies that related CSR and market performance, found that research in different contexts most support a positive association between the themes. The authors also note that the different results may be due mainly to the different metrics used for CRS.

Regarding the discussion about the CSR metric, it is observed that the studies that investigated CSR in Brazil, used as a measure of CRS the listing of companies in the ISE or ICO2. On the contrary, this research considered 6 dimensions of CSR proposed by an internationally recognized database and that provides a score for each of the dimensions, as determined in Table 1.

Therefore, as already highlighted in seminal studies, such as de Carroll (1979), CSR is a multidimensional concept, and therefore, it is relevant to analyze it to understand its different dimensions, which was carried out in this study. Thus, this research adds evidence on the benefits of CSR practices in terms of stock returns by considering an aggregate measure of CSR that measures the intensity of social and environmental practice by a score that varies from 0 to 100 and not only considering the analysis of categorical variables such as ISE and ICO2.

This paper also evidenced a powerful relationship between environmental activities and market performance rather social activities. The same result was also found in Yang and Baasandorj's (2017) paper, which analyzed the influence of CSR in general, the environmental dimension, and the social dimension on financial performance (measured by ROA and Q of Tobin) in air carriers located in several countries. The findings showed that ROA was positively related to CSR practices, environmental (at 1%), and social (at 10% level). Regarding Tobin's Q, the authors found a positive and significant relationship at the 5% level for the environmental dimension and did not show statistical significance for the social dimension.

The findings of this research are in line with those of Yang and Baasandorj (2017) when they find that the environmental dimension of CSR is related to the market performance of companies' companies, in terms of Tobin's Q, and this research, stock returns. However, the
authors do not justify possible reasons why the dimensions of CSR (environmental and social) have had different implications in terms of market performance.

In this way, this research expands the results of Yang and Baasandorj (2017) by showing that an additional measure of market performance (return of actions) is also more related to the environmental dimension of CSR than to the social dimension, opens the way to new research that can further investigate why the environmental dimension of CSR is more related to company performance (in terms of statistical reliability) than the social dimension of CSR.

Finally, it contributes to demonstrating that the characteristics of the sample are important when defining the statistical tests to be operationalized in research. In this study, when considering the sample of 166 companies and 1,162 observations, it was not possible to observe the relationship between CSR and the return of shares. However, when analyzing this sample, through an appropriate method of treatment (Propensity Score Matching), it was possible to verify the positive and statistically significant influence of the CSR practices in the return of the actions. In this way, it is suggested that companies that engage in CSR environmental practices are valued by the Brazilian stock market and have advantages in terms of market performance.

6 CONCLUSIONS

This research aimed to analyze the influence of Corporate Social Responsibility (CSR) practices on the return on shares of Brazilian companies. The main findings correspond to the positive relationship between CSR practices and the return of shares in Brazilian companies, analyzed during the years 2011 to 2017. More specifically, it was evidenced that companies engaged in practices related to the use of resources, emission of pollutants, and environmental innovation have higher share returns. These findings represent that investors value Brazilian companies that disclose actions related to the environment when they decide to invest.

This evidence generates additional contributions to the research already done, mainly in the Brazilian context, where studies have found different results on the relationship between CSR and market performance. In addition, the findings of Degenhart, et al. (2017), found that investors consider CSR information relevant to decision making but did not show whether the relevance of this information influenced market valuation.

In terms of academic contributions, this study contributes to evolving with the CSR measures used in Brazil. It was observed that previous surveys measured CSR by listing the companies in the Corporate Sustainability Index (ISE) or the Carbon Efficient Index (ICO2), contrary to this study, which considered the multidimensional theoretical concept of CSR and measured CSR by 6 different dimensions, divided into environmental dimension and dimension which are available in a widely recognized database.

Still, Cazeri et al. (2018) highlighted the initial stage of development of CSR practices in the Brazilian scenario, which was evidenced in this study by the low number of companies that had a CSR disclosure score. Thus, in terms of practical or empirical contributions, this study contributes to instigating Brazilian companies, which are still at an early stage in the implementation of CSR practices, to understand that such socially responsible behavior has a positive impact on the stock market and that investing in CSR practices generates a beneficial outcome in terms of results. For companies that already invest in CSR, the research serves to motivate them to continue with their investments, as this generates benefits in terms of return.

This research advances knowledge in the Brazilian scenario by concluding that different dimensions of CSR (social and environmental) have different implications for the capital market in terms of stock returns. The environmental dimension seems to be more valued in the Brazilian scenario, since it showed a positive and significant relationship with the return of the
actions, as opposed to the social dimension, which did not show a statistically significant relationship. These findings expand those of Yang and Baasandorj (2017), who evidenced the positive influence of the environmental dimension on Tobin's Q but did not find a significant relation to the social dimension of CSR. Therefore, this study expands the evidence by demonstrating that the environmental dimension of CSR also implies a higher return on actions, as opposed to the social dimension.

As limitations, it is highlighted the lack of justification as to why the environmental dimension of CSR influences performance measures, and the social dimension does not, which opens the way for future research to investigate these relationships in greater depth, and to seek to justify these findings. In addition, the 7-year review period may be highlighted as a limitation and justified by the availability of CSR information only as of 2011, but still considered as a limitation. More than that, it was analyzed only the measure of return of the actions in this research, and in later research, other measures of market performance could be analyzed to prove such findings. Finally, future research can investigate firm-level factors responsible for moderating the relationship between CSR and stock return, to better understand whether there are characteristics that justify different results in emerging scenarios.

REFERENCES


