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The Value Relevance of Environmental, Social, and Governance Performance: The Brazilian Case

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Abstract: There is extensive literature on the value relevance of social responsibility for companies that operate in developed countries. However, little is known about the influence of these practices on the price of assets listed on emerging economies, such as Brazil. In this context, the aim of this study is to analyse whether social responsibility activities carried out by companies listed on the São Paulo Stock Exchange during the 2010–2015 period play a significant role in enhancing firm value. Unlike previous studies, we distinguish between the three modern pillars of sustainability: environmental, social, and corporate governance (ESG). Our overall results support the value enhancing theory rather than the shareholder expense theory. However, it is important to note that the results also show that the market does not significantly value the three ESG pillars. Specifically, the market positively and significantly values the environmental practices carried out by companies not related to environmentally sensitive industries. In contrast, the market positively and significantly values the social and corporate governance practices carried out by the companies belonging to these sensitive industries. These findings are relevant for both investors and the managers of these companies, policy makers, customers, and citizens concerned about ESG issues.

Keywords: sustainable development; ESG performance; firm value; environmentally sensitive industries; Brazil

1. Introduction

Sustainable development, understood as development that meets the needs of the present without compromising the ability of future generations to meet their own needs [1], is today a key item on the agenda of corporations, governments, and academics around the world [2].

Specifically, when the concept of sustainable development is applied to companies it is called corporate social responsibility (CSR) and implies the incorporation of the objectives of social equality, economic efficiency, and environmental performance into the company's operating practices [3]. However, the concept of CSR is undergoing continuous evolution, moving from an initial position of damage limitation to a proactive position based on the creation of shared value, that is, of significant benefits for both society and the company itself [4].

In this context, the economic, natural, and human resources in Brazil make this country an important candidate for studying sustainable development and CSR. Brazil stands out due to its expanding economy, which is experiencing one of the highest growth levels in the world, with the private business sector playing the most important role in this regard [5]. It also stands out because it has the largest rainforest and the richest biodiversity in the world and a population of more than 200 million inhabitants [6].

However, most of the literature on sustainable development or CSR has focused on studying developed countries. Evidence on emerging countries like Brazil is scarce because reliable data has not been available until very recently. Moreover, prior research has primarily focused on analysing the

explanatory factors of CSR practices carried out by the main companies in the country listed on the São Paulo Stock Exchange [7–9]. However, it is important not only to analyse the explanatory factors of CSR activities but also to analyse whether stakeholders value this information, including employees, customers, suppliers, and politicians, as well as the shareholders of the company itself [10].

The fact that an increasing number of shareholders worldwide take environmental, social, and corporate governance considerations into account in their investment decisions has meant that listed firms are more interested in adopting CSR practices to obtain an advantage when it comes to accessing financial resources [11–13]. However, the potential benefit to a shareholder of the company in which it invests carrying out CSR activities depends on how that information affects the stock market value of the shares [14]. Although most of the existing empirical evidence has obtained results in favour of the value relevance of CSR practices, these studies have focused mainly on the analysis of developed markets in Europe [15–18] and North America [19–21].

In this regard, the contributions of our research are twofold. First, we highlight the importance of expanding the existing empirical evidence to different economic and institutional contexts that may allow conclusive results to be found. That is why the objective of this study is to expand the existing empirical evidence through looking at shareholder value creation from the CSR activities carried out by companies listed on the São Paulo Stock Exchange during the 2010–2015 period.

Second, most studies have used as their corporate sustainability indicators the publication of sustainability reports [15–19] or the inclusion of the company in a socially responsible index [13,18,20,21]. These binary variables have a number of disadvantages. In the case of sustainability reports, they may not currently have value relevance, since most large listed companies already voluntarily publish sustainability reports [22]. In the case of sustainability indices, by following a best-in-class criterion they are a measure of leadership in sustainability and not of social responsibility performance. That is why in this study we propose a measure of the social responsibility activities carried out by companies listed on the Brazilian stock exchange disposed by Thomson Reuters Eikon. There are two main advantages of this measure. Firstly, it is not a binary variable but rather a score variable. Secondly, it allows us to distinguish between the three main modern pillars of social responsibility: environmental, social, and corporate governance (ESG). More precisely, environmental performance refers to corporate environmental management that involves the control and prevention of pollution; social performance refers to the management of certain primary stakeholders such as employees, customers, and society; and corporate governance performance reflects independent, experienced, and diverse management.

Our overall results indicate that investors do not significantly value the three ESG pillars. Specifically, environmental performance is positively and significantly valued by investors at a 95% confidence level. Meanwhile, social performance, although positively valued, does not have a statistically significant relationship with stock prices. Corporate governance performance, however, is positive and significantly valued by investors in the Brazilian stock exchange at a 90% confidence level. We also observe that the market valuation of ESG performance is different for companies belonging to environmentally sensitive industries and those in non-environmentally sensitive industries. While in all cases the valuation is positive, only CSR practices not directly related to the business sector are significant.

In summary, the results indicate that the Brazilian stock market as a whole positively valued the companies that had a higher ESG performance during the 2010–2015 period. These overall findings reveal that implementing CSR policies that lead to a stronger sustainability performance is important for Brazilian investors and they are understood as a strategic advantage that generates value in the stock market. These findings are relevant not only for investors, but also for the managers of these companies, policy makers, and other stakeholders such as customers citizens concerned about environmental, social, and corporate governance issues.

The rest of the article is organised as follows. In Section 2 we present the existing literature in this field of study. In Section 3 we present the methodology used for our empirical research. In Section 4 we define the database on ESG performance in the Brazilian stock market as well as the financial

information necessary for the valuation of companies in the stock market. Section 5 shows the results obtained and Section 6 sets out the conclusions of our study.

2. Literature Review

There are two alternative theories as possible explanations of the impact of CSR activities on a company's stock market value: the value enhancing theory and the shareholder expense theory. On the one hand, the value enhancing theory holds that the integration of socially responsible activities into corporate strategies and practices generates competitive advantages that promote the creation of long-term shareholder value. Among these advantages are the improvement in brand reputation [23], the improvement in employee productivity, the increase in operating efficiency, and the improvement in the relationship with the regulators, society, and other interested parties [24], access to better investment projects [25] and greater financial resources [11]. Based on this theory, it is therefore expected that CSR measures carried out by listed companies will be valued positively and significantly by stock markets. In contrast, the shareholder expense theory holds that investing in CSR practices increases costs and puts companies at an economic disadvantage, resulting in lower market values. Specifically, Aupperle et al. [26], Barnea and Rubin [27], and Marsat and Williams [28], among others, argue that the commitment to sustainability can lead to over-investment and other activities that are not in the best interest of the shareholders. This theory suggests, therefore, that the implementation of sustainability initiatives may not be profitable and, therefore, this is likely to destroy the value of the company. Although the literature on CSR and shareholder value creation provides mixed results [29–31], a growing number of studies support the value enhancing theory [13,16,18,19,32–36].

However, as we indicated in the introduction, these studies have been carried out for companies listed on developed stock markets, with the literature on emerging markets being practically non-existent. In the case of the Brazilian market, the literature on CSR activities has evolved more slowly than the practice. In 2005, the São Paulo Stock Exchange (Bovespa) launched the Corporate Sustainability Index (CSI), with several subsequent empirical studies being based on that sustainability index.

We can highlight the works carried out by Lourenço and Branco [7] and Osarto et al. [37], who, although applying different study methodologies, analysed the factors that drive companies listed on the Bovespa stock market to belong to the CSI index. Specifically, Lourenço and Branco [7] noted that Brazilian companies who are leaders in sustainability are the largest and those that have a greater return on capital. Osarto et al. [37], in contrast, used surveys to identify different motivations for listed companies to be part of the CSI index. Among these are the ease of raising funds, the enhancement of reputation, and the search for competitive advantages. They especially emphasise environmental motivations based on protecting the environment.

To enrich the debate on sustainability in the area of finance, Santis et al. [38] analysed the financial and economic performance of the companies that appear in the CSI index compared to the performance of the companies listed in the selective index (Ibovespa). These authors found no evidence of differences in economic and financial performance between companies in each of the indices studied. In fact, other characteristics, such as sector classification, were observed to have a greater influence on the economic and financial performance of companies than their investments in sustainable initiatives.

More recently, García el al. [9], using the Thomson Reuters Eikon database, analysed whether the financial profile of Brazilian listed companies is associated with superior environmental, social, and corporate governance performance. Specifically, they observed that the financial performance of Brazilian listed companies is associated only with environmental performance. In addition, the negative sign of this association indicates that companies with the best environmental performance tend to be less profitable.

Based on the present review of the literature, there are two fundamental aspects to be highlighted. Firstly, we consider that the previous findings on the value relevance of CSR activities obtained for developed markets cannot be generalised to emerging markets such as the Brazilian stock market.

Just as emerging economies are in a different development phase to developed economies, companies can also be found at different stages of CSR maturity. In addition, the demand from stakeholders for ESG practices may vary substantially. Secondly, in the Brazilian stock market, with few studies on CSR and a lower level of understanding than in developed markets about the strengths and weaknesses of environmental, social, and corporate governance practices, examining this relationship is of great value for the CSR literature, and this is the contribution of this study.

3. Methodology

In the financial literature, it is widely accepted that the market value of equity is an adequate indicator of the value of a company. Based on this premise, Ohlson [39] proposed a model for the valuation of listed companies in which the market value of equity is a function of the company's financial information (specifically, its book value and accounting results) as well as other non-financial company information that may be considered relevant. However, Ohlson [39] did not specify what the content of this additional information should be.

This model has been widely used in the field of CSR research by using information on social responsibility as this additional information [13,15–21]. Following, therefore, the existing literature for other markets, in this study we propose the application of Ohlson's model [39] to estimate the value relevance in the São Paulo Stock Exchange of the CSR performance level of the companies listed on it.

Specifically, we test the modified version of Ohlson's model [39] proposed by Barth and Clinch [40] that involves scaling the variables included in the initial model using the number of shares outstanding. Although alternative scaling measures have been recommended, Barth and Clinch [40] conclude that a model that uses a share price specification mitigates the scale effects more effectively while maintaining the financial significance of the variables being studied.

The objective of our study, therefore, is to evaluate the relationship between the price of the shares and the CSR performance level of the companies listed on the Brazilian stock exchange. To achieve our objective, we present an empirical methodology that consists of three steps. The first step is to examine whether the information extracted from the financial statements (book value and earnings) is associated with the price of assets. The second step is to add CSR performance that represents the other non-financial information, into the proposed regression model to analyse whether this information is relevant in the process of forming long-term stock prices (in addition to the accounting information previously considered). The equations for the first two steps are the following:

$$P_{i,t} = \alpha_0 + \alpha_1 BVPS_{i,t} + \alpha_2 EPS_{i,t} + \varepsilon_{i,t} \quad (1)$$

$$P_{i,t} = \alpha_0 + \alpha_1 BVPS_{i,t} + \alpha_2 EPS_{i,t} + \alpha_3 CSR\ perf_{i,t} + \varepsilon_{i,t} \quad (2)$$

where $P_{i,t}$ is the share price of company i at the end of year t; $BVPS_{i,t}$ is the book value per share of company i in year t; $EPS_{i,t}$ represents the earnings per share of company i for the year t; $CSRperf_{i,t}$ is a non-accounting explanatory variable that represents the CSR performance of company i in year t; and finally, $\varepsilon_{i,t}$ is the error of company i in year t. As can be seen, we use a panel data methodology that consists of the combination of time series and cross-sectional data in a joint test. This allows us to control the individual unobservable heterogeneity (company effect) as well as the endogenous nature of the explanatory variables.

Specifically, we expect α_3, the coefficient that accompanies the $CSRperf_{i,t}$ variable in model (2), to be significant and positive, supporting the value enhancing theory previously discussed. In addition, the goodness of fit of both models is provided by showing the F statistic that analyses the joint significance of the explanatory variables, as well as the adjusted R^2 that shows the proportion of the variability of the dependent variable explained by the explanatory variables. We expect this to be higher when the $CSRperf_{i,t}$ variable is introduced into the study.

It should be noted that in the present study we use four alternative CSR performance variables, following the most recent literature on CSR and value creation [32,41,42]. Specifically, we use an

environmental performance variable, a social performance variable, and a corporate governance performance variable. These variables are included in model (2) individually with the aim of analysing the market valuation of each of these ESG pillars. Moreover, we also test model (2) by considering a general ESG performance variable calculated from the arithmetic mean of the three previous performance variables in order to estimate the average effect of these practices on stock prices.

Finally, we analyse whether the valuation of CSR performance differs according to the business sector. As we indicated in the literature review, companies must invest considerable effort and resources into CSR activities to meet the requirements of the interested parties. However, there are important differences depending on whether or not the company belongs to environmentally sensitive industries. As outlined by Lin et al. [43], environmentally sensitive industries have to face serious requirements for non-toxic packaging, less polluting processes, manufacturing practices that respect the ecosystem, etc. Therefore, those with a high CSR performance will be able to satisfy the expectations of the interested parties and obtain their recognition. In contrast, in environmentally non-sensitive industries, the requirements of the interested parties are not as strict. Therefore, companies that participate in CSR activities will not necessarily be recognized by their stakeholders.

Taking these aspects into account, we extended model (2) by including a new variable $CSRperf_{i,t}$ x $ESI_{i,t}$, which is the interaction of CSR performance with a dummy variable that takes the value 1 if company i belongs to an environmentally sensitive industry and 0 otherwise; the model therefore is as follows:

$$P_{i,t} = \alpha_0 + \alpha_1 BVPS_{i,t} + \alpha_2 EPS_{i,t} + \alpha_3 CSR\ perf_{i,t} + \alpha_4 CSR\ perf_{i,t} \times ESI_{i,t} + \varepsilon_{i,t} \quad (3)$$

The incorporation of this new variable into model (4) allows us to identify the differential effect on stock prices of the CSR performance of companies belonging to environmentally sensitive industries. Following Lin et al. [43] and García et al. [9], among others, we consider sensitive companies to be those that have a significant environmental impact, such as companies related to energy (including gas and oil), chemicals, electronic utilities, paper and cellulose, mining, and steel manufacturing. Specifically, we expect the α_4 coefficient to be positive and significant. This would indicate a positive and significant differential effect on stock prices of the CSR performance of companies belonging to sensitive industries.

4. Database

The database used in this study consists of two types of information: the financial information and the social responsibility information of the companies listed on Brazilian stock market. The two types of information are described below.

4.1. Corporate Responsibility Information

Sustainability is not an easy variable to measure and using the reports produced by the companies themselves can cause results to be conditioned by self-generation or self-reporting bias [44]. We therefore consider that it is more appropriate to use sustainability information prepared by external firms or rating agencies. Unlike other studies for the São Paulo stock exchange, we decided not to use the composition of the CSI sustainable index because, on following a best-in-class criterion, it represents a measure of leadership in sustainability and not of social responsibility performance. In addition, as Hassel and Semenova (2013) argue, the modern concept of CSR has essentially developed into three main types of relationship with interested parties. Therefore, these are the three aspects we should take into account.

Corporate ESG performance is measured by different rating agencies. KLD is among the most influential, especially in the US stock market. However, at an international level, the financial information giant Thomson Reuters Eikon, which in October 2009 acquired the well-known Swiss

agency Asset4, stands out. Since then, it has extended its coverage not only to other developed markets but also to emerging markets such as Bovespa.

The Thomson Reuters Eikon ESG ratings are an improvement on and replacement for the old Asset4 ratings. Specifically, the new ratings have been designed to transparently and objectively measure a company's ESG performance in the three environmental, social, and corporate governance areas. These ratings are based on the collection and standardization, by specialized analysts, of gross non-financial data derived from publicly available information, such as sustainability reports, financial reports, and company websites [45].

In the present study, we used the ESG performance score of the companies listed on Bovespa during the years 2010 to 2015. In total, there are 73 companies belonging to 24 business sectors. In Table 1, we present the average environmental, social, and corporate governance performance of each business sector during the years under study. It should be noted that Thomson Reuters Eikon provides an annual score for each company that is between 0 and 100 points. This allows us to quickly and easily identify the ESG strengths (50–100 points) or ESG weaknesses (0–49 points) of each company, business sector, or group of companies listed on Bovespa [46].

There are several aspects to be highlighted about Table 1. Of the three ESG pillars, the social pillar has the highest average score in the group of companies listed on the Brazilian stock exchange, followed by the environmental pillar, and finally the governance pillar, which, unlike the previous two, is the only one that has an annual general score below 50 points, indicating that corporate governance is a weakness for Brazilian companies.

As we can see in Table 1, environmental performance is higher than 50 points for 13 of the 24 business sectors considered, with the mobile telecommunications, beverages, chemicals, and aerospace and defence sectors standing out, along with the banks, as all having a rating of more than 80 points. The highest-rated companies from these sectors are Tim Participações, Amber, Braskem, Embraer, and Banco do Brasil, respectively. It should be noted that environmental performance measures the company's work with respect to minimizing resources, reducing emissions, and product innovation. Specifically, the use of resources refers to the performance and capacity of a company to reduce the use of materials, energy, or water and find more eco-efficient solutions by improving the management of the supply chain. In contrast, emission reduction measures the commitment and effectiveness of a company in reducing environmental emissions in the production and operating processes. Product innovation reflects the ability of a company to reduce the environmental costs and burdens of its customers, thus creating new market opportunities through new environmental technologies and processes or ecological products [32,41,42,47].

With regard to social performance, half of the business sectors show overall social strengths, since they have a score higher than 50. In addition, the forestry and paper, banks, mobile telecommunications, and aerospace and defence sectors stand out, with a score of more than 90. In this case, the highest-rated companies are Fibria Celulose, Banco do Brasil, Tim Participações, and Embraer, respectively. Social performance measures aspects relating to the quality of employment, respecting human rights, the relationship with the community, as well as the responsibility of the product. Specifically, it measures: the effectiveness of a company in creating job satisfaction, a healthy and safe workplace, maintaining diversity and equal opportunities; the effectiveness of a company in respecting the fundamental conventions on human rights; the commitment of the company to being a good citizen, protecting public health, and respecting business ethics; the ability of a company to produce quality goods and services that integrate health, safety, integrity, and the privacy of customer data [32,41,42,48].

Table 1. Average environmental, social, and corporate governance performance by sectors.

Environmental Performance		Social Performance		Corporate Governance Performance	
Mobile Telecommunications	87.67	Forestry and Paper	94.00	Household Goods and Construction	52.54
Beverages	87.07	Banks	92.90	Forestry and Paper	50.37
Chemicals	86.72	Mobile Telecommunications	91.75	Financial Services	44.38
Aerospace and Defence	84.13	Aerospace and Defence	91.60	Construction and Materials	41.33
Banks	81.61	Chemicals	84.67	Banks	37.32
Electronic and Electrical Equipment	78.07	Gas, Water, and Multiutilities	79.13	Personal Goods	36.48
Forestry and Paper	74.02	Electronic and Electrical Equipment	75.28	Mobile Telecommunications	32.74
Personal Goods	66.22	Household Goods and Construction	71.67	Industrial Transportation	29.53
Electricity	60.89	Electricity	71.17	Food Producers	27.23
Food Producers	54.08	Personal Goods	70.11	Beverages	26.53
Gas, Water, and Multiutilities	53.18	Industrial Transportation	66.93	Nonlife Insurance	26.01
Household Goods and Construction	53.17	Food Producers	65.12	Chemicals	24.53
Industrial Transportation	50.86	Financial Services	61.82	Software and Computer Services	23.91
Construction and Materials	48.08	Construction and Materials	50.41	Electricity	22.88
Oil and Gas Producers	43.86	Beverages	49.56	Aerospace and Defence	22.10
Financial Services	43.62	Oil and Gas Producers	45.33	Gas, Water, and Multiutilities	19.43
Industrial Metals and Mining	39.24	Real Estate Investment and Services	39.73	Oil and Gas Producers	18.60
Real Estate Investment and Services	34.76	Industrial Metals and Mining	39.21	Electronic and Electrical Equipment	18.38
Nonlife Insurance	34.26	Nonlife Insurance	37.96	General Retailers	17.65
General Retailers	27.01	General Retailers	36.40	Real Estate Investment and Services	17.51
Health Care Equipment and Services	22.69	Software and Computer Services	29.48	Industrial Metals and Mining	12.75
Alternative Energy	19.68	Alternative Energy	22.28	Food and Drug Retailers	9.82
Food and Drug Retailers	15.55	Health Care Equipment and Services	22.27	Health Care Equipment and Services	9.44
Software and Computer Services	10.85	Food and Drug Retailers	11.10	Alternative Energy	7.52

This table shows the average environmental, social, and corporate governance performance of each business sector during the years under study, based on a score between 0 and 100 provided by the Thomson Reuters Eikon database.

Finally, corporate governance performance refers to the management of the company (structure and functions of the board of directors, remuneration policy, etc.), the rights of the shareholders, and the vision and strategy of the company. Specifically, it measures the commitment and effectiveness of a company when it comes to following the principles of good corporate governance practices, the effectiveness of the company in relation to the equal treatment of shareholders, and the practices of the company to communicate information regarding the economic-financial, social, and environmental dimensions in its decision-making processes [28,32,42,47]. This ESG performance level is the weakest for the Brazilian listed companies, with only the household goods and construction and forestry and paper sectors having a score higher than 50, with Gafisa and Fibria Celulose being the highest-rated companies in each respective sector. The rest of the sectors still show weaknesses in corporate governance.

4.2. Financial Information

The financial information needed to apply Ohlson's [39] valuation model described in the methodology section, particularly the market value and book value of the equity at each year end, as well as the annual earnings of each company, have also been obtained from the Thomson Reuters Eikon database.

Table 2 shows the descriptive statistics (mean, maximum, minimum, and standard deviation) and the correlation matrix of the financial variables and the environmental, social, and corporate governance performance variables as well as a general ESG performance measure obtained from the arithmetic mean of the previous three, following Cheng et al. [32] and Mervelskemper and Streit [42]. Also, as we indicated in the methodological section, we use a specification of Ohlson's [39] model based on stock prices, as recommended by Barth and Clinch [40], to mitigate any scale effects present in the sample. For that reason, the information in Table 2 is provided as per-share. In addition, it should be noted that observations with a negative book value were eliminated from the sample [20,21]. Also, to ensure that the regression results were not influenced by outliers in the sample, we ranked market value in ascending order and the firms in the top and bottom 2.5% were eliminated. As a result, we have a total of 276 observations in the sample.

Table 2. Summary statistics.

Panel A: Descriptive Statistics							
	P	BVPS	EPS	ENV	SOC	GOV	ESG
Mean	22.57	20.06	1.99	59.28	69.20	31.43	53.31
Max	115.00	260.65	32.39	94.30	96.80	94.84	89.45
Min	0.45	0.52	0.00	9.40	6.08	2.30	10.50
Std. Dev.	16.05	37.52	4.63	26.36	27.70	20.98	21.46
Panel B: Correlation Matrix							
	P	BVPS	EPS	ENV	SOC	GOV	ESG
P	1.00						
BVPS	−0.214	1.00					
EPS	−0.078	0.784	1.00				
ENV	0.050	−0.111	−0.069	1.00			
SOC	0.074	−0.094	−0.049	0.851	1.00		
GOV	0.052	0.016	−0.015	0.383	0.496	1.00	
ESG	0.069	0.081	−0.054	0.841	0.846	0.696	1.00

This table shows the descriptive statistics (mean, maximum, minimum, and standard deviation) and the correlation matrix of the financial variables: Price (P), Book value per share (BVPS), and Earnings per share (EPS) and the environmental (ENV), social (SOC), and corporate governance (GOV) performance variables, as well as a general ESG performance measure obtained from the arithmetic mean of the previous three.

As we can see in Table 2, the average share price of the companies in the sample is 22.57, with a standard deviation of 16.05; the average book value per share is 20.06, with a standard deviation

of 37.52; and average earnings per share is 1.99, with a standard deviation of 4.63. Regarding the descriptive statistics of the ESG performance measures, we observe that on average the companies listed on Bovespa have a score of 59.28 points out of 100 for environmental performance, 69.20 for social performance, 31.43 for corporate governance performance, and 53.31 for general ESG performance, with standard deviations of 26.36, 27.70, 20.98, and 21.46, respectively. In terms of the information provided by the matrix of correlations between variables, we should highlight the high correlation between the different CSR performance measures. That is why they will not be considered together in the same regression but will instead be analysed individually.

5. Empirical Results

As we indicated in the methodology section, we initially present the results obtained by applying the modified version of Ohlson's [39] model proposed by Barth and Clinch [40] without including the CSR information and we later include in the model the different ESG performance measures described above. The results are shown in Table 3.

Table 3. The value relevance of ESG performance.

Intercept	21.008 ***	12.544 ***	14.978 ***	16.018 ***	9.656 *
	(0.00)	(0.00)	(0.00)	(0.00)	(0.06)
Book value per share	0.042	0.029	0.037	0.038	0.029
	(0.15)	(0.29)	(0.20)	(0.22)	(0.22)
Earnings per share	0.3458 ***	0.348 ***	0.368 ***	0.351 ***	0.358 ***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Environmental performance		0.147 **			
		(0.02)			
Social performance			0.089		
			(0.16)		
Governance performance				0.162 *	
				(0.06)	
General ESG performance					0.218 **
					(0.02)
Adjusted R^2	0.5927	0.5986	0.5945	0.5994	0.6014
F value	9.516	9.544	9.399	9.572	9.644
p-value	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

This table shows the results obtained by applying the modified version proposed by Barth and Clinch (2009) [40] of Ohlson's model for the valuation of listed companies (1995) [39] to the Brazilian stock exchange during the years 2010–2015. The results are presented first without including the CSR information and subsequently adding the different ESG performance measures to the model. The last rows include the adjusted R^2 and F test statistics. In brackets is the p-value, indicative of the significance of each coefficient and of the F test. ***, **, and * represent the 1%, 5%, and 10% significance levels, respectively.

We can see that, as we expected, environmental, corporate governance and general ESG performance are positively and significantly related to the price of shares on Bovespa. In the case of social performance, this is positively associated with the price of shares, but this relationship is not statistically significant. However, our overall results support the value enhancing theory. In addition, when we include CSR information in the model the adjusted R^2 statistic increases and the F tests are statistically significant, which implies that this information is relevant for the valuation of these companies on the stock market, along with the accounting information considered by Ohlson [39] and Barth and Clinch [40].

These results are similar to those obtained for developed markets [13,17–19], where there was a clear positive and significant relationship between sustainability information and the price of shares. However, unlike most previous studies in which dummy variables were used, such as the publication of social responsibility reports or the inclusion of the company in a sustainability index, in this study we use the three modern ESG pillars and find that investors do not significantly value the three pillars. This result is a new feature with respect to previous studies.

In this sense, we must note that investors are key stakeholders for listed firms and can exert considerable influence over the sustainability strategy of the companies in which they invest. As a result, the credibility of this type of information and investor confidence in it is associated with an increase in the value of equity shares [13]. Therefore, these findings are especially relevant for the managers of these companies because they reveal that sustainability practices are valued by the investment community.

However, as Da Rosa et al. [8] and García et al. [9] show, CSR demand from different stakeholders can vary substantially within the business sector. That is why in this study we also analyse the different valuation in stock prices of the CSR performance of companies belonging to sensitive industries, that is, those related to oil, gas, chemicals, electric utilities, paper and cellulose, mining, and steel manufacturing, which have an important environmental impact. The results are presented in Table 4.

Table 4. The value relevance of ESG performance in sensitive industries.

Intercept	12.845 ***	14.105 ***	16.025 ***	9.230
	(0.00)	(0.00)	(0.00)	(0.10)
Book value per share	0.031	0.031	0.037	0.025
	(0.30)	(0.25)	(0.22)	(0.35)
Earnings per share	0.348 ***	0.369 ***	0.334 ***	0.355 ***
	(0.00)	(0.00)	(0.00)	(0.00)
Environmentalperformance	0.201 **			
	(0.02)			
Environmental perf × Sensitive industries	−0.096			
	(0.54)			
Social performance		0.037		
		(0.66)		
Social performance × Sensitive industries		0.111 ***		
		(0.00)		
Governance performance			0.036	
			(0.62)	
Governance perf × Sensitive industries			0.228 **	
			(0.01)	
General ESG performance				0.146
				(0.11)
General ESG perf × Sensitive industries				0.136 *
				(0.09)
Adjusted R^2	0.5976	0.5941	0.6018	0.6006
F value	9.336	9.213	9.480	9.441
p-value	(0.00)	(0.00)	(0.00)	(0.00)

This table shows the results obtained by applying the expanded version of the model proposed by Barth and Clinch (2009) [40] to analyse the effect on prices of the ESG performance of the companies belonging to sensitive industries. The last rows include the adjusted R^2 and *F* test statistics. In brackets is the *p*-value, indicative of the significance of each coefficient and of the *F* test. ***, **, and * represent the 1%, 5%, and 10% significance levels, respectively.

As we can see in Table 4, the CSR performance of companies belonging to the so-called sensitive industries has a positive and significant effect on stock prices. These results again support the value-creation theory. Specifically, we observe that investors positively value the CSR practices carried out by companies that, due to their particular productive activity, have a more direct impact on environmental aspects. We also observe that this impact on prices is positive and significant when we analyse social performance, corporate governance, and general ESG. However, when we analyse environmental performance the results are positive but not significant. In contrast, the market positively and significantly values the environmental practices carried out by companies not related to environmentally sensitive industries. These results show that shareholders in sensitive industries are especially concerned about environmental practices but that these are already reflected in the share prices. In contrast, unexpected information about social and corporate governance practices is what generates significant added value.

Finally, it is important to point out that the results shown in Tables 3 and 4 hold after performing different robustness tests following the previous literature for both developed markets and for the specific case of the Brazilian stock exchange. First, we exclude the banks and insurance companies from the empirical study, since they have different accounting features and, therefore, their inclusion could be conditioning the results [13,17]. Second, we include the addition of two control variables to the empirical study, the size and leverage variables. The size variable has been measured as the natural logarithm of the total volume of assets of each entity and the leverage ratio has been measured as the ratio of long-term debts to total equity for the company. Previous empirical evidence suggests that both factors can have a significant effect on share prices [17,18,20]. It is therefore necessary to analyse whether the effect of CSR performance on stock prices holds after including both variables in regression models (3) and (4). Finally, we use data on the share price at the end of the first quarter of the following year to avoid the effect on the results of having taken the prices at year end [16,17].

The results obtained taking into account all of the aspects indicated above are presented in Table 5. Specifically, we show the results of the test carried out using simplified equation (3). As we can see in this table, the results obtained on the impact on stock prices of environmental, social, corporate governance, and general ESG performance are the same as those obtained in the initial tests. Therefore, the conclusions previously presented hold. The results show that investors positively value CSR practices and significantly value those related to the environment and corporate governance.

Table 5. The value relevance of ESG performance. Robustness check.

Intercept	0.961 (0.95)	−14.441 (0.26)	−22.570 (0.26)	−3.980 (0.77)
Book value per share	−0.079 * (0.06)	−0.067 * (0.07)	−0.066 * (0.08)	−0.076 ** (0.04)
Earnings per share	0.397 *** (0.00)	0.401 *** (0.00)	0.379 *** (0.00)	0.402 *** (0.00)
Size	0.759 (0.39)	1.921 ** (0.01)	2.373 ** (0.04)	0.901 (0.29)
Leverage	2.378 *** (0.00)	2.366 *** (0.00)	2.369 *** (0.00)	2.333 *** (0.00)
Environmental performance	0.145 ** (0.03)			
Social performance		0.070 (0.29)		
Governance performance			0.177 ** (0.03)	
General ESG performance				0.209 ** (0.04)
Adjusted R^2	0.6054	0.6013	0.6085	0.6078
F value	9.311	9.169	9.419	9.357
p-value	(0.00)	(0.00)	(0.00)	(0.00)

This table shows the results of the robustness test carried out on the initial model proposed by Barth and Clinch (2009) for the Brazilian stock exchange during the years 2010–2015. The last rows include the adjusted R^2 and F test statistics. In brackets is the p-value, indicative of the significance of each coefficient and of the F test. ***, **, and * represent the 1%, 5%, and 10% significance levels, respectively.

6. Conclusions

There is considerable debate in the academic field about whether the socially responsible behaviour of companies is consistent with the interests of the shareholders in the maximization of wealth. Shareholder awareness about CSR as a viable corporate strategy has grown over the years. For this reason, there is an increasing number of studies that analyse the impact of CSR on stock markets. However, most of the existing literature on CSR and the creation of shareholder value is based on companies that operate in developed countries and little is known about the influence of

CSR on the price of assets listed on emerging markets. It is therefore necessary to fill this gap in the CSR literature.

In this sense, we presented two novelties in this research field. First, we analysed the Brazilian case. Due to its unique economic, natural, and human resources, it is especially relevant to examine how investors value corporate ESG performance. More precisely, we contributed to increase the level of understanding about the advantages and disadvantages for investors of considering CSR information in their investments by examining the long-term relationship between ESG performance and stock prices and analysing whether investors in the São Paulo securities markets valued environmental, social, and corporate governance performance during the 2010–2015 period. This analysis was carried out by applying the modified version of Ohlson's asset valuation accounting model [39] proposed by Barth and Clinch [40].

Second, to proxy for a firm's ESG performance, we used performance scores extracted from Thomson Reuters Eikon instead of dummy variables. Although it is possible to perform a content analysis of the sustainability reports voluntarily disclosed by companies, the ESG ratings of specialized agencies, such as Thomson Reuters Eikon, are designed to help investors make informed decisions. This database is based on numerous data points on ESG aspects for each firm that are collected from publicly available sources such as firm websites, reports, filings, and news. In this sense, it is especially important to overcome potential biases resulting from the exclusive use of self-reported information. Additionally, this database allowed us to analyse the three CSR pillars separately in order to test whether investors value these pillars differently.

The results of the valuation analysis revealed that investors positively value the CSR practices carried out by companies listed on the Brazilian stock exchange. These results therefore support the value enhancing theory rather than the shareholder expense theory. However, it is important to note that the results also show that the market does not significantly value the three ESG pillars. Specifically, the market positively and significantly values the environmental practices carried out by companies not related to environmentally sensitive industries. In contrast, the market positively and significantly values the social and corporate governance practices carried out by the companies belonging to these sensitive industries. These results show that shareholders in sensitive industries are especially concerned about environmental practices but that these are already reflected in the share prices. In contrast, unexpected information about social and corporate governance practices is what generates significant added value.

These findings have important implications for the investment community but also for the managers of these companies and policymakers. This research provides relevant information about the effects on prices of CSR practices of Brazilian listed firms that is suitable for consideration by investors and analysts when making their investment decisions. Moreover, we have to note that investors are critical stakeholders and can wield considerable influence on the sustainability strategy of the companies they own. Consequently, the credibility and trust of investors in this kind of information legitimizes the decision of the managers of implementing CSR strategies. Moreover, these findings support the belief that conducting business in accordance with norms that integrate environmental, social, and corporate governance principles is a differentiation business strategy that contributes to shareholder value creation. We therefore consider that ESG practices should be a mandate for the strategic managers of Brazilian listed firms. Finally, policymakers also have a relevant role in this field. In order to continue the spread of ESG practices in Brazilian companies, the government should develop public polices which contribute to sustainable development in this country.

Future research should be aimed at expanding the empirical evidence on the value relevance of the different ESG pillars to other stock markets, both developed and emerging. The analysis of the differences and similarities between markets would allow us to understand the commitment of investors to CSR in greater depth. This is an essential area of study, since the commitment of shareholders to CSR is fundamental for the promotion of sustainable development globally.

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