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INFLUENCE OF ENVIRONMENTAL INVESTMENTS AND FINANCIAL PERFORMANCE INDICATORS TO COMPOSE THE CORPORATE SUSTAINABILITY INDEX (ISE)*

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ABSTRACT

This study aims to investigate the influence of environmental investments and financial performance indicators in 2014's Corporate Sustainability Index (ISE). This research is classified as descriptive, with a quantitative and qualitative approach. It is a documentary research, based on procedures and sourced by secondary data. The research sample comprises 178 companies eligible to ISE in 2015, base year 2014. The 2014 Sustainability Reports are referenced in order to identify environmental investments. Of the 178 companies, 95 published sustainability reports, of which 93 reported environmental investments qualitatively and 49, quantitative. On average, environmental investments totaled R$ 158,028,447,36. The statistical technique used to determine which variables influenced entry to ISE was regression. Total assets, asset profitability, current liquidity, indebtedness, *Novo Mercado*, qualitative and quantitative environmental investments were used as independent variables. In conclusion, asset profitability, indebtedness and quantitative environmental investments influence companies for selection to compose ISE. The company size was calculated to have 1% level of significance, indebtedness and quantitative environmental investments 5% and, profitability 10%.

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INTRODUCTION

Society has been reflecting more and more on the environment, since it is essential to life quality. Due to this concern, consumers value environmentally correct postures adopted by some companies, since this way it is possible to minimize the environmental impacts generated by them.

Sustainable development softens aggression towards the environment. The definition of sustainable development emerged in the Brundtland report as "one that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1991, p. 46).

Therefore, given the pressures of society towards companies, the disclosure process has become more efficient. Environmental disclosure is understood as the act of disclosing or evidencing practices related to the environment, an adequate transparency mechanism of the companies.

ISE was created in 2005 by the São Paulo Stock Exchange (BOVESPA). It is the first sustainability indicator in Latin America and the fourth of its kind in the world (Favaro & Rover, 2014), "with the purpose of showing the market performance of a portfolio formed by companies that adopt the principles of sustainable management" (Marcondes & Bacarji, 2010, p.18). To participate in ISE, the company must own one of the 200 most liquid shares of BMF&Bovespa. The Index consists of up to 40 of these companies. The aim is to aggregate companies focused on sustainability, based on principles of economic efficiency, social-environmental balance and corporate governance (BMF&Bovespa, 2015).

According to Dalmácio and Paulo (2004, p.7), "companies have a social commitment to society, and should no longer aim only at profit". They emphasize that it is necessary to preserve the environment, as companies are relevant to the economic and social development of the country. Developing sustainable products can average better financial and economic returns for companies, strengthening the brand and its image (Pereira, Silva, & Carbonari, 2011). But according to Barbieri (2011), for most companies, this concern is not yet effective, because if it really were, the accumulation of environmental issues would not be so huge.

Due to the importance of sustainable development, social responsibility, transparency and corporate governance, it is crucial that companies make environmental investments. Based on the above, we ask: What is the influence of environmental investments and economic and financial indicators in the selection of companies to compose ISE? To answer this question, the objective of the study is to verify the influence of environmental investments and economic and financial indicators in the selection of companies to compose ISE.

Thus, this research is justified due to the importance of investigating whether larger, more profitable companies with high liquidity, lower indebtedness, members of the new market and with environmental investments are more likely to belong to ISE.

2 LITERATURE REVIEW

Companies highlight environmental issues through social report or management report, as well as disclosure in environmental reports (Tinoco & Kraemer, 2011). According to Barbieri (2011, p. 279), "the social balance sheet is an instrument to make the company's social responsibility transparent", and according to Tinoco and Kraemer (2011, p. 235), "they are the averages that companies adopt to describe and disclosure their environmental performance".

Dias (2012, p.144) explains that the reports "constitute a form of accountability, based on the triple bottom line concept" and that the elaboration covers the measurement, disclosure and accountability, based on a social responsibility information, allowing the socio-environmental repercussion of the company's performance.

Communication of socio-environmental performance is important. It contributes to accountability and transparency (Dias, 2012). Vellani (2011, p. 39) states that "transparency, in the context of business, averages that the company allows access to reality through accounting

reports". For Tachizawa (2015), the implementation of social balance is focused on the public accountability and transparency of companies.

The Global Reporting Initiative (GRI) is an independent international organization created in the late 1990s to help companies, governments and other organizations understand and communicate their impact on sustainability issues such as climate change, human rights, corruption and others (GRI, 2016).

The GRI operates in a transparent and responsible way, with the objective of achieving a sustainable economy, in which companies can measure social, economic and environmental performance (GRI, 2012). The GRI guidelines provide adequate and up-to-date information, helping make the sustainable issue disclosure a business-to-business practice (GRI, 2013). GRI arises to "make sustainability reports as common as financial reports" (GRI, 2012, p. 16). Bronstein (2015) states that the scenario has changed since 2006 with the launch of G3 in Portuguese. G4 is the current GRI model, but some companies still use G3.

In 1999, the first index that considers sustainable aspects was created in New York – the Dow Jones Sustainability Indexes, and then (2001), the FTSE4Good, from London. The third is from Johannesburg, JSE of 2003 and, in 2005, ISE is born in Brazil (Favaro & Rover, 2014).

According to Barbieri and Cajazeira (2009), ISE integrates companies that stand out in the three dimensions of sustainability and governance, forming a stock portfolio that represents the Brazilian benchmark. These initiatives seek to create references based on the definition of sustainable company, through a management system related to the policy of social responsibility. Teixeira, Nossa e Funchal (2011) and Pereira *et al*. (2011) corroborate the earlier concept by defining the index's objective of being a benchmark of organizations that deliver sustainable good practices by committing to corporate social responsibility and corporate sustainability.

Marcondes and Bacarji (2010) argue that ISE makes the market more attractive to investors, especially those committed to socially responsible investments, as it encourages companies to introduce social, environmental and governance issues into investment decision-making. Therefore, ISE's mission is to get companies to adopt environmental practices, helping investors to make sustainable investment decisions (ISE, 2015).

The environmental indicators, according to França (2004), present the results regarding environmental performance and are important measurement instruments that allow improvements in the scope of sustainability, through the implementation of actions. Azevedo (2006) emphasizes that the indicators must be adequate so that it is possible to evaluate the company's practices with respect to sustainable development. Vellani (2011) defines physical and monetary environmental indicators as being the main instrument of companies to evaluate sustainability. They promote information relevant to decision makers.

ISE is essential in the sustainable scope. It identifies companies that care about governance through an environmental management system related to social responsibility. It causes researchers to begin to focus their studies on the area (Table 1).

Table 1
Previous studies

Author(s) / Year	Study
Bertagnolli, Ott and Damacena (2006)	The authors determined the influence of socio-environmental investments on the economic performance of companies. They used social statements of 176 companies (IBASE) and internal and external social indicators and environmental indicators (independent variables), as well as net revenue and operating income (dependent variables), and found that the investments explain changes in the dependent variables.
Macedo, Souza, Souza and Cipola, (2007)	The researchers evaluated the performance of the ISE companies through indicators of liquidity, indebtedness and profitability between companies of Melhores e Maiores Magazine and compared those that belong to ISE with the others. The authors concluded that there are no significant advantages of socially responsible firms in the market.
Ott, Alves and Flores (2009)	The authors replicated the methodology of Bertagnolli *et al.* (2006) and analyzed environmental investments and economic performance of companies with a sample of 353 companies, and presented results similar to the 2006 survey.

Continue

Table 1 (continuation)

Author(s) / Year	Study
Nunes (2010)	The variables (size, sector of activity, share concentration, location of share control, being ADR issuer and state-owned) were analyzed from 124 companies that led to ISE membership. They concluded that the size of the company and the sector of activity interfered with the entrance to ISE.
Guimarães (2010)	The author assessed whether the company's change over ISE influences the company's long-term value. The results did not confirm the increase in the value of the companies.
Machado, Macedo, Machado e Siqueira (2012)	They investigated the relationship between social-environmental investments and the inclusion of a company to ISE through logistic regression, and concluded that there was a positive relationship between them, demonstrating the company's commitment to sustainability.
Garcia e Orsato (2013)	They researched 15 academic papers with various methods of economic and financial evaluation between 2006 and 2011, verifying the creation of value for the companies that composed ISE. The authors found no significant differences between the company's adherence to the index and the impact on the value of its shares.

Note. Source: Prepared by the authors (2015).

In the study by Bertagnolli *et al*. (2006) and Ott *et al.* (2009), environmental investments interfered in the economic performance of companies. For Machado *et al*. (2012) there was a positive relation between the investments and the adhesion of the companies to ISE. According to Nunes, Teixeira, Nossa and Galdi (2010), some factors interfered in the entry of companies to ISE. According to Macedo *et al.* (2007), Nunes (2010), Guimarães (2010), Garcia and Orsato (2013), there were no significant differences of socially responsible companies over the others. Therefore, through the previous studies, it was noticed that depending on the analysis, the environmental investments may influence or not the adhesion of the companies.

3 METHODOLOGY

This work is classified as descriptive and explanatory, since the results indicate which variables explain the selection of companies to compose ISE. Regarding the methodological approach, the research is predominantly quantitative, since statistical tests were carried out through logistic regression, and also qualitative, when the disclosure of environmental investments was verified.

The collection source occurred by averages of secondary data. According to Loesch (2012, p. 3), they are "published or communicated by another researcher or organization", and the content analysis is used. The search for environmental investment values consisted of "a method of data analysis that can be applied to both qualitative and quantitative studies" (Beuren, 2006, p. 137). For data collection, environmental aspects were verified in the sustainability reports of the companies that compose the most liquid stocks in 2014, according to the BMF&Bovespa website. By averages of these reports, the aim was to have in the GRI remissive index model, item EN31 (G4) or EN30 (G3), "total investments and expenses with environmental protection". With regard to companies that did not present this topic, the value was obtained by the social balance, IBASE model. When the company portrayed the quantitative value in the GRI – table, texts and social balance sheet – the table was prioritized when presenting the total investment.

If the company did not show the social balance and the GRI, environmental data was collected on topics such as: Environmental performance, Socio-environmental management, Environmental and Natural capital. In addition, to search for quantitative information, it was searched by R$ and "invest".

For the sample, the 200 most liquid stocks of the 2014 BMF&Bovespa were selected. ISE consists of up to 40 of these companies. Some companies presented two types of actions, such as common and preferred ones, so there were 182 companies remaining. Table 2 shows the number of companies eligible for ISE and for exclusions made.

Table 2
Number of eligible companies reviewed

Total number of companies eligible for ISE	182
(-) Anhanguera (merger with Kroton)	1
(-) Auto Metal (information not available)	1
(-) BHG (process of capital closure)	1
(-) Sierra Brasil (has no report in Portuguese)	1
Total of companies surveyed	**178**

Note. Source: Research Data (2015).

Auto Metal was excluded because it was not listed on BMF&Bovespa, BHG, which is in the process of capital closure, and Anhanguera, as it merged with Kroton. Some companies changed their name, others merged or were incorporated. As an example, IMC Holdings is considered as BMI S.A. as was incorporated. And LLX LOG is now called Plumo Logística S.A.

In relation to companies with or without a report, Ideiasnet, despite having an annual report, was disregarded because it was not suited, as it did not present social and/or environmental aspects. In the same way, Cetip, despite presenting social issues, mentioned no environmental issue, therefore, it was considered that the company did not have a sustainability report.

Cosan, despite having no specific topic on the environment in its report, data was found through keywords, which made it possible to assert that the company has qualitative environmental investments, such as: projects related to the identification of social and environmental risks in business, ecoefficient process of final destination of the leftover materials used and investment in efficient and responsible land management. Tupy also did not present a topic related to the environmental aspect, but when searching for the keywords, only quantitative information was found.

Contact was made via email with Sulamerica, Sierrabrasil and Lojas Americanas. With regard to Sulamerica, information was requested for a written report, since it had only been made available on video. In response, the company stated that it only has the video version, therefore, only the aspect related to sustainability was analyzed. Sierrabrasil was excluded because it did not present the complete report in Portuguese, and no answer was obtained. From the email requesting the full report sent to Lojas Americanas, no response was obtained either. Only the summary on the Companhia Verde website was used, since the link for the full report was broken.

The indices were collected in the Economática Software database, using the companies' consolidated information for the calculations of 2014, and we chose to use: total assets (TAM), asset return (ROA), current liquidity (LIQC) and indebtedness (GEND). For the analysis of the influence of the environmental investments, a list presenting the companies that make up the portfolio of 2015 was presented, and it was compared with the eligible companies of 2015, in the base year 2014, which are informed on the website of BMF&Bovespa, and the technique of statistical analysis of logistic regression was used (Fávero, Belfiore, Silva, & Chan, 2009) to verify if factors such as: total assets, asset profitability, current liquidity, indebtedness, new market and environmental investments explain the companies selection to compose ISE.

4 RESULTS

The ISE companies stand out in the Public Utilities sector, representing 27.5%, specifically the Electric Energy segment with 11 companies. For the non-ISE companies, the two most representative sectors are: Construction and Transport, and Cyclical Consumption, corresponding to 18.84% each. The Construction and Engineering segment represents 69.23% of the total of the sector; it is the one that has more companies. The Public Utility sector is not very representative. It is equivalent to 7.97% of the non-ISE companies (Table 3).

Table 3
Number of eligible companies by sector and segment

Sector	Segment	ISE	% ISE per sector	Non-ISE	% non-ISE per sector
Industrial goods	Machinery and Equipment	1	5,00%	4	8,70%
	Transportation Material	1		5	
	Services	0		3	
Construction and transportation	Construction and engineering	1	10,00%	18	18,84%
	Transportation	3		8	
Cyclical consumption	Business	3	7,50%	6	18,84%
	Miscellaneous	0		8	
	Hotels and Restaurants	0		1	
	Media	0		2	
	Fabric, Apparel and Shoes	0		5	
	Houseware	0		2	
	Trips and Leisure	0		2	
Non-cyclical consumption	Farming	0	7,50%	2	15,22%
	Processed food	1		8	
	Beverages	0		1	
	Trade and Delivery	0		4	
	Miscellaneous	0		1	
	Tobacco	0		1	
	Personal Use and Cleaning Products	1		0	
	Health	1		4	
Financial and others	Properties exploration	0	20,00%	9	16,67%
	Diversified Holding	0		2	
	Financial Intermediary	6		6	
	Pension and Insurance	1		3	
	Several Financial Services	1		3	
Basic materials	Wood and Paper	3	17,50%	2	7,25%
	Several Materials	0		2	
	Mining	1		1	
	Chemical	1		1	
	Steel Industry and Metallurgy	2		4	
Oil, gas and biofuels	Oil, Gas and Biofuels	0	0%	2	1,45%
Information Technology	Computers and equipment	0	0%	2	4,35%
	Programs and services	0		4	
Telecommunications	Fixed Telephony	1	5,00%	1	0,72%
	Mobile Telephony	1		0	
Public utility	Water and sanitation	1	27,50%	2	7,97%
	Electric power	10		8	
	Gas	0		1	
Total		**40**	**100,00%**	**138**	**100,00%**

Note. Source: Research Data (2015).

The categorization of the eligible companies by segment was carried out according to BMF&Bovespa's governance levels: Level 1, Level 2 and *Novo Mercado*, and those of the traditional market were included to encompass companies that trade in the stock market, but are not listed in the levels of corporate governance. It can be seen that, in the same way as the ISE companies, the non-ISE companies represent a greater number than those belonging to the *Novo Mercado* and have a higher percentage, representing 68.84%, compared with 52.5% of those belonging to ISE (Table 4).

Table 4
Quantity of companies eligible by type of market

Type of Market	ISE	NON-ISE	Total companies
Level 1	11	15	26
Level 2	3	14	17
Novo Mercado	21	95	116
Traditional	5	14	19
Total	**40**	**138**	**178**

Note. Source: Research Data (2015).

Table 5 shows the number of companies eligible for ISE that had a sustainability report in 2014, 53.37% of which published such documents. All ISE companies issued the reports in 2014, with non-ISE accounting for approximately 40%, which allows us to identify that all ISE companies and 40% of non-ISE companies mentioned environmental information in their sustainability reports.

Table 5
Number of eligible companies that issued sustainability report in 2014

Eligible companies	Total companies	Total reports 2014	% of companies that have reported
ISE	40	40	100,00%
NON-ISE	138	55	39,86%
Total	**178**	**95**	**53,37%**

Note. Source: Research Data (2015).

As all ISE companies issued reports and as the Public Utility sector is predominant, consequently it is the one that presented most amount of documents. The sectors that contain most non-ISE companies are: Construction and Transportation and Cyclical Consumption, representing 18.84%. Third is Financial and Others, with 16.67%. The sector that issued most reports is the Non-Cyclic Consumption sector, followed by Construction and Transportation, and Financial and Others. It can be seen that non-ISE companies, despite being the largest, are not the ones that presented the most reports, as is the case of the Cyclical Consumption sector (Table 6).

Table 6
Number of eligible companies reporting by sector

Sector	Number of reports - ISE	Number of reports – non-ISE
Industrial goods	2	5
Construction and transportation	4	9
Cyclical consumption	3	7
Non-cyclical consumption	3	10
Financial and others	8	9
Basic materials	7	3
Oil, gas and biofuels	0	2
Information Technology	0	2
Telecommunications	2	1
Public utility	11	7
Total	**40**	**55**

Note. Source: Research Data (2015)

The data presented in Table 7 shows that a large part of the companies issued the annual report, followed by the sustainability report. Non-ISE companies presented less standardized reports when compared to ISE, as they used other nomenclatures, such as: performance, socio-environmental balance, social report, socio-environmental report and annual social and environmental responsibility report.

Table 7
Report type

Report type 2014	ISE	NON-ISE	Total companies
Annual report	14	23	37
Sustainability report	11	18	29
Annual and sustainability report	9	6	15
Annual sustainability report	3	2	5
Annual Integrated Report	2	-	2
Annual Integrated Report	1	-	1
Performance	-	2	2
Socio-environmental balance	-	1	1
Social balance	-	1	1
Annual report on socio-environmental responsibility	-	1	1
Social and environmental report	-	1	1
Total	**40**	**55**	**95**

Note. Source: Research Data (2015).

According to Table 8, of the 40 ISE companies that reported in 2014, 36 presented the GRI index. 6 mentioned G3, and 30, G4. Four companies used the G3, and 20, G4, to mention the companies' quantitative value based on the information "total investments and expenses with environmental protection".

Table 8
Number of eligible companies reporting GRI report

Eligible companies	Total reports 2014	Total companies with GRI	GRI G3	GRI G4
ISE	40	36	6	30
NON-ISE	55	30	6	24
Total	**95**	**66**	**12**	**54**

Note. Source: Research Data (2015).

Of the 55 non-ISE companies that reported in 2014, 30 issued the GRI. 6 have G3 and 24, G4. Only 4 companies issued G3, and 12, G4, reporting the quantitative value on the topic "total investments and expenditures on environmental protection".

For companies that did not have the GRI, the information was sought in the social report. Ultrapar was the only one to mention quantitative values in the social balance sheet. For the rest, it was searched in the topic related to the environment, seeking any monetary value. It was verified that 90% of the ISE companies presented some GRI model, and 54.54% of non-ISE companies disclosed the G3 or G4 model, which apparently demonstrates that ISE companies seek to provide greater accessibility to information. Of the eligible companies, approximately 70% reported some GRI model, 81.82% through GRI G4.

Table 9 shows the number of eligible companies that have disclosed qualitative and/or quantitative environmental investments.

Table 9
Eligible companies that have disclosed qualitative and/or quantitative environmental investments

Eligible companies	Total reports 2014	Environmental investments	
		Qualitative	Quantitative
ISE	40	40	27
NON-ISE	55	53	22
Total	**95**	**93**	**49**

Note. Source: Research Data (2015).

All ISE companies have disclosed environmental investments in a qualitative way. 67.5% also reported quantitative values. However, of the non-ISE companies, only Multiplus and Tupy did not mention the investments in a qualitative way in their annual and sustainability report, and 40% of the companies disclosed quantitative values. Of the total eligible companies that reported reports, 97.89% mentioned environmental investments qualitatively, and only 51.58% reported quantitative environmental investments.

By averages of the data shown in Table 10, it can be seen that from the ISE companies, the Public Utility sector publicized most environmental investments in a qualitative way. From the non-ISE companies, the Non-Cyclic Consumption sector did so, represented by 10 companies. The sector of eligible companies that most mentioned environmental investments in a qualitative way was Public Utilities, followed by Finance and Others.

Table 10
Eligible companies that have disclosed qualitatively environmental investments by industry

Sector	Environmental investments in a qualitative way - ISE	% environmental investments in a qualitative way - ISE	Environmental investments in a qualitative way – Non-ISE	% environmental investments in a qualitative way – Non-ISE	Total environmental investments in a qualitative way
Industrial goods	2	5,00	3	5,66	5
Construction and transportation	4	10,00	9	16,98	13
Cyclical consumption	3	7,50	7	13,21	10
Non-cyclical consumption	3	7,50	10	18,87	13
Financial and others	8	20,00	9	16,98	17
Basic materials	7	17,50	3	5,66	10
Oil, gas and biofuels	0	0,00	2	3,77	2
Information technology	0	0,00	2	3,77	2
Telecommunications	2	5,00	1	1,89	3
Public utility	11	27,50	7	13,21	18
Total	**40**	**100,00**	**53**	**100,00**	**93**

Note. Source: Research Data (2015)

All ISE companies that belong to the Public Utility sector have mentioned environmental investments in a qualitative way. This is the sector with the highest representation, corresponding to 40.74%.

Of the non-ISE companies, the Construction and Transportation and Public Utility sectors stood out the most, corresponding to 22.73% each. This analysis indicates that although the Non-Cyclic Consumption sector has more companies with disclosure of environmental investments in a qualitative way, it is not the sector with the largest number of companies with disclosure of quantitative investments. Only 3 out of the 10 companies mentioned the investments in a qualitative way, according to Table 11. The Construction and Transportation and Public Utility sectors indicated in Table 10, with 9 and 7 companies, respectively, have 5 companies that have disclosed quantitative investments.

Table 11
Eligible companies that have disclosed quantitative environmental investments by sector

Sector	Quantitative environment investments - ISE	% Quantitative environment investments - ISE	Quantitative environment investments – Non-ISE	% Quantitative environment investments – Non-ISE	Total Quantitative environment investments
Industrial goods	1	3,70	3	13,64	4
Construction and transportation	3	11,11	5	22,73	8
Cyclical consumption	1	3,70	0	0,00	1
Non-cyclical consumption	1	3,70	3	13,64	4
Financial and others	2	7,41	1	4,55	3
Basic materials	6	22,22	2	9,09	8
Oil, gas and biofuels	0	0,00	2	9,09	2
Information technology	0	0,00	0	0,00	0
Telecommunications	2	7,41	1	4,55	3
Public utility	11	40,74	5	22,73	16
Total	**27**	**100,00**	**22**	**100,00**	**49**

Note. Source: Research Data (2015)

The sector reporting the highest average of quantitative environmental investments of the ISE companies is the Basic Materials sector, with R$ 276,419,159.18, and it was the second sector reporting most quantitative investments (Table 12). Of the non-ISE companies, the sector with the highest average is Oil, Gas and Biofuels, since Petrobras alone comprises R$ 3,276,900,000.00 of environmental investments, which averages that the average of the companies that belong to this sector is high.

Table 12
Average of eligible companies that have disclosed quantitative environmental investments by sector

Sector	Average of quantitative environment investments - ISE	Average of quantitative environment investments - Non-ISE
Industrial goods	R$ 11.122.000,00	R$ 9.462.166,40
Construction and transportation	R$ 9.370.968,85	R$ 7.061.896,80
Cyclic consumption	R$ 647.664,00	R$ 0,00
Non-cyclical consumption	R$ 208.410.000,00	R$ 15.070.613,33
Financial and other	R$ 165.548.500,00	R$ 44.689.000,00
Basic materials	R$ 276.419.159,18	R$ 238.439.525,00
Oil, gas and biofuels	R$ 0,00	R$ 1.641.339.681,82
Information Technology	R$ 0,00	R$ 0,00
Telecommunications	R$ 8.730.670,50	R$ 8.094.690,53
Public utility	R$ 96.117.252,73	R$ 101.897.669,32
Total	**R$ 122.690.949,88**	**R$ 201.397.194,27**

Note. Source: Research Data (2015)

In Table 13, it is possible to verify the descriptive statistics of the quantitative investments of the eligible companies, considering R$ 0.00 as the minimum value. The only company that has reports but has no quantitative investment that considers R$ 0.00 as the minimum value is Multiplus, since Tupy, despite being excluded from Table 9 (due to having not mentioned investments in a qualitative way), has disclosed the quantitative values.

Regarding quantitative investments, the ISE companies, when considering the R$ 0.00 minimum value, presented a better average, although the highest value belongs to Petrobras, a non-ISE company. The smaller standard deviation indicates that the values should be close to the average, unlike non-ISE companies whose data is more dispersed than the average.

Table 13
Quantitative investments considering R$ 0.00 as the minimum value (R$)

Eligible companies	Quantity of companies	Average	Max	Min	Standard deviation
ISE	40	R$ 82.816.391,17	R$ 864.800.000,00	R$ 0,00	R$ 162.624.927,11
Non-ISE	54	R$ 82.050.708,78	R$ 3.276.900.000,00	R$ 0,00	R$ 451.114.856,05
Total	**94**	**R$ 82.376.531,07**	**R$ 3.276.900.000,00**	**R$ 0,00**	**R$ 356.463.902,61**

Note. Source: Research Data (2015).

Table 14 shows the quantitative investments disregarding R$ 0.00 as the minimum value, since R$ 0.00 corresponds to companies that only mentioned environmental investments in a qualitative way without mentioning the quantitative ones. When disregarding the value of R$ 0.00, the average of non-ISE companies becomes larger, despite having a high standard deviation, indicating that some companies have environmental investments that are distant from the average. Excluding Petrobras, the company with the largest investment of non-ISE companies, the average corresponds to R$ 54,944,679.71. It can be seen that the average of non-ISE companies is higher, since Petrobras has a very significant investment.

Table 14
Quantitative investments disregarding R$ 0.00 as the minimum value (R$)

Eligible companies	Quantity of companies	Average	Max	Min	Standard deviation
ISE	27	R$ 122.690.949,88	R$ 864.800.000,00	R$ 548.800,00	R$ 185.983.573,28
NON-ISE	22	R$ 201.397.194,27	R$ 3.276.900.000,00	R$ 523.600,00	R$ 698.874.996,19
Total	**49**	**R$ 158.028.447,36**	**R$ 3.276.900.000,00**	**R$ 523.600,00**	**R$ 483.722.182,67**

Note. Source: Research Data (2015)

The profitability of the asset indicates how much the company has made of profit in relation to its total assets. Table 15 shows the analysis of this indicator in % and indicates better averages for the ISE companies with less dispersion, since the standard deviation is lower.

Table 15
Analysis of Asset Profitability of eligible companies (in %)

Eligible companies	Quantity of companies	Average	Max	Min	Standard deviation
ISE	40	4,47	17,29	-3,81	4,61
NON-ISE	138	2,97	33,29	-27,85	8,82
Total	**178**	**3,31**	**33,29**	**-27,85**	**8,08**

Note. Source: Research Data (2015)

Table 16 shows the analysis of the indebtedness in %, and although the maximum value comes from non-ISE companies, ISE companies have a higher indebtedness than those. By analyzing this indicator, it can be seen that non-ISE companies are less indebted. Even excluding the company with the maximum value (IBG S.A.), the average corresponds to 58.96%, below the ISE companies.

Table 16
Analysis of the indebtedness of eligible companies (in %)

Eligible companies	Quantity of companies	Average	Max	Min	Standard deviation
ISE	40	65,29	94,40	13,10	17,96
NON-ISE	138	57,96	173,80	12,50	23,88
Total	**178**	**59,61**	**173,80**	**12,50**	**22,84**

Note. Source: Research Data (2015).

The analysis of the current liquidity index of the eligible companies is shown in Table 17, in which the non-ISE portfolio companies presented a better average if compared to the others, despite having a higher standard deviation. BBseguridade was the only company that did not mention the value of the current liquidity indicator.

Table 17
Analysis of the current liquidity of eligible companies

Eligible companies	Quantity of companies	Average	Max	Min	Standard deviation
ISE	40	1,53	3,80	0,60	0,74
NON-ISE	137	1,82	12,10	0,00	1,31
Total	**177**	**1,75**	**12,10**	**0,00**	**1,21**

Note. Source: Research Data (2015).

The Qgep Part of the sample was excluded to test again the averages and to analyze if only this company was distant, since it represented 12,1. However, although the average fell to 1.75, it was not enough for the ISE companies to perform better.

We also analyzed the total assets, and we observed that the average of the ISE companies is higher in relation to non-ISE, however the standard deviation is also higher, showing a greater dispersion of data. By the averages of the analysis, it can be seen that the ISE companies are larger, since they are well above the average of the total eligible companies (Table 18).

Table 18
Total Asset Analysis of eligible companies (in thousands of reais)

Eligible companies	Quantity of companies	Average	Max	Min	Standard deviation
ISE	40	137.481.045,48	1.437.485.512,00	3.209.768,00	333.213.263,38
NON-ISE	138	14.692.070,10	793.375.000,00	70.155,00	68.406.424,95
Total	**178**	**42.285.098,28**	**1.437.485.512,00**	**70.155,00**	**175.294.034,32**

Note. Source: Research Data (2015).

Through the logistic regression analysis, we verified factors that interfere in the selection of companies to compose ISE. The sample consisted of 177 eligible companies. BBseguridade was excluded because it did not present the liquidity indicator. The following options were considered: Classification diagrams; Hosmer-Lemeshow adjustment quality; CI for exp(B): 95%; Probability Per step: Input: 0.05 and Removal: 0.10; Rating Limit: 0.5; Maximum interactions: 20; Include constant in the model. We analyzed the probabilities and group association as predicted values, including the covariance matrix. The considered method was insertion, "which executes the model with all the variables selected by the researcher" (Fávero *et al.*, 2009, p. 447).

The dependent variable was ISE, which considered 1 for member companies and 0 for non-member companies. The analyzed covariables were the following: Natural Total Asset Logarithm (TAM), Asset Profitability (ROA), Current Liquidity (LIQC), Indebtedness (GEND), *Novo Mercado* (NM), Qualitative Environmental Investments (INVQUALI) and Quantitative Environmental Investments (INVQUANT).

For the variables INVQUALI, INVQUANT and NM, as well as for ISE dependent variable, we used dummy variables that indicate the presence or absence of a given attribute, assuming only the value 1 or 0 (Corrar, Paulo, & Dias, 2007). That is, for INVQUANT, we considered if the company showed monetary quantitative environmental investment, assuming the value 1, or not, represented by 0.

The model was tested by eliminating INVQUALI and INVQUANTI including quantitative environmental investment (VALORINV), but the analysis was not significant for any variable. No high correlation was identified, allowing to conclude that the explanatory variables are not influencing the others. Table 19 shows by means of Chi-Square that the joint coefficients are significant. We tested if at least one of the coefficients is different from 0. By Sig = 0.000, at least one of the variables has coefficient different from 0, rejecting the hypothesis that the parameters are null. The model is valid at the significance level of 5%.

Table 19
Omnibus Test of Model Coefficients

		Chi-square	df	Sig.
Step 1	**Step**	92,000	7	,000
	Block	92,000	7	,000
	Model	92,000	7	,000

Note. Source: Research Data (2015).

The proposed model presents 61.7% of explanatory power (Nagelkerke R Square), that is, the variables explain 61.7% of the companies' acceptance of ISE. The Hosmer-Lemeshow test verifies the null hypothesis that there are no significant differences between the expected and observed frequencies. The result indicates that there are no significant differences between the expected and observed frequencies at the level of significance, considering that the Sig value was 0.711, not rejecting the null hypothesis.

Table 20 shows if the model correctly classifies the events, based on the initially established c cut-off point (Fávero *et al.*, 2009). Due to BBseguridade having being excluded for not mentioning the current liquidity, 177 companies were actually observed. It can be concluded that there is 88.7% of company success, whether or not it belongs to ISE. Non-ISE companies are correctly classified in 94.9% (130/(130+7)) and non-ISE in 67.5% (27/(27+13)).

Table 20
Rating table

Observed			*Predicted*		
			ISE		*Percentage Correct*
			0	1	
***Step* 1**	**ISE**	0	130	7	94,9
		1	13	27	67,5
	Overall Percentage				88,7

Note. Source: Research Data (2015).

Table 21 indicates the variables, presenting the results that are significant in the selection of companies to compose ISE. It was possible to conclude that the significant variables were: TAM, ROA, GEND and INVQUANT (size, profitability of the asset, indebtedness and quantitative environmental investment), which interfere in the selection of companies to compose ISE. As to current liquidity, qualitative environmental investment and the fact of belonging to the *Novo Mercado* did not show any significance in relation to the company being part of ISE. The TAM variable was significant at 1% level, the GEND and INVQUANT at 5% level and the ROA at 10% level.

Table 21
Variables in the equation

		B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**95% C.I.for EXP(B)**	
								Lower	***Upper***
Step 1	**TAM**	0,758	0,243	9,745	1	0,002	2,135	1,326	3,437
	ROA	0,1	0,052	3,658	1	0,056	1,105	0,998	1,224
	LIQC	-0,012	0,254	0,002	1	0,961	0,988	0,601	1,624
	GEND	0,032	0,016	3,853	1	0,05	1,032	1	1,065
	NM(1)	-0,47	0,53	0,786	1	0,375	0,625	0,221	1,766
	INVQUALI(1)	-19,629	4048,87	0	1	0,996	0	0	.
	INVQUANT(1)	-1,062	0,506	4,405	1	0,036	0,346	0,128	0,932
	Constant	-14,375	4,375	10,795	1	0,001	0		

Note. Source: Research Data (2015).

The study found that the analysis of the indices is in line with the logistic regression analysis when identifying that the size, the profitability of the asset, the indebtedness and the quantitative environmental investment were the factors that influenced the selection of companies to compose ISE, making it possible to come to the same conclusion.

5 CONCLUSIONS

In order to achieve the objective of the research, it was initially identified whether companies have disclosed environmental investments in their sustainability reports. Of the 178 eligible companies surveyed, 95 submitted reports. 93 companies report that they have invested in environmental aspects, and 49 mention monetary amounts.

In addition, we compared if the ISE companies have greater environmental investments than the non-ISE companies. For the companies that issued reports, 100% of the ISE companies presented qualitative environmental investments and 67.5% quantitative ones, corresponding to a greater proportion of investments to ISE, since from the non-ISE companies, only 40% reported quantitative values and 96.36% qualitatively.

When calculating the economic-financial indicators and when analyzing the descriptive statistics, we concluded that the total assets, the profitability of the asset and the indebtedness presented the highest averages for the ISE companies. And, through the logistic regression, we evaluated if some factors influenced the selection of the companies to compose ISE. It was found that TAM, ROA, GEND and INVQUANT interfered in the selection of the companies to ISE. The analysis of the indices is in agreement with the logistic regression obtaining the same conclusion. The TAM, ROA, GEND and INVQUANT variables influenced the selection of companies to compose ISE, but LIQC, INVQUALI and NM did not show significant results. The TAM variable was significant at 1% level, the GEND and INVQUANT at 5% level and the ROA

at 10% level.

Due to the criteria used, the result cannot be generalized, since, if other parameters are considered, different conclusions can be obtained. Another limitation of the research is that it refers to a single period (2014). It has not been applied to other periods. In addition, not all companies have released sustainability reports. Thus, for future work, we recommend the verification of more time periods, as well as the analysis of the social aspect involving social and environmental investments. We also propose to consider the savings of resources resulting from social and environmental investments and to make new selections, such as the most profitable companies.

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