

CORPORATE SUSTAINABILITY INDEX: Does the firm benefit from it?

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Introduction

Porter and Kramer (2006) define the competitiveness of companies as dependent on the community around them, thanks to the synergy between economic and social objectives. According to the authors, companies are induced to adopt social and sustainable practices for four reasons: moral obligation, sustainability, licenses to operate or reputation. These motives stem from a tension implicitly imposed by society, which views large corporations as more or more influential than the government itself on these issues.

There are non-consensual opinions about real corporate social responsibility. Opposing lines began the arguments of two economists, both Nobel Prize winners, Milton Friedman and Paul Samuelson. A defender of the orthodox view, Friedman argues that the company fulfills its social role by focusing only on obligations relating to the generation of employment, the provision of services or products suited to the market and the payment of taxes. Any activity that exceeds these limits would, according to him, generate economic inefficiency (Friedman, 1973).

Already Samuelson (1971), defender of a heterodox line, has the same vision of Porter and Kramer (2006): there is economic and social interdependence. Also Elkington (1999), creator of the model that is now one of the references of business sustainability, called the Triple Bottom Line, believes that companies must structure their processes in activities sustained by economic, social and environmental benefits. The company's long-term success, according to Savitz and Weber (2006), depends on the establishment of a balance, called "Sweet Spot", where the interests of the company are similar to those of the stakeholders - stakeholders who influence and influence the activities of a particular business.

In the line of financial research, authors have found evidence that the investor positively evaluates companies that adopt sustainable practices in their agenda of operation. The perception may have similar explanations to findings related to Corporate Governance, such as those of Klapper and Love (2004) and Silva and Leal (2005), which point to indications that the investor perceives in a beneficial way practices of transparency and solidity, resulting in positive relationship between the adoption of corporate governance practices and company performance and market valuation.

Since the cost of equity is the discount rate that partly determines the market value of a company, we can consider it as the rate of return demanded by the market, according to the perceived risk attributed (Ghoul *et al.*, 2011). Making use of contemplation in the Corporate Sustainability Index (ISE) as a proxy for social responsibility in the Brazilian stock market, the present study sought to evaluate if the investor perceives "socially responsible" companies as less risk-prone in Brazil. If the fact that the company belongs to the ISE changes the risk perceived by investors, then these companies should benefit from lower capital cost than the others, in the same way as the companies studied by Ghoul *et al.* (2011) in the United States. If this relationship is proved, the investment in sustainable practices can be considered an economically advantageous strategy for Brazilian companies.

Theoretical Framework

In this session will be presented the theoretical bases used to support the analyzes carried out. Distributed in three sub-chapters, these theories deal briefly with the definitions of sustainability, sustainability seals, and the cost of capital of companies. The aim is to build a scenario capable of giving greater robustness to the analyzes and results obtained.

Sustainability

Definitions of social responsibility have long been discussed, but it was in the 1970s that they gained a body (Carroll, 1999). In 1973, Friedman argued contrary to what was debated as corporate social responsibility. The author, as we can see below, did not consider it possible to delegate responsibilities to the companies.

"Discussions about 'social responsibility in business' are notable for their lack of rigor and analytical laxity. What does it mean to say that a 'business' has responsibilities? Only people can take responsibility. (...) the doctrine of 'social responsibility' involves the acceptance of the socialist view that political mechanisms, not market mechanisms, are the appropriate way to determine the allocation of scarce resources to alternative uses." (Friedman, 1973)

In an antagonistic way, Samuelson (1971) had proposed shortly before that "A large corporation, today, not only engages in social responsibility, but it is actually better for it to do so!" For the author, society places companies in a position that compels them to invest in socially responsible actions, with interdependence between economic and social objectives.

According to Johnson (1971), companies are not limited to this dichotomous analysis of whether or not they have social responsibility because of external pressures. For the author, the objective of the company goes beyond earning immediate profit, and it must work to maximize its usefulness and the perpetuation of its activities. In this way, the author says that in addition to immediate financial results, companies need to include in their analysis the usefulness of those around them, such as society and the environment in which they are inserted.

More than the concepts of sustainability that are extremely dynamic and questioned, such as the triple bottom line proposed in 1997 by Elkington, sustainability must be understood as the ability to harmonize the relationship between the needs of society and the needs of the environment, adapting to the constant changes in the scenario (Kates *et al.*, 2001). For the authors, it is fundamental to achieve an economic environment of sustainability that these relations between society and the environment are conducted in this sense, highlighting between what needs to be done, the education of society in that sense.

Sustainability research has a common basic goal: to link interdisciplinary knowledge to actions that seek to integrate society and the environment in which it is embedded (Clark, 2007). Miller (2013) points out that many scientists believe that sustainability research offers universal values related to sustainability and provides the knowledge framework needed to support decision making in society.

However, as Sarewitz (2004) points out, the complexity of the sustainability analyzes provides us with a significantly diversified knowledge framework. Similar situations observed by different scientific lenses may provide basements for different positions when making decisions. These differences can be amplified by political, cultural and institutional differences.

Sustainable Certifications

Sustainability certificates are certifications, usually voluntary, designed to ensure that a particular product or company is in compliance with a set of sustainability criteria. These systems have emerged as a response to market concerns about the socio-environmental impacts of economic activities and are innovative forms of sustainability governance that do not emanate from the state (Kersbergen and Waarden, 2001; Arts, 2006; Take, 2012).

For Mol and Oosterveer (2015), the growth in the number of sustainability certifications from the mid-1990s has responded to the growing demand for sustainability in transnational value chains as a way of guaranteeing the sustainability of products and production circumstances, customers and consumers downstream of global value chains. The notion of regulation or governance through information has developed over this two-decade period. Information regulation or governance refers to the idea that information is fundamentally reshaping governance processes, institutions, and practices, making these processes essentially different from conventional modes of governance.

The same authors point out that when conventional governance is highly dependent on authoritarian resources, belief in information control and state power, in informational governance information is becoming a crucial source, with transformative powers in specified practices, although no one is in information control. Information processes now begin to become acts of governance with transformative power, rather than just subsidizing the formulation and implementation of authoritarian state policies.

Certifications are usually made by private companies that are part of a global network and committed to the same set of guidelines (Rezende and Farina, 2001). These companies operate in a number of industries, facing difficulties in a number of them. These difficulties involve frequent changes in standards, lack of awareness and knowledge, and traceability of the chain (Lopes *et al.*, 2010).

Cost of Capital

Modigliani and Miller (1958), using the perfect markets hypothesis and considering the inexistence of taxes, have shown that the value of organizations does not depend on their financing structure, being equal the costs of capital and third-party capital.

From that moment on, differences between equity and third-party costs started to be based on market imperfections as well as conflicts between different categories of investors. Taxation (Modigliani and Miller, 1963), bankruptcy costs (Kraus and Litzenberger, 1973), agency conflict (Jensen and Meckling, 1976) and underinvestment (Myers, 1977) were the first major issues that evidenced differences between own capital and third parties.

Another factor that has an intense impact on companies' cost of equity is information about risk (Easley and O'hara, 2004; Leuz and Verrecchia, 2005), with profit being one of the main sources of information about the company (Biddle, Seow and Siegel, 1995, Francis, Schipper and Vincent, 2003), with a significant negative relation with the cost of equity. The risk premium tied to equity, and hence the cost of that capital, is related to information uncertainty and economic conditions. In a survey conducted in 56 countries, Fernandez, Aguirreamalloa and Avendaño (2011) identified that the most important factor influencing the risk premium required for equity investments is the past risk premium.

With the evolution of the market and the emergence of new demands and analysis methodologies, other issues started to influence the financing costs of companies, shifting the discount rates of capital, such as the evolution of the globalization of capital markets (Stulz,

1999), diversification (Hann, Ogneva and Ozbas, 2013), customer base concentration (Dhaliwal *et al.*, 2015), business lifecycle stage (Hasan *et al.*, 2015), business political connections (Chen, Chen and Wei, 2011) and sustainable performance (Ng and Rezaee, 2015).

Evaluating social responsibility in Chinese companies, Xu, Liu and Huang (2015) observed that the higher the level of social responsibility presented by companies, the lower their cost of equity. The authors also point out that this trend is stronger in times of economic crisis than in moments of booms. Feng, Wang and Huang (2015) identify that in companies in Europe and North America there is also a reduction of the cost of equity with the improvement of social responsibility indexes.

On the contrary, Richardson and Welker (2001) indicate that there is a significant positive relation between corporate social disclosure and its cost of capital, while Humphrey, Lee and Shen (2012) did not identify differences between the cost of equity of companies with high and low social performance, using a set of British companies. In a sample of the same country, Clacher and Hagendorff (2012) did not observe a consistently positive relationship between the inclusion of companies in social sustainability indexes and the market reaction, indicating that this inclusion is indifferent to investors. In the environmental dimension, the study by Kim, An and Kim (2015) also points out that the increase in the intensity of greenhouse gas emissions by companies causes an increase in the cost of equity of companies.

Methodological procedures

In this chapter, the methodological procedures used to address the research question will be explained.

Interviews with experts

As a way of directing the research, three initial interviews were carried out with specialists in the financial market, two working with portfolio management and one academic. These interviews were carried out based on a dynamic semistructured roadmap, which aimed to direct the interview in order to raise the opinions of the interviewees about the Corporate Sustainability Index and the companies that compose it, as opposed to the other companies traded on the Stock Exchange from Sao Paulo.

The dynamic semi-structured questionnaire was used to allow factors raised by previous interviewees to be incorporated into the interview script of the next interviewees. This flexibility allows for the reinforcement or not of the statements made by one of the interviewees, giving greater robustness to the interviews and their responses.

Sample Construction

The variables used in this study were collected among Brazilian non-financial companies whose shares are traded on the São Paulo Stock Exchange. The sample was obtained using Bloomberg Database and has a longitudinal dimension, composed of a time series of 12 years, between 2006 and 2017. The number of 271 companies, considerably larger in relation to the number of observed periods, allows the result to be considered as asymptotically valid, based on the assumption of a "short panel", that is, where N (the number of individuals in the sample) is "large" and T (time periods), "small". The panel is characterized as unbalanced, since there are missing observations for some companies, in certain periods.

Description of the Variables

In this subchapter, the variables used will be described.

Cost of Equity

The cost of equity is understood as the minimum rate of return required by investors for the capital invested. Through the CAPM model, widely diffused in theory and widely used by investors, we obtained an estimate of the rate of return required for the investment, given by the linear relationship between the firms' return and the β risk factor. The model, initially proposed by Sharpe (1964) has already been used for the same purpose in works such as that of Silva and Quelhas (2006).

As previously discussed by Neto, Lima and Araújo (2008) there are some particularities in the Brazilian market that need to be re-evaluated in emerging markets, as in the case of Brazil. For the authors, the opportunity cost of investors is more effective when calculated through the benchmark of a more stable economy, plus the country risk, which represents the risk of default. Thus, the CAPM will be calculated as follows:

$$R_e = R_f + \beta (R_m - R_f)$$

where R_e corresponds to the expected return; R_f at the risk-free rate; R_m to the return of the market portfolio and β to the sensitivity of the return of each asset to changes in the market portfolio.

Risk Free Rate

For the calculation of the risk-free rate, the historical series of T-Bonds maturing in 30 years from 2006 to 2017 was used. The country risk for the same period was added to this return.

Beta

The market beta represents the conjunctural risk assumed in each period by each company studied. It is the coefficient of the regression between the return of the market portfolio and the returns of the asset:

$$\beta_{i,t} = \frac{COV (R_{a,i}; R_{m,i})}{VAR (R_{m,i})}$$

Where " $COV (R_{a,i}; R_{m,i})$ " is the covariance between the returns of the asset and the market portfolio and " $VAR (R_{m,i})$ " is the variance of the portfolio of Marketplace. Thus, the beta allows to measure the sensitivity of each company to the variations of the market portfolio.

Sustainability Index

As a way to evaluate the impact of the Sustainability Index, a dummy variable was created that assumes value 1 when the company is part of the Corporate Sustainability

Index and 0 when it does not. This information was obtained on the website of the Index on the São Paulo Stock Exchange and is distributed as follows in table 1.

Control Variables

For the purpose of this study, controls similar to those found in the work of Ghoul *et al.* (2011). The risk variable (beta) was eliminated from the regressions, considering the high correlation with the cost of equity, estimated by CAPM. In addition, annual macroeconomic effects were used, which are described in Table 1.

Table 1 – Control variables

<i>Market-to-book Ratio</i>	$Price\ to\ Book\ Ratio_{i,t} = \frac{Last\ Price_{i,t}}{Book\ Value\ per\ Share_{i,t}}$	The Market-to-book index corresponds to the ratio between the market value and the book value of the firms.
<i>Financial Leverage</i>	$Leverage_{i,t} = \frac{Average\ Total\ Assets_{i,t}}{Average\ Total\ Common\ Equity_{i,t}}$	Allows controlling the effects of companies' level of indebtedness on their cost of equity.
<i>Profitability</i>	$Profitability_{i,t} = \frac{Net\ Income_{i,t}}{Total\ Assets_{i,t}}$	Provides control over the possible effects of more or less profitable companies on their cost of capital.
<i>Size</i>	$Size_{i,t} = \ln(Total\ Assets_{i,t})$	Allows the size of the sample companies to be controlled. If one considers the theory of the cost of bankruptcy, one has to say that larger companies are less subject to financial difficulties and have, to the detriment of this, a greater indebtedness capacity than smaller companies.
<i>Sectors</i>	GICS 2-digit code	The companies were divided according to the Global Industry Classification Standard (GICS). We used the 2-digit code. For each one, a dummy variable was created that assumes value 1 when the company corresponds to this sector, and 0 when it does not. The "Financial and insurance services" sector, which has a distinct debt structure, was excluded from the sample and could skew the sample.
<i>Years</i>	$Year_t$	In order to capture possible influential macroeconomic events in the sample, the dummy $YEAR_t$ assumes value 1 in the i th year and 0 in the others. It is expected to control the annual effects that eventually hit the market and are not observed.

Table 2- ISE Companies

Year	# Companies	Companies
2006	28	AES Eletropaulo; All Amer Lat; Aracruz; Bco Brasil; Belgo Mineira; Bradesco; Braskem; CCR SA; Cemig, Celesc; Cesp; Copel; Copesul; CPFL Energia; Dasa; Eletrobras; Embraer; Gol; Iochpe-maxion; Itausa; Natura; Perdigão SA; Suzano Papel; Tractebel; Unibanco; VCP; WEG; Itaú Banco
2007	34	Acesita; AES Eletropaulo; All Amer Lat; Aracruz; Arcelor SA; Bco Brasil; Bradesco; Braskem; Celesc; CCR SA; Cemig; Coelce; Copel; CPFL Energia; Dasa; Embraer; Energias EDP; Gerdau; Gerdau Met; Iochpe-maxion; Itaú Banco; Itausa; Localiza; Natura; Perdigão SA; Petrobrás; Suzano Papel; Gol; Suzano Petro; TAM SA; Tractebel; Ultrapar; Unibanco; VCP
2008	32	AES Eletropaulo; AES Tietê; AM Inox BR; Aracruz; Bco Brasil; Bradesco; Braskem; CCR SA; Cesp; Cemig; Coelce; Copel; CPFL Energia; Dasa; Eletrobras; Embraer; Energias EDP; Gerdau; Gerdau Met; Itaú Banco; Light SA; Natura; Perdigão SA; Petrobrás; Sabesp; Sadia SA; Suzano Papel; Iochpe-maxion; Suzano Petro; Tractebel; VCP; WEG
2009	30	AES Eletropaulo; AES Tietê; Bco Brasil; Bradesco; Braskem; Celesc; Cemig; Cesp; CPFL Energia; Coelce; Dasa; Duratex; Eletrobras; Embraer; Energias EDP; Gerdau; Gerdau Met; Itaú Banco; Light SA; Odontoprev; Perdigão SA; Sabesp; Sadia SA; Suzano Papel; Telemar; TIM Part SA; Tractebel; Natura; Unibanco; VCP
2010	34	AES Eletropaulo; AES Tietê; Bco Brasil; Bradesco; Braskem; BRF SA; Cesp; Cemig; Coelce; Copel; CPFL Energia; Dasa; Duratex; Eletrobras; Embraer; Energias EDP; Even; Fibria; Gerdau; Inds Romi; Itausa; Itaú Banco; Light SA; Natura; Redecard; Sabesp; Sul América; Gerdau Met; Suzano Papel; Telemar; TIM Part SA; Tractebel; Usiminas; Vivo
2011	38	AES Eletropaulo; AES Tietê; Anhanguera; Bco Brasil; Bic Banco; Bradesco; Braskem; BRF SA; Cesp; Cemig; Coelce; Copasa; Copel; CPFL Energia; Duratex; Eletrobras; Embraer; Energias EDP; Even; Fibria; Gerdau; Inds Romi; Itausa; Itaú Banco; Light SA; Natura; Redecard; Sabesp; Santander BR; Sul América; Gerdau Met; Suzano Papel; Telemar; TIM Part SA; Tractebel; Ultrapar; Vale; Vivo
2012	37	AES Eletropaulo; AES Tietê; Anhanguera; Bco Brasil; Bic Banco; Bradesco; Braskem; BRF SA; Cemig; CCR SA; Cesp; Coelce; Copasa; Copel; CPFL Energia; Duratex; Ecorodovias; Eletrobras; Embraer; Even; Fibria; Gerdau; Gerdau Met; Itausa; Itau Unibanco; Light SA; Natura; Energias EDP; Sabesp; Santander BR; Sul América; Suzano Papel; Telemar; TIM Part SA; Tractebel; Ultrapar; Vale
2013	37	AES Eletropaulo; AES Tietê; Bco Brasil; Bic Banco; Bradesco; Braskem; BRF SA; CCR SA; Cesp; Cemig; Coelce; Copasa; Copel; CPFL Energia; Duratex; Ecorodovias; Eletrobras; Energias EDP; Even; Gerdau; Gerdau Met; Itausa; Itau Unibanco; Light SA; Natura; Sabesp; Santander BR; Fibria; Sul América; Suzano Papel; Telefonica Brasil; Telemar; TIM Part SA; Tractebel; Ultrapar; Vale; WEG
2014	40	AES Eletropaulo; AES Tietê; Bco Brasil; Bic Banco; Bradesco; Braskem; BRF SA; CCR SA; Cemig; Cesp; Cielo; Coelce; Copasa; Copel; CPFL Energia; Duratex; Ecorodovias; Eletrobras; Embraer; Even; Fibria; Fleury; Gerdau; Gerdau Met; Itausa; Itau Unibanco; Klabin SA; Light SA; Natura; Energias EDP; Oi; Sabesp; Santander BR; Sul América; Suzano Papel; Telefônica Brasil; TIM Part SA; Tractebel; Vale; WEG
2015	39	AES Eletropaulo; AES Tietê; B2W Digital; Bco Brasil; Bradesco; Braskem; BRF SA; CCR SA; Cemig; Cielo; Coelce; Copel; CPFL Energia; Duratex; Ecorodovias; Eletrobras; Embraer; Even; Fleury; Gerdau; Gerdau Met; Itausa; Itau Unibanco; JSL; Klabin SA; Light SA; Fibria; Lojas Americanas; Lojas Renner; Energias EDP; Natura; Sabesp; Santander BR; Sul América; Telefônica Brasil; TIM Part SA; Tractebel; Vale; WEG
2016	34	AES Eletropaulo; AES Tietê; B2W Digital; Bco Brasil; Bradesco; Braskem; BRF SA; CCR SA; Cesp; Cemig; Cielo; Copel; CPFL Energia; Duratex; Ecorodovias; Eletrobras; Embraer; Engie Brasil Energia; Fibria; Fleury; Itausa; Itau Unibanco;

2017	34	Klabin SA; Light SA; Lojas Americanas; Lojas Renner; Even; Energias EDP; Natura; Santander BR; Sul América; Telefônica Brasil; TIM Part SA; WEG AES Eletropaulo; AES Tietê; B2W Digital; Bco Brasil; Bradesco; Braskem; BRF SA; CCR SA; Celesc; Cemig; Cielo; Copel; CPFL Energia; Duratex; Ecorodovias; Eletrobras; Embraer; Engie Brasil Energia; Fibria; Fleury; Itausa; Itau Unibanco; Klabin SA; Light SA; Lojas Americanas; Lojas Renner; MRV; Energias EDP; Natura; Santander BR; Sul América; Telefônica Brasil; TIM Part SA; WEG
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Source: BM&FBovespa

Variables

Tables 3 and 4 correspond, respectively, to the descriptive statistics and correlation matrix of the variables present in this study. Note that there is no high linear relationship between variables.

Table 3 – Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
CAPM	1930.00	0.14	0.17	0.00	1.17
Market-to-book	1539.00	205.75	3162.40	0.03	116620.50
Size	2138.00	20.99	2.05	8.01	27.45
Profitability	2065.00	1.79	10.85	-69.29	26.21
Indebtedness	1818.00	3.20	2.56	1.20	15.68

Source: Study data

Table 4 – Correlation Matrix

	CAPM	Market-to-book	Size	Profitability	Indebtedness
CAPM	1				
Market-to-book	-0.0122	1			
Size	0.2896	-0.0053	1		
Profitability	0.0241	-0.0073	0.0862	1	
Indebtedness	0.0505	0.151	0.0978	-0.2481	1

Source: Study data

Significance and robustness

In order to evaluate the statistical significance of the results obtained and to increase the robustness of the behavior observed in this study, two tests will be performed, based on the following regressive models.

$$CAPM_{i,t} = \beta_0 + \beta_1 ISE_t + \beta_2 Price_to_Book_{i,t-1} + \beta_3 \ln AT_{i,t-1} + \omega^T \Omega_{i,t-1} + \alpha_i + u_{i,t} \quad (1)$$

$$\begin{aligned}
CAPM_{i,t} = & \beta_0 + \beta_1 ISE_t + \beta_2 Price_to_Book_{i,t-1} + \beta_3 \ln AT_{i,t-1} & (2) \\
& + \beta_4 Leverage_{i,t-1} + \beta_5 Profitability_{i,t-1} \\
& + \omega^T \Omega_{i,t-1} + \alpha_i + u_{i,t}
\end{aligned}$$

In both regressions the vector ω^T has dimension (k x 1) and represents the control variables for years and sectors, when applicable.

Results

The three interviews pointed out that there is no real evidence of a higher level of sustainability of the companies that compose the ISE in comparison with other companies. Interviewee number 1 also cited recent examples of companies that made up the index and were responsible for emblematic cases of environmental damage or cases of corruption, citing Vale and Petrobras, but also remembering that Sabesp made the index until 2015, although there is complete information that its operations are highly inefficient, with the loss of about 40% of the water inserted in the network, with clear environmental and social damages.

This same interviewee indicated, however, that there should be a difference between the capital costs of the companies that compose the sustainability index when compared with the companies that do not make it up. According to him, this difference would be justified by two main factors. The first factor is the perception of sustainability of these companies due to the seal provided by the stock exchange itself. Less informed investors would take this information as true when it comes to directing their capital, privileging these companies. The other interviewees reinforced this idea, arguing in the same vein.

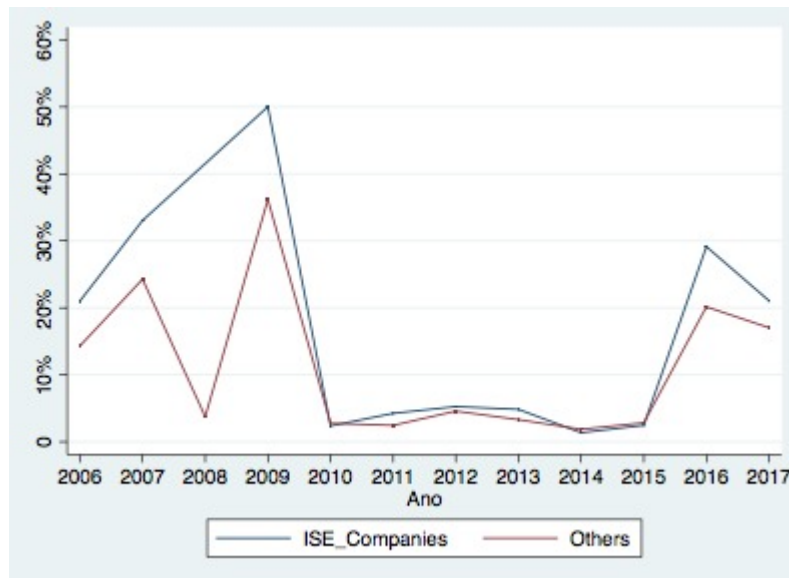
The second factor raised by the first respondent as being responsible for a change in the cost of capital of ISE component companies was a greater capacity of communication of these companies. In his opinion, the participation in the index is more related to the communication capacity of the companies that effectively at the level of sustainability. For the interviewee, this better communication capacity would be reflected in the cost of capital by a reduction in the sensation of uncertainty and the asymmetry of information on the part of the investors. This idea, however, was rejected by the other interviewees. According to both, even if it is understood that there is in fact a greater capacity of communication of the companies that compose the index, this capacity would not be enough to affect the investors perception with respect to the risks.

In addition, it was mentioned by the third interviewee that there is not properly a process of selection of the companies that compose the index. According to him, submitted forms by companies, these companies are included in the index without further investigation by the stock exchange about the data provided and other that should be relevant. This passive position grants nothing about the information security, but if a company leaves the index, it signals that it definitely does not fill the sustainability criteria, causing a phenomena similar to what is observed in dividends payment.

Considering what was gathered through the interviews, the analysis of the results obtained in the statistical tests should be analyzed from the perspective of the

sustainability stamps and sustainability perception. Although, according to the interviewees, there is in fact no significant difference in terms of the sustainability of the companies composing the index when compared to those that do not make it up, the mere fact of being part of the ISE seems to affect the cost of capital, as can be seen in the Figure 1 below.

Figure 1 – Cost of capital over time



Source: Study data

As can be seen in the graph above, since the first moment it was implemented, the ISE seemed to negatively impact the cost of capital of the companies that were higher than the other companies. After the first four years, the cost of capital of those companies started to follow the general tendency of the other companies. This fall coincided with the start of the national economic crisis, which caused investors to seek greater security in their investments, seeking for more liquid and guaranteed investments.

In addition, what is observed with the result of the regressions used, expressed in the Table 5 below, is that the ISE dummy variable, which represents companies that received the sustainability seal, presented a positive, though insignificant, coefficient. In the same way found for Romano *et al.* (2016), it seems indifferent for the companies cost of capital to be part of the ISE list. The results suggest that companies that signal the adoption of sustainable practices to investors, ratified by the certification body, does not benefit from a lower cost of capital than those that do not, but seems to have the opposite effect.

To test for the effect of being in the ISE over these companies cost of capital, we've analyzed only the companies that have been part of the index at least once since 2006. The results, shown in the Table 6, indicates that the companies observe a raise in their cost of capital after entering the ISE, with a significant result at 1% level, confirming the signals provided by the results shown in Table 5.

Table 5 – Results with all companies

VARIABLES	All Companies	FE Year	FE Industry	FE Year Industry	All Companies	FE Year	FE Industry	FE Year Industry
ISE	0.0192 (0.0183)	0.00175 (0.0111)	0.0326* (0.0171)	0.0106 (0.0119)	0.0241 (0.0186)	0.00356 (0.0113)	0.0369** (0.0174)	0.0113 (0.0122)
Market-to-book	1.12e-05*** (3.65e-06)	2.69e-06 (1.84e-06)	1.20e-05*** (3.83e-06)	3.21e-06** (1.42e-06)	1.60e-05*** (4.51e-06)	2.76e-06 (2.59e-06)	1.71e-05*** (5.26e-06)	3.52e-06* (1.91e-06)
Size	0.0192*** (0.00292)	0.0141*** (0.00226)	0.0228*** (0.00279)	0.0165*** (0.00229)	0.0188*** (0.00283)	0.0145*** (0.00226)	0.0224*** (0.00280)	0.0170*** (0.00234)
Profitability					-0.00164*** (0.000589)	-0.00123*** (0.000477)	-0.00141** (0.000602)	-0.00110** (0.000500)
Financial Leverage					0.000377 (0.00148)	-0.000598 (0.000971)	1.04e-05 (0.00143)	-0.000740 (0.000944)
Constant	-0.299*** (0.0602)	-0.0412 (0.0463)	-0.325*** (0.0689)	-0.0770 (0.0544)	-0.287*** (0.0581)	-0.0391 (0.0460)	-0.314*** (0.0677)	-0.0783 (0.0548)
Observations	778	778	778	778	765	765	765	765
Number of Company Name	232	232	232	232	230	230	230	230
FE Year		YES		YES		YES		YES
FE Industry			YES	YES			YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Study data

Table 6 – Results with ISE companies

VARIABLES	ISE	FE Year	FE Industry	FE Year Industry	ISE	FE Year	FE Industry	FE Year Industry
ISE	0.0467*** (0.0140)	0.0253** (0.0103)	0.0527*** (0.0116)	0.0322*** (0.00912)	0.0508*** (0.0140)	0.0269*** (0.0100)	0.0561*** (0.0119)	0.0326*** (0.00907)
Market-to-book	1.03e-05*** (3.48e-06)	2.47e-06 (1.69e-06)	1.09e-05*** (3.70e-06)	2.80e-06** (1.24e-06)	1.47e-05*** (4.51e-06)	2.48e-06 (2.38e-06)	1.56e-05*** (5.35e-06)	3.03e-06* (1.70e-06)
Size	0.0156*** (0.00305)	0.0116*** (0.00233)	0.0193*** (0.00292)	0.0139*** (0.00238)	0.0151*** (0.00297)	0.0119*** (0.00228)	0.0189*** (0.00294)	0.0143*** (0.00239)
Profitability					-0.00180*** (0.000576)	-0.00132*** (0.000472)	-0.00151** (0.000591)	-0.00115** (0.000494)
Financial Leverage					0.000617 (0.00151)	-0.000463 (0.000968)	0.000270 (0.00150)	-0.000586 (0.000959)
Constant	-0.229*** (0.0629)	0.00540 (0.0477)	-0.262*** (0.0732)	-0.0284 (0.0574)	-0.216*** (0.0609)	0.00837 (0.0470)	-0.249*** (0.0722)	-0.0297 (0.0574)
Observations	778	778	778	778	765	765	765	765
Number of Company Name	232	232	232	232	230	230	230	230
FE Year		YES		YES		YES		YES
FE Industry			YES	YES			YES	YES

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Source: Study data

In all cases analyzed, what is observed is a positive influence of the participation of companies in the ISE over their average cost of capital, showing that it may not be financially interesting to be part of that index.

Conclusion

Since the initial discussions on the real social responsibility of companies, questions have been raised about the adoption of sustainable practices on their management and results. The objective of this study was to evaluate whether the signaling of the adoption of sustainable practices changes the perception of risk in the Brazilian market, using the Corporate Sustainability Index of the São Paulo Stock Exchange. The cost of equity through CAPM was estimated for a sample of 112 Brazilian publicly traded companies from 2005 to 2017. Thus, the cost of capital of companies belonging to the Corporate Sustainability Index was compared with others that did not take part of that index.

What was observed was a significant influence of the companies' participation in the index on their capital costs, although, according to the interviews, this participation does not represent, in fact, a more sustainable business performance. That influence, in opposition to the majority of the previous findings, was not negative, but positive. That means that companies that take part of the ISE at least once tend to have a higher cost of capital. In this sense, the main contribution of this study is to highlight the absence of impact of the sustainability signaling over investors. This concern was even more evident in the market analyzed before the national economic crisis that occurred at the start of the second decade of the 21st century.

On the other hand, it was not possible to analyze in depth the reality of the companies' sustainability practices, which would make it possible to ascertain whether the signaling of sustainable performance is true or not. This would allow greater certainty when affirming that sustainability practices, and not just their signaling, have an effect on the cost of capital of companies. This is one of the limiting factors of this study, as is the fact that a single national sample, Brazil, is used to carry out the study, not allowing the effect to be understood to exist in other countries. Finally, it is suggested that future studies should analyze similar indexes in other stock exchanges around the world, as well as the inclusion of control by the liquidity of the securities observed in the analysis.

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