Performance analysis of sustainable investments in the Brazilian stock market

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Abstract

This work analyzes the Corporate Sustainability Index (ISE) with the main objective of disclosing the performance of sustainable investments in the Brazilian stock market, during the period from December 2005 to December 2010. We mainly use the following measures: Sharpe, Treynor, Jensen, Sortino, Modigliani & Modigliani, and Omega. Our results show that, although there is evidence of promising potential, sustainable investments did not achieve a satisfactory financial performance in the analysis period, thus indicating that the constraints imposed by this type of investment in capital allocation in the country were not sufficient to affect its economic environment. As the adoption of criterions that demand high performance of companies in relation to sustainability issues become mandatory, these investments will tend to add value.

Keywords: sustainable investment; socially responsible investment; corporate sustainability index; portfolio performance analysis.

1 Introduction

The concept of sustainability is increasingly evident in the capital markets and has had consequences for investment activities and for the missions of the global stock exchanges. The most important consequence of the inclusion of sustainability in capital markets was the creation of a new type of investment – the sustainable investment (SI) – which primarily aims at including environmental, social and corporate governance (ESG) factors in traditional investment activities.

With the objective of stimulating this investment approach, in 2006, the United Nations (UN) established the Principles for Responsible Investment (PRI), which consists of an international network that puts into practice six basic ESG principles. These principles reflect the view that ESG factors may affect the performance of investments and, therefore, that they must be taken into account by all investors. In addition, due to the evolution of SIs, financial reports have undergone an integration process, as it began to be necessary to incorporate new, relevant, non-financial information so that investors could check the real performance and risk of companies. In this context, thousands of companies have already adhered to initiatives such as the Global Reporting Initiative (GRI), the Carbon Disclosure Project (CDP) and the Green House Gas Protocol Initiative (GHG Protocol).

According to the World Federation of Exchanges (2010), stock exchanges worldwide have become increasingly active regarding sustainability-oriented issues. In this context, initiatives regarding the promotion of products and services to sustainable investors and the development of specific markets for SI niches stand out most. As for sustainable products and services, there has been a growing release of stock indices based on companies selected on the basis of their ESG performances. In relation to the development of specific markets for SI niches, greater attention to issues related to climate change is currently observed. The global commitment to mitigating these changes has resulted in the implementation of control systems for greenhouse gas (GHG) emissions, thus introducing specific carbon markets to stock exchanges.

1.1 Problem Situation and Objectives of the Article

Although Brazil is the seventh largest world economy (World Bank, 2011), it still faces great ESG challenges. On social-environmental aspects, the country has very unsatisfactory levels of income distribution, access to basic utilities and GHG emissions (Central Intelligence Agency, 2011; United Nations Development Programme, 2011; McKinsey & Company, 2009). For corporate governance, although the field has improved significantly in past years, the country still has issues that need to be addressed to continue this progress (Brazilian Institute of Corporate Governance, 2010). Therefore, in Brazil, SIs may contribute significantly to improve the situation of the country to support a sustainable capital market and sustainable development.

However, given that the aim of investors is to maximize their wealth, they will not feel motivated to perform SI if there is no evidence that such applications will bring satisfactory returns for their assumed risk. Considering these arguments, the objectives of our work are to analyze the historical performance of SIs in the Brazilian stock market and to observe whether SIs are actually attractive applications. To do so, we analyze the performance of the Corporate Sustainability Index (ISE) of the BM&FBOVESPA (Brazilian Mercantile, Futures and Stock Exchange) against its benchmark and against other sectoral indices. The ISE is regarded as a benchmark of a theoretical portfolio comprised of stocks of companies selected according to their ESG performances.

The importance of this work is its ability to support governmental and academic sectors, companies, investors and other players interested in the disclosure of SI results in the Brazilian stock market, thus assisting in the development of their policies, research, strategies and investments.

1.2 Article Structure

This article is divided into five sections. The first section approaches the sustainability scenario in the capital markets, the problem situation and the objectives of our work. The second section explains the main concepts and conducts a literature review. The third section describes our research methodology. The fourth section presents and discusses the results. Finally, the fifth section summarizes the main results and conclusions of the study and proposes topics for future papers.

2 Concepts and Literature Review

2.1 Sustainable Investment

The term "sustainable" became globally known in 1987 after the introduction of the concept of sustainable development in the Brundtland report of the UN's World Commission on Environment and Development. Based on this document, sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs (Brundtland, 1987). Sustainable investing, in turn, is a concept in evolution and can be defined as a process that integrates ESG factors into investment analysis, stock selection and active ownership practices into the belief that these factors can improve long-term risk management and, therefore, that they may increase the investments' expected returns (International Finance Corporation, 2011a).

However, there are several other concepts similar to SI, such as *socially responsible investment*, *ethical investment*, *impact investment* and *green investment*. Although they use different expressions, all these concepts share concerns about incorporating ESG factors into investment analysis and management. Because the term "sustainable" comprises, in a broader sense, issues related to ESG factors, we chose to use SI terminology in this article.

2.1.1 Strategies

According to the Forum for Sustainable and Responsible Investment (2010), there are three main SI strategies: ESG incorporation, shareholder advocacy and community investing. Table 1 briefly describes these strategies.

Table 1: Main sustainable investment strategies

Strategy	Description
ESG incorporation	The explicit incorporation of ESG factors into the investment process (which includes negative screening, positive screening and ESG integration)
Shareholder advocacy	Actions sustainable investors take as asset owners (e.g., communicating and filing or co-filing shareholder resolutions on ESG issues)
Community investing	Providing access to credit, equity, capital and basic banking products to communities that are underserved by traditional financial services

Source: Forum for Sustainable and Responsible Investment (2010). Made by the authors.

The ESG incorporation strategy comprises three main sub-strategies. Negative screening excludes assets of companies, the main sources of income of which are related to goods and services that generate negative externalities to society ("sin" stocks). Positive screening selects assets of companies that have the best ESG performances, based on pre-selected criteria (this sub-strategy includes the best-in-class approach, which aims to select assets of companies with the best ESG performances in each economic sector). ESG integration explicitly includes ESG risks and opportunities in traditional financial analysis.

The three main SI strategies are non-excludable and may be used in a supplemental manner.

2.1.2 Return and Risk Characteristics of Sustainable Investment Portfolios

Rudd (1981), Grossman and Sharpe (1986), Diltz (1995) and Bello (2005) undertook financial analyses of the return and risk characteristics of portfolios formed based on the first SI strategy displayed in Table 1. In the first two studies, the authors shared the idea that any constraint imposed on a selection of assets would only reduce or maintain investors' maximum possible utility. Grossman and Sharpe (1986) emphasized that, when SI portfolios face constraints, they may only obtain some incremental risk premiums if they are sub-optimal. Rudd (1981) pointed out that screening strategies (negative or positive) bias portfolios, as they exclude assets and force the concentration on others, making impossible the obtaining of market portfolios. In addition, Rudd (1981) stated that, due to the constraints imposed by screening strategies, SIs increase a portfolio's diversifiable risk, which is not necessarily offset by an increase in expected return, and the portfolio's performance is harmed. Diltz (1995) and Bello (2005) carried out empirical tests and observed that SIs have statistically similar financial performances, as compared to the other investments.

2.1.3 Evolution

According to the Forum for Sustainable and Responsible Investment (2010), the first signs of SI strategies' implementation occurred centuries ago and originated with religious investors, who predominantly used negative screening strategies in the capital allocation process. In the beginning of the 20th century, it was possible to observe the establishment of the first SI mutual funds, still strongly based on negative screening strategies. From the 1970s on, SI strategies became more active. Sustainable shareholders and investors began to adopt negative screening strategies on a smaller scale, acting more actively regarding the ESG issues of invested companies and considering several sustainability dimensions in investment analysis. However, in the last decades, there has been an improvement in the discussion of SI, and such concepts have been substantially consolidated. This development may be corroborated by the growing establishment of local and regional organizations that promote such types of investments. The most important of these organizations are the Forum for Sustainable and Responsible Investment (US SIF, established in 1981) and the European Sustainable Investment Forum (Eurosif, established in 2001).

2.2 Sustainability Indices in the Stock Market

According to the International Finance Corporation (2011b), the sustainability indices in the stock market have the objective of representing a theoretical portfolio of shares of local, regional or multinational companies selected based on ESG factors and thus in compliance with SI strategies (notably ESG incorporation). The organizations that provide these indices are mostly stock exchanges, private companies that offer financial services and, on rare occasions, non-governmental organizations specializing in sustainability.

Sustainability indices typically use the three main SI factors (environmental, social and corporate governance) to assess companies' performances. However, some indices use only one or two. These ESG factors are broken down into assessment metrics and indicators, the aim of which is to quantify the ESG performances of the assessed companies, rank them and indicate whether the companies stay or are excluded from the index.

The first sustainability index in the world – named the Domini 400 Social Index (DSI) – was launched in 1990 and is currently known as the MSCI KLD 400 Social Index. Over the last decade, several sustainability indices were launched, with the Dow Jones Sustainability Index (DJSI) series (in 1999) and the FTSE4Good Index series (in 2001) as the most prominent. In the emerging countries, the first launched index was the Johannesburg Stock Exchange Socially Responsible Investment Index (JSE SRII, in 2004). The second was the Corporate Sustainability Index (ISE, in 2005). There were very few relevant academic studies that analyzed the performance of these indices, due mainly to their short period of existence. In this context, we can highlight the works of Sauer (1997), Statman (2000), Schröeder (2007), Fowler and Hope (2007), Collison, Cobb, Power, and Stevenson (2008), Consolandi, Jaiswal-Dale, Poggiani, and Vercelli (2009), Machado, Machado, and Corrar (2009), and Cavalcante, Bruni, and Costa (2009).

2.2.1 The Corporate Sustainability Index (ISE)

The ISE was launched in December 2005 by means of financial and technical support from the World Bank's International Finance Corporation (IFC), and its main objective is to be a voluntary adhesion index that reflects the return of a theoretical portfolio composed of stocks of a maximum of 40 companies selected based on their ESG performances.

To participate in the ISE, the stock of a prospective company must belong to the group of the 200 most traded stocks in the BM&FBOVESPA and must have been traded in at least 50% of the trading sessions occurring during the 12 months before the beginning of the reassessment process of the portfolio. In addition, the company must not be under some legal situations.

The performance of the prospective companies is assessed using a specific questionnaire developed by the Getúlio Vargas Foundation Center for Sustainability Studies (GVces), which is constantly upgraded. The information provided in the questionnaire is supported by official documentation and is checked by the GVces before defining the portfolio of the index. The evaluation is based on seven basic factors: environmental, social, economic, nature of the product, corporate governance, climate change and general. The questionnaires' answers are statistically analyzed using cluster analysis, which identifies the groups of companies with similar performances and indicates the group with the best general performance. This selected group is still analyzed by the ISE Deliberative Council, chaired by the BM&FBOVESPA.

The ISE portfolio is renewed on an annual basis and, from 2010 on, the effectiveness of the ISE portfolio has been measured over the period from the first business day of January of each year to the last business day of December of the same year.

3 Methodology

As mentioned above, the objectives of this paper are to analyze the historical performance of SIs in the Brazilian stock market using the ISE as a benchmark of a theoretical portfolio comprised of stocks of companies selected according to their ESG performances and to observe whether SIs are actually attractive applications. Therefore, the study only considers SIs derived from the ESG incorporation strategy (see Table 1).

To achieve this aim, the ISE's performance is compared to the BOVESPA Index (representing the market portfolio) and the other BM&FBOVESPA sectoral indices existing since it was launched (see Table 2). To do so, we use level of liquidity, return indicators and risk indicators, as well as the following performance measures: Sharpe, Treynor, Jensen, Sortino, Modigliani & Modigliani and Omega. These performance measures are discussed in Section 3.1. For the performance analysis, we use the Interbank Deposit Certificate (CDI) as the risk-free rate.

Table 2: Acronym, name and launch of the analyzed indices

Acronym	Name	Launch
IBOV	IBOVESPA or BOVESPA Index (market portfolio)	1968
IEE	Electrical Energy Sector Index	1996
INDX	Industrial Sector Index	2000
ITEL	Telecommunications Sector Index	2000
IGC	Differentiated Corporate Governance Shares Index	2001
IFNC	Financial Sector Index	2004
ISE	Corporate Sustainability Index	2005

Source: Made by the authors

The study covered the period from December 1, 2005, to December 30, 2010 (which included the first five ISE portfolios). Therefore, there were 1,257 daily observations of the return of the indices. The daily quotations of the indices mentioned in Table 3 and of the CDI were taken from the Brazilian Mercantile, Futures and Stock Exchange (2011) and from the Organized Over-the-Counter Assets and Derivatives (2011) websites, respectively, and were statistically manipulated to generate a database that became the basis for the development of the results in the following section. These data are displayed in tables and graphics.

3.1 Portfolio Performance Measures

3.1.1 Sharpe's Measure (*ShM*)

Sharpe's measure (Sharpe, 1966) represents the differential return of a portfolio by unit of risk, as shown in equation 1:

$$ShM_i = (R_i - R_f) / \sigma_i , \quad (1)$$

where ShM_i is the portfolio's Sharpe's measure; R_i is the portfolio return; R_f is the risk-free return; and σ_i is the standard deviation of the portfolio returns.

3.1.2 Treynor's Measure (*TM*)

Treynor's measure (Treynor, 1965) represents the differential return of a portfolio by unit of systematic risk, as shown in equation 2:

$$TM_i = (R_i - R_f) / \beta_i , \quad (2)$$

where TM_i is the portfolio's Treynor's measure and β_i is the portfolio's systematic risk.

This measure is similar to Sharpe's in the sense that it calculates the premium ($R_i - R_f$) per unit of risk. It differs from Sharpe's measure, however, in its choice of index risk. While Sharpe's uses the risky asset's

standard deviation (σ_i), Treynor's uses its beta (β_i). Thus, *TM* measures the success of a portfolio under the assumption that that investors hold well-diversified portfolios.

3.1.3 Jensen's Measure (*JM*)

Jensen's measure (Jensen, 1968) is similar to Treynor's, because both assume that investors hold well-diversified portfolios. The measure represents the surplus return obtained by the portfolio, based on its expected return calculated by means of the Capital Asset Pricing Model (CAPM). Therefore, Jensen's measure may be described by equation 3:

$$JM_i = R_i - [R_f + \beta_i (R_m - R_f)], \quad (3)$$

where JM_i is the portfolio's Jensen's measure and R_m is the expected return of the market portfolio.

3.1.4 Sortino's Measure (*SoM*)

Sortino's measure (Sortino & Price, 1994) represents the differential return of a portfolio by unit of downside risk, as shown in equation 4:

$$SoM_i(R_{\min}) = (R_i - R_f) / \sigma_{DR_i}, \quad (4)$$

where SoM_i (R_{min}) is the portfolio's Sortino's measure as a function of R_{min}; R_{min} is the minimum expected return by the investor; and σ_{DR_i} is the portfolio's downside risk.

The downside risk is based on modern portfolio theory and may be defined as a way of calculating the risk of a portfolio, considering only its probability of incurring a return inferior to that acceptable by the investor (R_{min}). R_{min} can also be defined as a loss threshold, and for any investor, returns less than its specific loss threshold are considered losses and returns greater than the threshold as gains.

3.1.5 Modigliani & Modigliani's Measure (M^2)

Modigliani & Modigliani's measure (Modigliani & Modigliani, 1997) represents the surplus return of a portfolio when compared to the return of the market portfolio. The advantage of the M^2 measure is that it fits the volatility of the analyzed portfolio to the volatility of the market portfolio, to compare the returns of different portfolios, considering the same level of risk. Equation 5 describes this indicator:

$$M_i^2 = RAP_i - R_m = \sigma_m ShM_i + R_f - R_m, \quad (5)$$

where M_i^2 is the portfolio's Modigliani & Modigliani's measure; RAP_i is the portfolio return adjusted to the market portfolio risk; and σ_m is the standard deviation of the market portfolio returns.

Equation 5 shows that the M^2 measure is a function of Sharpe's measure and, therefore, both yield the same results. However, they provide different information for the performance analysis.

3.1.6 Omega Measure (Ω)

The five previous measures are performed in the mean-variance framework and, therefore, require assumptions about the investor's utility function (namely a quadratic utility function) or about the normality of the assets' returns distribution. However, it is well known that a quadratic utility function is inconsistent with rational human behavior. Moreover, assets' returns are usually far from normally distributed (Favre-Bulle & Pache, 2003). Thus, mean and variance do not appropriately capture the return and risk properties of securities, and alternative measures capturing all of the moments of the distribution must be introduced.

Omega is a new measure proposed by Keating and Shadwick (2002a, 2002b) that reflects all of the statistical properties of the returns distribution, and it does not require any of the assumptions before. This measure is a function of the portfolio return, and it is calculated by the division of the probability of obtaining a return superior to a minimum expected return by the probability of obtaining a return inferior to it, as shown in equation 6:

$$\Omega_i(R_{\min}) = \frac{\int_{R_{\min}}^{b} [1 - F(x)]dx}{\int_{a}^{R_{\min}} F(x)dx}, \tag{6}$$

where Ω_i (R_{min}) is the portfolio's Omega measure as a function of R_{min} and $F(x)$ is the cumulative distribution function of the portfolio returns defined by the interval [a,b].

Therefore, it is noticeable that the Omega measure is in compliance with modern portfolio theory, as well as Sortino's measure.

4 Results and Discussion

4.1 Level of Liquidity

Table 3 classifies the analyzed indices based on their liquidity levels, represented by the average number of daily trades. We observe that the ISE and the IGC obtained the highest variations of this measure. This fact may indicate that investors have preferred to trade stocks of companies with high ESG performances and, therefore, these assets may have their market risk (beta) reduced.

Table 3: Classification by liquidity level

Classification	Index	Average number of daily trades		
		Dec/2005	Dec/2010	Δ
1º	IGC	18,960	295,269	1,457%
2º	**ISE**	10,833	113,757	950%
3º	IBOV	28,996	282,570	875%
4º	IEE	3,658	20,204	452%
5º	ITEL	6,500	10,686	64%
6º	INDX	*	125,890	-
7º	IFNC	*	62,386	-

* No available data

4.2 Basic Return and Risk Performance

Table 4 classifies the analyzed indices based on their average daily return ($\overline{R}$), total return (R_{total}), standard deviation (σ), systematic risk (β) and diversifiable risk ($\sigma_\varepsilon^2 / \sigma^2$). The diversifiable risk was calculated by dividing the variance of the regression errors in the analyzed index returns (σ_ε^2), based on the single index model, by its total risk (σ^2). We observe that the ISE did not obtain a great differential of return and risk, although it has obtained a low diversifiable risk. Such a fact may indicate that the adoption of SI strategies increases the diversification of investment portfolios, which is contrary to what was supposed by Rudd (1981).

Table 4: Preliminary classification of return and risk

Classification	$\overline{R}$		R_{total}		σ		β		$\sigma_\varepsilon^2 / \sigma^2$	
1º	IFNC	0.107%	IEE	183.03%	IEE	1.50%	IEE	0.58	IBOV	0%
2º	IEE	0.094%	IFNC	166.22%	ITEL	1.90%	ITEL	0.73	IGC	4%
3º	INDX	0.085%	INDX	129.85%	INDX	1.92%	INDX	0.88	**ISE**	9%
4º	IBOV	0.083%	IGC	118.98%	IGC	1.94%	IGC	0.91	INDX	9%
5º	IGC	0.081%	IBOV	117.14%	**ISE**	2.00%	**ISE**	0.92	IFNC	20%
6º	**ISE**	0.079%	**ISE**	108.73%	IBOV	2.08%	IBOV	1.00	IEE	35%
7º	ITEL	0.055%	ITEL	59.28%	IFNC	2.40%	IFNC	1.04	ITEL	36%

Figure 1 represents the ISE's, the IBOVESPA's and the CDI's returns during the analysis period. We observe that the ISE had a very similar performance to that of the IBOVESPA, although it demonstrated a worse

recovery during and after the 2008 financial crisis. However, both performed above the risk-free rate for the most of the period.

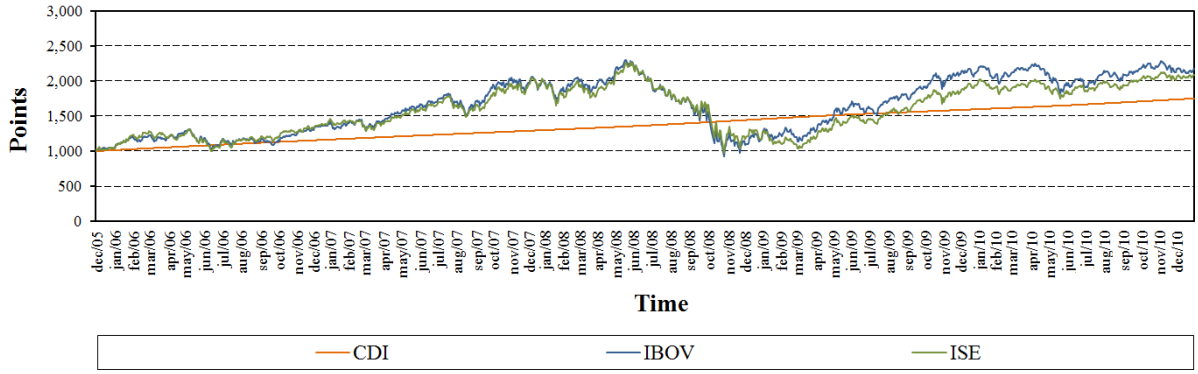

Figure 1: Return of the indices (bases fitted for 1,000 points on 11/30/2005)

4.3 Sharpe, Treynor and Jensen Analyses

Table 5 classifies the analyzed indices based on Sharpe's, Treynor's and Jensen's measures. We observe that the ISE obtained a total risk premium and a systemic risk premium only superior to those of the ITEL. In addition, the ISE and ITEL were the only indices to have a negative Jensen's alpha. Such results show that the ISE obtained an unsatisfactory performance in these approaches.

Table 5: Classification by Sharpe's, Treynor's and Jensen's measures

Classification	*ShM*		*TM*		*JM*	
1º	IEE	0.033	IEE	0.085%	IEE	0.027%
2º	IFNC	0.026	IFNC	0.060%	IFNC	0.022%
3º	INDX	0.021	INDX	0.046%	INDX	0.006%
4º	IGC	0.019	IGC	0.040%	IGC	0.001%
5º	IBOV	0.019	IBOV	0.039%	IBOV	0.000%
6º	**ISE**	0.017	**ISE**	0.037%	**ISE**	-0.002%
7º	ITEL	0.006	ITEL	0.014%	ITEL	-0.018%

4.4 Sortino Analysis

Table 6 classifies the analyzed indices based on Sortino's measure, regarding three values of R_{min}: –3%; 0% e +3%. We observe that the ISE outperformed the benchmark for the lowest R_{min} (–3%), and for the zero R_{min} (0%), the index obtained an unsatisfactory position. These observations show that the index may be a good choice for risk-loving investors and a worse option for risk-neutral investors.

Table 6: Classification by Sortino's measure

Classification	*SoM* (R_{min} = –3%)		*SoM* (R_{min} = 0%)		*SoM* (R_{min} = +3%)	
1º	IEE	11702	IEE	0.093	*	*
2º	ITEL	7.269	IFNC	0.068	*	*
3º	**ISE**	6.507	INDX	0.063	*	*
4º	IGC	6.497	IGC	0.061	*	*
5º	INDX	6.207	IBOV	0.058	*	*
6º	IBOV	5.618	**ISE**	0.058	*	*
7º	IFNC	5.100	ITEL	0.043	*	*

* There was no classification, as the *SoM* loses its interpretation value when it is negative.

4.5 Modigliani & Modigliani Analysis

Table 7 classifies the analyzed indices based on Modigliani & Modigliani's measure. We observe that the ISE had a very unsatisfactory classification, and as the ITEL, were the only indices to obtain a negative M^2 measure.

Table 7: Classification by Modigliani & Modigliani's measure

Classification	M^2	
1º	IEE	0.030%
2º	IFNC	0.015%
3º	INDX	0.005%
4º	IGC	0.000%
5º	IBOV	0.000%
6º	**ISE**	-0.003%
7º	ITEL	-0.027%

4.6 Omega Analysis

For the Omega analysis, we use the same values of R_{min} established in the Sortino analysis (–3%, 0% and +3%). The probability of the analyzed indices' returns falling within the interval [–3%;+3%] is, on average, very high (90.46%), which supports the choice of this range. Table 8 classifies the analyzed indices based on the Omega measure. We observe that the ISE had a good performance for the lowest R_{min}, which shows that the index may be a good choice for risk-loving investors. Such a fact reinforces the result obtained in the Sortino analysis. For risk-neutral (R_{min} = 0%) and risk-averse (R_{min} = +3%) investors, the ISE proved to be an intermediary option.

Table 8: Classification by the Omega measure.

Classification	Ω (R_{min} = –3%)		Ω (R_{min} = 0%)		Ω (R_{min} = +3%)	
1º	IEE	38.19	INDX	1.15	IFNC	0.06
2º	ITEL	19.90	IGC	1.11	IBOV	0.05
3º	**ISE**	16.91	IBOV	1.11	ITEL	0.05
4º	IGC	16.42	IEE	1.11	**ISE**	0.04
5º	INDX	16.18	**ISE**	1.11	INDX	0.04
6º	IBOV	13.75	ITEL	0.99	IGC	0.04
7º	IFNC	10.00	IFNC	0.79	IEE	0.02

5 Conclusions and Directions for Further Research

This study analyzed the Corporate Sustainability Index (ISE) with the main objective of disclosing the historical performance of sustainable investments in the Brazilian stock market. Below are the main results of the study, subsequent conclusions and a recommendation of topics for further studies.

Comparing the ISE's performance with those of other indices, we observed that it did not present any significant return or risk differential using Sharpe's, Treynor's, Jensen's and Modigliani & Modigliani's measures, although it has obtained a low diversifiable risk, and its liquidity has increased substantially. We also observed that the ISE had a very similar performance to that of the IBOVESPA, although it demonstrated a worse recovery during and after the 2008 financial crisis. In the Sortino and Omega approaches, we observed that the index may be a good choice for risk-loving investors.

Therefore, we conclude that, although there is evidence of promising potential, sustainable investments in the Brazilian stock market did not achieve satisfactory financial performance, indicating that the ESG constraints imposed by this type of investment in capital allocation in the country are not sufficient to affect its economic environment. Such a fact may be explained by the following aspects: (i) foreign investors, whose applications represent roughly one-third of the total volume traded in the BM&FBOVESPA, may prefer to invest sustainably their resources regionally in emerging markets rather than in a particular country, such as Brazil; (ii) the Brazilian financial market is still not convinced of the importance of sustainability in the performance of its investments; and (iii) there is no effective regulation in the country that include sustainability restrictions in the capital market, which can force the non-sustainable companies to internalize their ESG costs.

For further research, we recommend a detailed study of the historical performance of other sustainability indices in emerging markets, which have existed for a reasonable period of time, such as the Johannesburg Stock Exchange Socially Responsible Investment Index (launched in 2004) and the ECPI Ethical Emerging Markets Tradable Equity Index (launched in 2006).

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