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Sustainable Market Indexes Behavior Analysis: a Study on the Brazilian Stock Market

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Abstract: *During the last decades, companies have sought to adjust themselves to specific regulation in order to keep their businesses and, also, looked for certifications into programs of sustainable enterprise recognition. Due to that, socially responsible investments have emerged as alternatives to conscious investors and as a funding source for sustainable companies. Stock exchange organizations have created indexes focused on monitoring this market, such as the Índice de Sustentabilidade Empresarial (ISE) and the Índice de Sustentabilidade Corporativa Diferenciada (IGC), from Brazilian stock exchange – BM&FBOVESPA. However, there is a dearth of research on the financial returns from the adoption of sustainable actions, and even the few studies that do it, present controversial conclusions. Considering that, the present paper quantitatively analyzed the behavior of sustainability focused market indexes in the Brazilian economy and compared them to other indexes of this market. The results show that the returns on investments for the sustainable indexes behave similarly to non-sustainable indexes and, despite the divergences observed for the risk indicator, the results indicate that these discrepancies cannot be attributed to sustainable compliance.*

Keywords: Indexes, Stock Exchange, Sustainability, Socially Responsible Investments.

1. Introduction

In the last two decades, the issue of sustainability has raised the interest of several distinct social groups. According to Elkington (2001), what began as the work of dispersed protest groups has became the most powerful social movement of the second half of the twentieth century, and it will shape markets and industries as the business paradigm for the twenty-first century. Starting with environmentalists, consumer groups and regulatory bodies, the issue of sustainability soon began to influence organizational practices and strategies. As a result, companies have been pressed to fulfill regulations – in order to survive – and strive to obtain certifications of sustainability, so that sustainable activities are used as marketing tools to generate a competitive advantage and market share.

However, the compliance, differentiation and exposure obtained with eco-efficient processes and products demand significant investments, as well as great efforts to implement change within the organization. Because of this, companies that choose to adopt sustainable measures hope that their resource outlays and efforts are rewarded in several marketing aspects, such as in image building before their stakeholders (including consumers, collaborators, regulatory agencies and investors) as well as in direct financial returns, such as increase in profits and attraction of investments. Elkington (2001) credits Robert Shapiro - then CEO of Monsanto - with the suggestion that, as the socio-environmental crisis becomes more evident, the world will demand a set of changes to insure human survival, and will be willing to pay those who contribute to that.

In this context, Socially Responsible Investments (SRI) rise in importance. The Organization for Economic Co-operation and Development – OECD – (2007) assigns the origin of SRIs to North-American investors at the beginning of the twentieth century, who avoided investing in companies in certain industrial sectors, such as manufacturers of tobacco and alcoholic beverages, due to strictly religious motives. However, in the recent decades

there has been a worldwide tendency of investors to allocate their resources to socially responsible, sustainable and profitable organizations and markets (BM&FBOVESPA, 2011a). In this sense, the SRIs consist of the creation of investment funds and portfolios whose composition is based on social, environmental and ethical criteria (Stenström and Thorell, 2007) and, as such, represent a relevant tool to guide these new investors and to fund-raising by sustainable organizations.

However, according to the OECD (2007), despite the development of SRIs, the evidence concerning their performance is still inconsistent. The OECD document uses several global studies on the profitability and risk associated with these investments as examples, with controversial conclusions. For this reason, the purpose of this article is to verify whether there is a difference between the performance of SRIs and conventional investments in the Brazilian stock market, by analyzing the behavior of profitability and risk indicators from the indexes focused on sustainability used by BM&FBOVESPA (ISE and IGC), and comparing them with their other indexes.

2. Theoretical and Empirical Rationale

In this section, relevant concepts to the understanding of the research topic will be addressed, as well as the context in which they are inserted.

2.1. Sustainability and Sustainable Organizations

During the first Antwerp Workshop on Eco-Efficiency held in 1993, eco-efficiency was defined by the *World Business Council for Sustainable Development* (WBCSD) as related to the delivery of competitively priced goods and services that satisfy human needs and bring quality of life while progressively reducing ecological impacts and consumption of resources throughout the life cycle of the product, to a level at least in line with the earth's

estimated carrying capacity. Similarly, in 1987, the World Commission on Environment and Development (WCED) had defined sustainable development as the one that meets the needs of the present without compromising the ability of future generations to meet their own needs. More recent concepts introduce the social dimension to sustainable development. Elkington (2001) states that it is important not only to conserve natural resources for the benefit of current and future generations but also to respect human rights. For this reason, sustainable capitalism also involves ethical, social, and political issues, demanding the definition of new visions on social equality, environmental fairness and business ethics, as well as markets and technologies that promote them. Thus sustainable development presents itself as a larger field that envelops eco-efficiency and corporate social responsibility (CSR) - which represents an organization's permanent commitment to adopt an ethical behavior towards sustainable economic development, improving the quality of life of their employees and their families, as well as that of society in general (Holme and Watts, 2000).

Hart (1997) claims that corporations are the only institutions with the resources, technology, global reach and motivation to reach it, however, according to Elkington (2001), the concept of sustainable corporations is still embryonic and, in many cases, it is not possible to define if a given organization is sustainable or not. He suggests, however, that the development of sustainability research and sustainability practices will make it possible to evaluate whether a company is moving in the right direction. According to Hart and Milstein (2003), a sustainable company is one that contributes to sustainable development by providing economic, environmental, and social benefits simultaneously. Nidumolu et. al. (2009) claim that such companies can develop new markets and have started to transform the competitive context, disturbing the current *status quo*. They also suggest that companies that implement proactive measures that go beyond current regulations will develop expertise that will pressure their competitors to follow suit and even influence future laws and regulations.

By positioning themselves as sustainable organizations to the market, companies hope to avoid the risk of not complying with legal restrictions while also bolstering their image before consumers and investors. By doing so, companies hope to increase their market share, build customer loyalty and capture a higher volume of resources from investors, especially the ones who are interested in SRIs.

2.2. Stock Market Indexes

Market indexes represent the behavior of prices of a set of shares that constitute it. These indexes may represent specific economic sectors, or the general behavior of the shares in the economy (Mellagi Filho and Ishikawa, 2000). In addition, as it has been observed in recent approaches, they may represent the behavior of companies that operate in different sectors but have a common strategic aspect, such as the sustainability and corporate governance indexes. According to Fortuna (2008), indexes work as a direct reference for the analysis of individual share prices, because they contain the prices of the stock that constitutes them, and simultaneously provide a kind of early indicator for economic performance, as Tosta de Sá had also claimed in 1999. Finally, they also serve as a database to measure risk (Mellagi Filho and Ishikawa, 2000), and as a support tool for investment management and promotion of of future markets (Tosta de Sá, 1999).

Just as other stock exchanges in the world, BM&FBOVESPA presents market indexes that serve as a benchmark for investors. Its first index was created in 1968, the Bovespa Index (Ibovespa), which still is the major market index representative of the Brazilian economy. Currently, the São Paulo Stock Exchange has 21 market indexes. They have been developed with the goal of representing the behavior of the Brazilian economy as a whole, its specific sectors, as well as companies that have a given strategy in common, and trends arising from external influences and other markets.

2.3. Sustainability Applied to the Stock Market

According to Hart (1997), the biggest contemporary challenge is to develop a global economy able to be sustained indefinitely by the planet and its resources. This challenge, along with social concerns and media pressure regarding sustainability, has altered the perception of consumers regarding their customary products and companies, causing a surge of sustainable measures to achieve competitive advantages. In addition, regulatory authorities have begun to require minimum operating standards - varying according to the segment - that force companies to review their procedures, incorporating concerns related to eco-efficiency and corporate social responsibility.

As a result, sustainability concerns have spread through financial markets and stock exchanges worldwide. In the last few decades, it has been possible to identify a trend among global investors toward the search for investments in eco-efficient and socially responsible organizations (BM&FBOVESPA, 2011a). According to the OECD (2007), the definition of those investments, called Socially Responsible Investments (SRIs) varies according to the country, but they have in common the consideration of social, environmental and ethical factors in their composition. It also adds that current discussions regarding SRIs include matters of modern financial theory and markets, suggesting that extra-financial factors such as those considered in SRIs affect long-term and non-diversifiable risks, as well as profitability and returns on investments. This vision is shared by BM&FBOVESPA (2011a), by defending that SRIs aim to generate value in the long-term, by considering that sustainable organizations are less vulnerable to environmental, social, and also financial risks. However, the aforementioned document (OECD, 2007) indicates that existing evidence on the behavior of socially responsible investments is still inconclusive and controversial.

In view of this trend, stock markets have sought to adjust by providing solutions to this new niche of investors, and, at the same time, stimulating the raising of resources by the

sustainable companies they list. In 1999 Down Jones Indexes - in partnership with Sustainable Asset Management Indexes (SAM) - released the first global sustainability index, the Dow Jones Sustainability World Index (SAM, 2011). The index is composed by the top organizations in the Dow Jones Global Total Stock Market Index that meet the long-term economic, social and environmental standards for sustainability (CME GROUP INDEX, 2011.) Later, new sustainability indexes were created by Dow Jones and SAM, and some stock exchanges also created their own indexes, such as the FTSE4GOOD index, developed in 2001 by the FTSE Group, a joint-venture created by The Financial Times newspaper and the London Stock Exchange (FTSE, 2008) and the SRI Index, created by the Johannesburg Stock Exchange (JSE) in 2004 (JSE and EIRIS, 2011).

In Brazil, similar actions could be observed in 2001, with the creation of the Special Corporate Governance Stock Index (*Índice de Ações com Governança Corporativa Diferenciada - IGC*), comprising the companies in BM&FBOVESPA that meet the commitments to provide specific information and adoption of corporate rules that balance the rights of shareholders (BM&FBOVESPA, 2009.) Later, in 2005, the Corporate Sustainability Index (*Índice de Sustentabilidade Empresarial - ISE)* was created by an Advisory Board chaired by Bovespa and supported by Fundação Getúlio Vargas, with the aim of monitoring the shares of corporations whose practices are in line with criteria of environmental, social justice and economic health commitments (BM&FBOVESPA, 2011a). Fortuna (2008) adds that the ISE aims to establish a standard of better business practices for sustainable management and to be an instrument to encourage the dissemination of those practices.

3. Research Methodology

As previously mentioned, this study seeks to analyze the behavior of the sustainable indexes of BM&FBOVESPA, and to verify if its behavior is different from other indexes that

are present in the Brazilian economy. The analysis is based on two distinct indicators: Profitability and Risk of the São Paulo Stock Exchange indexes. The profitability of the shares was measured by the variation of their value at closing over time, while their risk was measured by the standard deviation of the profitability samples and by the beta coefficient, which represents the share's volatility against a benchmark index. Therefore, it is intended to discover if the adoption of sustainable measures by publicly traded organizations in the Brazilian market affects their financial performance in the stock market.

This study is characterized as a descriptive research, concerned with observation, analysis and interpretation of facts (Andrade, 2002), focusing on sustainability and the stock market, which are themes that have been discussed extensively in the literature. The method is a quantitative analysis of secondary data, with the application of a series of statistical tests to verify the behavior of the indexes in the light of the research problem under investigation.

In line with the objective of verifying the influence of the adoption of sustainable practices in the performance of publicly traded companies in the Brazilian market, the study population encompasses the companies listed on BM&FBOVESPA. The sample is composed by market indexes that are representative of the Brazilian economy, containing both indexes focused on sustainable strategies and conventional indexes, based on the Brazilian economy and its specific sectors.

A longitudinal time frame was adopted, since it would not be possible to analyze the performance and evolution of these indicators from a single data point, but rather from a series of observations over time. For this study, we opted to use data from the same period (January 12, 2005 to January 8, 2011) for every index, regardless of the time the index has existed, in an effort to reduce biases caused by historical events or economic cycles during the lifetime of specific indexes, when others did not exist, that might have affected their performance. For this reason, the duration of some indexes was cut short for this analysis,

while more recent indexes had to be excluded from the study, in order to allow a longer, more reliable period for the analysis, encompassing a total of 1399 data records for each index under analysis. As a result, the study sample is non-probabilistic and comprise the indexes listed below, based on the information available on BM&FBOVESPA (2011b):

a) Bovespa Index - Ibovespa;

b) Corporate Sustainability Index - ISE;

c) Special Corporate Governance Stock Index - IGC;

d) Special Tag Along Stock Index - ITAG;

e) Brazil Index - IBrX;

f) Brazil 50 Index - IBrX-50;

g) Telecommunication Sector Index - ITEL;

h) Electric Power Index - IEE;

i) Manufacturing Sector Index - INDX;

j) Financial Index – IFNC;

k) Public Utilities Index - UTIL;

l) Valor BM&FBOVESPA 2nd Line Index - IVBX-2;

As mentioned before, secondary data collected were treated quantitatively, in order to perform the verification of behavior and index comparison. The procedures presented below were employed with the purpose of ensuring a rigorous statistical analysis of the data.

a) Database extraction and formatting;

b) Descriptive statistics;

c) Normality and homogeneity of variance testing;

    d)   Homogeneity of means testing;

    e)   Linear regression.

4. Presentation and Analysis of Results

Initially, descriptive statistics were extracted from samples corresponding to the profitability of the indexes (Table 1). The objective of this procedure is to provide some additional, synthetic data regarding the object of analysis, and particularly to obtain a measure of risk (represented by the standard deviation) and the mean profitability for each market index. This first analysis allows us to observe that, regarding mean profitability, the sustainability indexes are dispersed in a core group composed of nine indexes of similar daily profitability (between 0.062% and 0.067%). With regard to risk, the sustainable indexes are grouped in the center of the scale, displaying a greater risk than the IEE, IVBX2, ITEL and INDX indexes, due to their higher standard deviation, which shows wider fluctuations and, consequently, higher volatility. For the same reasons, their risk is shown to be lower than the rest of the indexes, which include those that represent the Brazilian economy as a whole (Ibovespa, IBrX and IBrX-50), since their hypothetical portfolio is composed by sectorally diversified organizations.

Table 1 - Descriptive Statistics of Profitability

	Minimum	Maximum	Mean	Standard Deviation	Variance
Ibovespa	-11.393	14.659	.063	1.998	3.993
IBrX	-11.472	14.682	.066	1.971	3.886
IBrX50	-12.099	14.836	.064	2.059	4.240
IFNC	-12.057	20.922	.064	2.354	5.543
IEE	-6.962	12.301	.090	1.433	2.053
IGC	-10.371	15.017	.064	1.867	3.485
INDX	-11.143	12.544	.062	1.847	3.412
ITAG	-10.330	16.821	.063	1.908	3.642
UTIL	-8.166	69.167	.133	2.428	5.896
ISE	-9.865	15.580	.067	1.9127	3.658
ITEL	-12.828	14.140	.063	1.839	3.383
IVBX2	-10.744	14.804	.055	1.729	2.988

Source: Data analysis with SPSS Software

The divergences between profitability and risk will be analyzed afterward, in order to verify if they are statistically significant or if they can be considered homogeneous. In the case of profitability, its homogeneity will be investigated using the same indicator (daily variation), while for risk the daily coefficient β will be used instead of the standard deviation, because it allows for greater amounts of data.

Before performing the hypothesis tests to verify the homogeneity of means, correlation analysis and linear regression, it is necessary to verify the homogeneity of variances and normality of the samples. This allows us to decide if parametric or non-parametric tests should be used in subsequent analysis in this study. The homogeneity of variances was assessed with the Levene test and the obtained *p-value* (presented in Table 2 by the indicator *sig*) was less than the statistical significance value (0.05). Thus the null hypothesis was rejected for both indicators, demonstrating the existence of statistically significant divergences between the samples of profitability, as well as those of risk.

Table 2 - Levene's Test for Homogeneity of Variances for Beta and Profitability

	Beta				Profitability			
	Statistics	df	g12	Sig.	Statistics	df	g12	Sig.
Based on the Mean	6.179	10	15378	.000	13.899	11	16776	.000
Based on the Median	5.784	10	15378	.000	13.852	11	16776	.000
Based on Median adjusted with df	5.784	10	5789.792	.000	13.852	11	14531.428	.000
Based on the Truncated Mean	5.786	10	15378	.000	13.936	11	16776	.000

Source: Data analysis with SPSS Software

The rejection of homogeneity of variance is enough to determine the use of non-parametric tests for homogeneity of means. However, the normality of the samples was also investigated, with the Shapiro-Wilk and Kolmogorov-Smirnov tests. As can be observed in Table 3 below, the null hypothesis was once again rejected at a significance level of 5 percent, indicating that normality cannot be statistically confirmed for any of the tested samples.

Table 3 – Normality Tests for Beta and Profitability

Group	Beta				Profitability			
	Kolmogorov-Smirnov		Shapiro-Wilk		Kolmogorov-Smirnov		Shapiro-Wilk	
	Statistics	Sig.	Statistics	Sig.	Statistics	Sig.	Statistics	Sig.
Ibovespa	-	-	-	-	.078	.000	.925	.000
IBrX	.345	.000	.203	.000	.079	.000	.922	.000
IBrX50	.362	.000	.186	.000	.076	.000	.924	.000
IFNC	.348	.000	.198	.000	.084	.000	.923	.000
IEE	.307	.000	.313	.000	.064	.000	.932	.000
IGC	.362	.000	.198	.000	.083	.000	.925	.000
INDX	.392	.000	.094	.000	.065	.000	.932	.000
ITAG	.384	.000	.152	.000	.073	.000	.924	.000
UTIL	.396	.000	.067	.000	.151	.000	.484	.000
ISE	.333	.000	.252	.000	.075	.000	.927	.000
ITEL	.314	.000	.304	.000	.061	.000	.943	.000
IVBX2	.366	.000	.134	.000	.079	.000	.918	.000

Source: Data analysis with SPSS Software

The two tests - normality and homogeneity of variance - are fundamental to the definition of the methodology that was used in the study, resulting in the need to use non-parametric hypothesis testing to verify the homogeneity of means: Kruskal-Wallis. This test aims to determine if the behavior of the sustainable indexes differs from that of the others, by verifying if there are statistically significant differences between the means of the analyzed samples. In this study, all the samples were tested simultaneously, so its result presents the convergence or divergence of the market indexes that have been established for the Brazilian economy.

Table 4 - Test for Homogeneity of Means for Beta and Profitability

	Beta	Profitability
Chi-square	661.887	1.488
df	11	11
Sig. Assim.	.000	1.000

Source: Data analysis with SPSS Software

Regarding the risk indicator, the Kruskal-Wallis test result presented in Table 4 – *p-value* (0.00) below the significance level (0.05) – indicates that there are significant divergences in the behavior of the risk in the indexes under analysis. The first procedure that was performed (extraction of descriptive statistics) indicates that the differences among the

standard deviation of the market indexes must be considered relevant, placing the volatility of the sustainability indexes above that of the IEE, IVBX-2, ITEL, and INDX indexes, while it is lower than both IBrX indexes and the Ibovespa, IFNC and UTIL indexes.

However, regarding profitability, the results of the same test – *p-value* (1,00) superior to the level of significance (0.05) – allows us to affirm that no statistically significant differences exist in the behavior of the closing values of the analyzed indexes. This indicates that the profitability of the sustainability indexes behaves in a similar way to the other Brazilian indexes. Thus the adoption of sustainable measures by the organizations has no statistically verifiable influence on their prices in the stock market.

Finally, simple linear regression was applied to the sustainability indexes to describe the behavior of their profitability in relation to a reference index that is deemed representative of the Brazilian stock market. The Ibovespa Index was selected for this analysis, since it is considered the main indicator for the behavior of the average performance of shares in the Brazilian stock market (BM&FBOVESPA, 2011b). The results of the regression analysis are presented in Tables 5 and 6 and described immediately afterward.

Table 5 - Regression Analysis: ISE and Ibovespa

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Standard Error	Beta		
1	(Constant)	.009	.015		.609	.543
	Ibovespa	.913	.008	.954	119.109	.000

a. Dependent Variable ISE
Source: Data analysis with SPSS Software

Table 6 - Regression Analysis: IGC and Ibovespa

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Standard Error	Beta		
1	(Constant)	.006	.010		.597	.551
	Ibovespa	.913	.005	.978	174.165	.000

a. Dependent Variable IGC
Source: Data analysis with SPSS Software

The regression analysis allows us to determine the behavior of profitability in the ISE and IGC indexes in relation to the behavior of Ibovespa index, according to functions I and II respectively. It is interesting to note that the result of the regression analysis - presented in Tables 6 and 7 - shows that the behavior of the profitability of ISE and IGC are quite similar. This observation becomes more relevant considering that both tests indicate that the value of the constant (the function's linear coefficient) is not statistically different from zero (*p-value* superior to the significance level of 5 percent).

$$P(ise) = 0.009 + 0.913 \text{ x } P(ibov) + \varepsilon \quad (I)$$

$$P(igc) = 0.006 + 0.913 \text{ x } P(ibov) + \varepsilon \quad (II)$$

where P(ise) is the profitability of the ISE index; P(igc) the profitability of the IGC index; P(ibov) the profitability of the Ibovespa index and ε the residual error.

The implications of the linear regression test were verified by testing the generated residuals for normality, both in the analysis of the ISE index as well as in the analysis of the IGC index (Table 7). The results presented in Table 7 indicate the possibility that there may be an inherent error in the regression analysis. This error could be caused by the reductionist model, in which the only indicators employed were those for risk and profitability, excluding a wide array of factors that influence and/or represent the behavior of the shares. However, as presented in the histograms for normality analysis from the ISE and IGC residuals (Figure 1), normal distribution can be verified and graphically confirmed, which indicates a possible dysfunction in statistical analysis. As such, the results that arise from the linear regression, despite the generated statistics, can be considered valid.
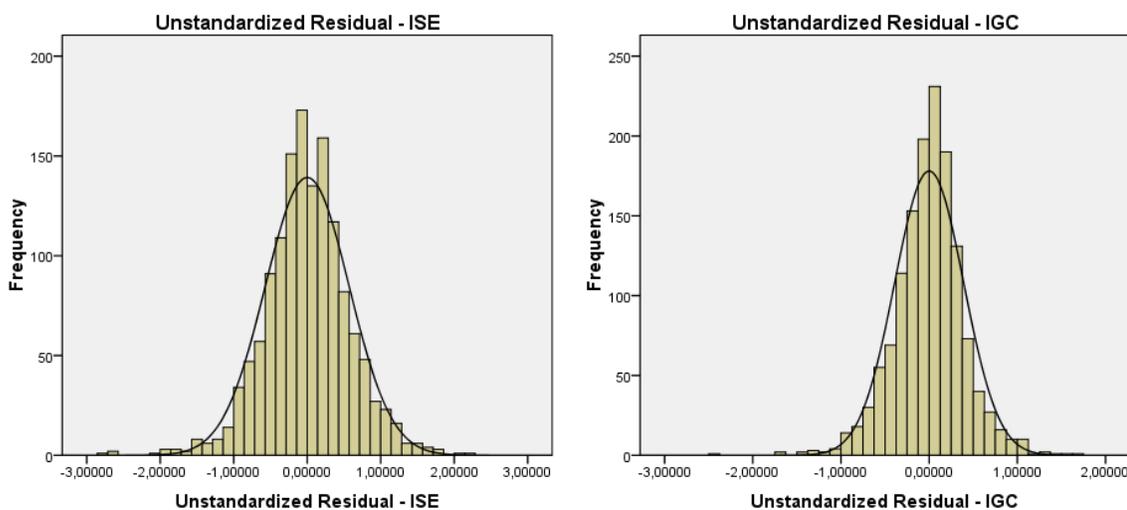
Table 7 - Residual Test

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Unstandardized Residual - ISE	.037	1399	.000	.986	1399	.000
Unstandardized Residual - IGC	.049	1399	.000	.977	1399	.000

a. Lilliefors Significance Correction
Source: Data analysis with SPSS Software

Figure 1 - Histogram of Residuals

Source: Data analysis with SPSS Software

5. Final Considerations, Limitations and Recommendations

The findings indicate that the profitability of the indexes related to sustainability is strongly connected to the profitability of the other indexes in BM&FBOVESPA. This inference, together with the verification of the hypothesis of homogeneity of means, indicates that there is no divergence in behavior of closing values among the indexes under study. Therefore, it is inferred that the adoption of sustainability actions by the company does not influence the valuation of its shares in the stock market, even if it enjoys recognition among the actors.

However, it was possible to observe statistically significant divergences related to risk behavior. Nevertheless, this distinction should not be considered to be caused exclusively by

the adoption of sustainable practices. In fact, the divergences are not associated only with the relation between the sustainable indexes and the other indexes. On the contrary, the more substantial discrepancies reflect the comparison between the specificity of the sectors: the sectoral indexes present lower risk (with the exception of the IFNC and UTIL indexes) and the more general indexes present higher risk (with the exception of the IVBX-2 index).

As a concluding remark, it should be pointed out that the stock market and the shares that it comprises are influenced by a great diversity of factors, and also that the shares that make up each index are also part of other indexes. For those reasons, a bias toward homogeneity of behaviors may emerge, as it was suggested by our analysis of profitability. Hence it is recommended that future research could adopt as unit of analysis the shares of individual companies rather than aggregated market indexes, thus allowing the inclusion of other variables in addition to the focus on sustainability.

References

Andrade, M. M. (2009). *Como preparar trabalhos para cursos de pós-graduação: noções práticas.* 5.ed. São Paulo: Atlas.

BM&FBOVESPA (2009). *Level 1: corporate governance*. São Paulo: BM&FBovespa.

BM&FBOVESPA (2011a). *Corporate sustainability index: ISE.* Available at: <http://www.bmfbovespa.com.br/Indices/download/ISE.pdf>. Access on: June 23 2011.

BM&FBOVESPA (2011b). Free research on bm&fbovespa's index site. Available at: <http://www.bmfbovespa.com.br/indices/BuscarIndices.aspx> Acess on: Aug. 10 2011.

CME GROUP INDEX (2011). **Dow jones sustainability world index – fact sheet**. Available on < http://www.sustainability-index.com/07_htmle/publications/factsheets.html> Acess on: July 14 2011.

Elkington, J. (2001). *Canibais com garfo e faca*. São Paulo: Makron Books.

Fortuna, E. (2008). *Mercado financeiro: produtos e serviços.* 17.ed. Rio de Janeiro: Qualitymark.

FTSE (2008). *FTSE4GOOD index series*. London: FTSE International Limited.

Hart, S. L. (1997). Beyond greening: strategies for a sustainable world. *Harvard Business Review*, jan-feb.

Hart, S. L.; Milstein, M. B. (2003). Creating sustainable value. *Academy of Management Executive*, v. 17, n. 2.

Holme, R.; Watts, P. (2000) *Corporate social responsibility: making good business sense.* Geneva: World Business Council for Sustainable Development.

JSE; EIRIS (2011). *Johannesburg stock exchange SRI index: background and selection criteria 2011*. Johannesburg.

Mellagi Filho, A.; Ishikawa, S (2000). *Mercado financeiro e de capitais*. São Paulo: Editora Atlas.

Nidumolu, R.; Prahalad, C. K.; Rangaswami, M. R. (2009). Why sustainability is now the key driver for innovation. *Harvard Business Review,* sep.

OECD (2007). Recent trends and regulatory implications in socially responsible investment for pension funds. In: *OECD Roundtable on Corporate Responsibility*, 2007, Paris. Guidelines... Paris: Organisation for Economic Co-operation and Development.

SAM (2011). *Dow jones sustainability index in collaboration with sam: setting the standard for sustainability investing*. Available at: http://www.sustainability-index.com. Access on: July 14 2011.

Stenström, H. C.; Thorell, J. J. (2007). Evaluating the performance of socially responsible investment funds: a holding data analysis. *Master's Thesis.* Stockholm: Stockholm School of Economics.

Tosta de Sá, G. (1999). *Administração de investimentos, teoria de carteiras e gerenciamento de risco.* Rio de Janeiro: Qualitymark.

WORLD BUSINESS COUNCIL FOR SUSTAINABLE DEVELOPMENT (1993). Report of the BCSD: First Antwerp Eco-Efficiency Workshop.

WORLD COMISSION ON ENVIRONMENT AND DEVELOPMENT (1987). *Our common future.* Oxford: Oxford University Press.