Did the Creation of ISE Created Value to Companies?

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The present research conducted an event study to evaluate the effect of Corporate Social Responsibility (CSR) on share price, following approach work of Curran and Moran's (2007). The share price of a company was used as a measure of the companies' financial performance. The announcement of the constituents of the *Índice de Sustentabilidade Empresaria*l (ISE) was defined as the proxy for CSR. None of the abnormal returns and Cumulative Abnormal Returns were statistically significant from zero, although the mean abnormal return for day 0 was positive. This work did not find evidence of positive abnormal returns following the announcements of companies being included in ISE. On the other hand, there was also no evidence of negative abnormal returns. The lack of significant results have been found in previous distinct work for international indexes and also for the Brazilian index and it does not necessarily mean absence of relation between good social practices and creation of value. There are some possible explanations for the lack of relation. Among the possible explanations, the low power of t-test is a possibility that was found in this paper, but that has not been acknowledged in other works.

1. Introduction

Corporate Social Responsibility (CSR) is a concept whereby organizations consider the interests of society by taking responsibility for the impact of their activities on customers, employees, shareholders, communities and the environment in all aspects of their operations. Recently, there has been a growing interest on CSR and an increasing concern of the companies on this issue. Companies worldwide seem to be enhancing their efforts and expenditures to align their actions with this concept. Despise the growing efforts, it is still not clear in the empirical literature the relationship between CSR and corporate financial performance.

The present research conducted an event study to evaluate the effect of CSR on share price, following approach work of Curran and Moran's (2007). The value of an event study derives from the fact that, given rationality in the market place, the effects of an event will be immediately reflected in the share prices. Therefore a measure of the events' economic impact can be built using share price over a relatively short period of time (SOLIBAKKE, 2002).

The share price of a company was used as a measure of the companies' financial performance. The announcement of the constituents of the *Índice de Sustentabilidade Empresaria*l (ISE) was defined as the proxy for CSR. ISE is a sustainability index for Brazilian companies listed in the Brazilian stock market (BOVESPA). The Index was launched in December 2005, aiming to be composed only by companies with good sustainability practices and to provide the basis for financial Social Responsible Investments (SRI) products in the local market (BOVESPA, 2007).

For Fowler and Hope (2007) there was a growth in sustainability indices in recent years, but this increase was not followed by an increase in academic research on the subject. The authors believe that these indices are a very promising source for academic researchers studying potential links between sustainability and corporate performance. Furthermore, they suggest that research in the impact of the indices on companies can be a very prolific area for further study.

The relevance of the present work relies on observing the stock market's reaction to companies entering the ISE's index in Brazil from 2005 to 2007. Existing literature either deals with international markets or present data up to 2006. Possible results could be used to support management's decisions toward efforts that aim at sustainability practices, and more pragmatically to join ISE's index. For academic purposes, there is a significant debate about sustainability effects on share prices, thus this study aims to foster this discussion with Brazilian data.

The objective of this study is to investigate the potential link between sustainability and corporate performance, by assessing the changes in share prices following the announcement of the firms included in the ISE.

The remainder of the work is organized as follows, Section II provides a brief overview of the related research and Section III presents the methodology and data set. Section IV and V discuss the empirical results and summarizes the main findings of the article.

2. Related Research

The neo-classical economists' perspective of the role of professional management within a company is that their decisions should only pursue to maximise company's long-term market value, therefore the wealth of the shareholders. On the other hand, stakeholder theory's perspective is that managements' concern should extend to a much broader spectrum of stakeholders (e.g., employees, customers, suppliers and the general community) whose interests should all be considered in the decisions taken by the company. These different perspectives are potentially conflicting, since maximizing the wealth of shareholders is not necessarily achieved through decisions where managers consider the interests of distinct stakeholders (BIRD et al., 2007).

Despite the differences, some authors suggest an intermediate perspective. De George (1990) affirms that the stakeholder theory does not preclude the interests of the shareholders, but it ensures that distinct interests are considered. Jensen (2001) proposed the Enlightened Stakeholder Theory, which affirms that a management that only considers the maximization of shareholder's value in detriment of different stakeholder groups is unlikely to succeed. This author illustrate this theory with the example that low wages and poor work condition should lead to low productivity which can largely offset any cost-savings and thus actually reduce company's value.

For Post et al. (2002) a company's ability to create sustainable value for its shareholders, and hence its long-term value, is defined by its association with critical stakeholders. Bird et al. (2007) corroborate this view, suggesting that management has to evaluate the impact of its' actions on different stakeholders (consistent with stakeholder theory) but, at the same time, have "to ultimately evaluate all of these decisions on the basis of their impact on the market value of the company" (consistent with the neo-classical view).

Therefore the association between CSR and corporate performance is complex and its complexity can be seen in the empirical literature, which presents contrasting results among authors. Griffin and Mahon's (1997) article reviewed 51 papers on this association and concluded that even though the majority of the studies showed a positive relationship, it should be noted the variability and inconsistency among the results. For Jones and Morrel

(2001) the literature trying to capture this relationship presents complicated and inconclusive results.

Previous researches in this field have used a variety of econometric methodologies to measure the relationship of CSR and financial performance. Among these methodologies, event study has been used in some studies. To measure the impact of new information an event study estimates the abnormal share return. The abnormal return is the actual return of a share minus the expected return of that share and can be seen as an indicator of the stock market's reaction to the arrival of new information.

The significance of the abnormal return permits to infer that specific new information had a significant impact on the price of the share of the companies (McWilliams, Siegel, 1997). The inference of this significance relies mainly on the assumption of market efficiency. Under the efficient market hypothesis the price of the stocks would quickly adjust to relevant new information, allowing the research to measure the effects of a particular new fact to a set of stocks.

Some examples of event studies are Jones and Murrrell (2001) investigation on the impact of a firm's public recognition of exemplary social performance and Klassen and Mclaugghlin's (1996) research on the effects of environmental management. More specifically, two papers have attempted to link Social Responsible Index and Shareholder's value, using event study. Curran and Moran (2007) examined the impact that announcements of inclusion in and deletion from the FTSE4Good caused on the share prices of the companies involved in the announcement. Becchetti, Ciciretti and Hasan (2007) measured the share price movements following the entry and exit announcement of the companies from the Domini 400 Social Index.

A crucial issue on the studies of Curan and Moran (2007) and Becchetti, Ciciretti and Hasan (2007) is the nexus between the announcements and share value. For the first authors, the addition of a company to a social index signals that it has accomplished a certain level of environmental and social performance and has economic strengths. Thus, the authors concluded that an inclusion on a social index "should bring reward because the company is perceived to be environmentally, socially, and economically strong. On the other hand, the latter authors do not see a clear positive nexus and, based on their literature review, assert that an addition to a market index can have different and conflicting effects. For them, if an increase in CSR signals cost increase, then a negative abnormal return should be expected. However, if is considered, the growing volume of financial assets intermediate by socially responsible funds it is expected a positive abnormal return. Beccheti, Ciciretti and Hasan (2007) suggest that CRS actions may be positive in terms of revenues or value added per worker, but not necessarily in terms of shareholder's value.

Both Dias (2007) and Costa (2007), use event study to search the link between the inclusion in ISE and the share price of companies. They did not find significant abnormal returns when using the market model, but Dias (2007), using a control group, found significant positive abnormal return. It is important to note that despise the use of the same methodology, there were differences in the samples considered and in the methodological approach. For instance, Dias (2007) analyzed the index constituents of 2005 and 2006 and Costa (2007) only the constituents of 2005.

The present work also use ISE as the reference index. Even tough, social responsible investments existed for some time, sustainable indexes are recent. The Domini 400 Social Index, created in 1990, was the world's first sustainable index. Nevertheless, the recent increase on investments of social responsible investment industry has stimulated the creation of other indexes around the world: Dow Jones Sustainability Index, FTSE4Good, Humanix, Vigeo (Fowler, Hope, 2007). The Brazilian sustainability index (ISE) was created in 2005.

In order to be included in ISE, companies need to meet a series of criteria. This criteria are evaluated based on a survey that eligible companies submit voluntarily. The survey is based on the concept of "Triple Bottom Line" which considers aspects of environment, social and economics. Furthermore, the survey evaluates other dimensions like product nature and corporate governance (BOVESPA, 2007).

Considering that ISE was created in 2005 and that BOVESPA announces annually the new ISE's constituents (formed by companies that achieved the index criteria), this research attempts to answer the following question: are those individual efforts realized by companies towards sustainability recognized by the stock market? The following hypotheses were formulated to guide the empirical work:

> H_0: Announcements of companies being included in ISE does not generate positive abnormal returns for those companies.
>
> H_1: Announcements of companies being included in ISE generates positive abnormal returns for those companies.

3. Methodology

The first step in an event study is to define the event of interest and to identify the event window, i.e, the period over which the share prices of the involved companies will be examined. The event window is often larger than the specific period of interest, allowing the research to analyze a potential leak of information before the day of the announcement (MacKinlay, 1997) and to capture changes in share price due to latecomers to the announcement.

In this work, the events of interest were: announcement of the constituents of the ISE in 2005 and the announcements of the revision of the index in 2006 and 2007. The event window used comprises 19 days, composed of 9 days before the announcements through 9 days after it. An accurate identification of the event date is fundamental to event studies (ARMITAGE, 1995). In the present study, this date was determined as the day of the public meeting that announced the companies that comprise the ISE (November 30, 2005) and the days of the public meetings that announced the revision of the constituents of the index (November 30, 2006 and November 27, 2007).

Following the definition of the event, it is necessary to establish the selection criteria for the inclusion of a specific firm in the research sample. The first criterion was being part of the companies who composed the initial ISE index on 2005. For 2006 and 2007, the companies that were added to the index were also included on the first selection. On a second screening, for the companies that had two kinds of shares (Preferencial shares and Ordinary shares), the share with less liquidity (fewer number of transactions per day) was excluded from the

sample. Considering the two types of shares for the same company could interfere in the independence of the events, since the returns of those shares tend to be correlated (CAMPBELL, LO, MACKINLAY, 1997). Furthermore, the companies that present less than 40 transactions per day were excluded from the sample. The initial selection was composed of 53 different shares and the final sample had 39 companies and their respective most liquidity share.

The segment distribution of the companies analyzed (Table 1) is presented according to BOVESPA's criteria. There is a good industry distribution with 17 different segments. However, there is a concentration of companies in the Electric utilities and Banks segments, with these segments representing 44% of the companies in the sample.

Table 1 – Segment Distribution

Segment	Number of Companies
Electric utilities	12
Banks	5
Pulp and paper	3
Steel	3
Airlines	2
Meat, poultry and others	2
Petrochemicals	2
Aerospace	1
Car rental	1
Exploration and refining	1
Holdings – diversified	1
Motors and compressors	1
Personal care	1
Pharmaceutical	1
Railroads	1
Toll roads and highways	1
Water utilities	1
Total	**39**

The ultimate goal of an event study is to verify the possible impact of an event over the share price. In order to measure this impact, the study compares the actual ex post return of the share over the event window minus the expected return over the same period. This difference is called the abnormal return and can be expressed as:

$$AR_{jt} = R_{jt} - E\left(R_{jt} \middle| X_t\right),$$

where AR_{jt} is the abnormal return, R_{jt} is the actual return, and $E(R_{jt} \mid X_t)$ is the expected return for firm j and event date t. Curran and Moran (2007) state that "any difference between the abnormal returns and expected returns can be put down to fluctuations in the returns caused by the event in question".

The share actual return was calculated from the closing share prices adjusted for dividends, using the following formula:

$$R_{jt} = Ln\left(P_{jt} / P_{jt-1}\right),$$

where R_{jt} is the share return for firm j on day t and P_{jt} is the share price for day t. For Batistella et al. (2004) the adoption of the neperian logarithm increased the accuracy of the returns.

The expected returns were calculated using the market model. For Armitage (1995) this model is the most reliable method, presenting at least as good results as other models. The Market model, using ordinary least square regression, estimates the relationship between a share's returns and an index's returns. This relationship permits to estimate expected returns, given actual returns of the market index. The equation below was used to estimate the expected returns:

$$E\left(R_{jt}\right) = \alpha_j + \beta_j R_{mt} + \varepsilon_{jt},$$

where $E(R_{jt})$ and R_{mt} are the expected return of the share and the return on a market index for period t, respectively. Moreover, α_j estimates the mean return over the period not explained by the market, β_j measures the relation of a firm to the market index and ε_{jt} is the mean zero disturbance term.

On the present research, the estimation period, used to estimate β, comprised the first trading day of the event's year until the first day of the event window, averaging 217 trading days. Armitage (1995) states that the estimation period ranges from 100 to 300 days in most studies and the choice of the size of the estimation period involves a trade-off between more accuracy of estimation of α_j and β_j and these coefficients becoming more "out of date". This author, based on the research of Corrado and Zivney (1992), suggests that an estimation window of more than 100 days should be sufficient.

The results were analyzed daily, but were also analyzed accumulating the daily results using the cumulative abnormal return (CAR). CAR is simply the sum of the daily abnormal returns of the event window:

$$CAR_i\left(t_1, t_2\right) = \sum_{t=t_1}^{t_2} AR_{it},$$

where, CAR_i is the cumulative abnormal return of period i, t_1 and t_2 are the first and last day of the event window, respectively.

In order to test the significance of the results, the data was tested for normality using the one sample Shapiro-Wilk test. Next, results that presented normal distribution were tested using a t-test. Results that did not present a normal distribution were tested using a nonparametric approach. The nonparametric test used was Wilcoxon Signed Ranks Test, which considers that both the sign and the magnitude of abnormal returns are relevant.

Share prices were obtained through the Economatica©'s data base. For statistical procedures the software SPSS (version 16) was used for normality tests, t-test and non-parametric tests and the software G*Power 3.0.5 was used to analyse the power of the t-test.

4. Results and discussion

Daily abnormal returns were calculated for the event window. These returns were tested for normality using the one sample Shapiro-Wilk test. According to Sahai and Ageel (2000) the Shapiro and Wilk W test is one of the most powerful omnibus tests for testing normality and can be used for a sample as small as 10. The results (Table 2) showed that for five different days (-4, -1, +3, +4 and +6) the data did not present, at 5% confidence level, a normal distribution.

Table 2 - Tests of Normality (Abnormal Return)

	Shapiro-Wilk		
	Statistic	df	Sig.
Day-9	,965	39	,254
Day-8	,976	39	,572
Day-7	,983	39	,820
Day-6	,974	39	,489
Day-5	,959	39	,168
Day-4	,924	39	,012
Day-3	,964	39	,237
Day-2	,982	39	,773
Day-1	,928	39	,016
Day 0	,987	39	,928
Day+1	,977	39	,600
Day+2	,964	39	,237
Day+3	,885	39	,001
Day+4	,937	39	,030
Day+5	,972	39	,436
Day+6	,932	39	,021
Day+7	,990	39	,974
Day+8	,975	39	,517
Day+9	,977	39	,581

When the abnormal returns do not present a normal distribution, parametric tests are not well specified. In those cases, non-parametric tests are well-specified and more powerful to reject a false null hypothesis of no abnormal returns (SERRA, 2004).

Therefore, daily abnormal returns were tested using a nonparametric approach (Wilcoxon Signed Ranks Test). None of the abnormal returns were statistically significant from zero (Table 3), although the mean return for day 0 was positive. Curran and Moran (2007) did not showed evidence of significant daily abnormal returns, but also encountered a positive mean for day 0. Costa (2007), researching ISE, did not encounter significant positive abnormal returns.

Beccheti, Ciciretti and Hasan (2007), studying the Domini 400 social index, also did not report positive significance abnormal returns for addition on the index. However, these authors reported a significant negative effect upon the exclusion of the companies from the index.

Table 3 – Wilcoxon Signed Rank Test (Abnormal Returns)

Test Statistics										
	Day-9	Day-8	Day-7	Day-6	Day-5	Day-4	Day-3	Day-2	Day-1	Day 0
Z	-,265[a]	-,516[b]	-,991[b]	-,126[b]	-,740[a]	-,433[a]	-1,354[a]	-1,354[b]	-,419[a]	-,502[b]
Asymp. Sig. (2-tailed)	,791	,606	,322	,900	,460	,665	,176	,176	,675	,615
	Day 0	Day+1	Day+2	Day+3	Day+4	Day+5	Day+6	Day+7	Day+8	Day+9
Z	-,502[a]	-,893a	-,154[a]	-,154b	-1,842a	-,586[a]	-,656[a]	-,921a	-,335b	-,251a
Asymp. Sig. (2-tailed)	,615	,372	,878	,878	,065	,558	,512	,357	,738	,802

a. Based on negative ranks.

b. Based on positive ranks.

The CAR was used to analyse the abnormal returns over a period longer than a day. Before testing its' significance, the CAR was tested for normality (Table 4) using the Shapiro-Wilk test. Since the results presented a normal distribution, at 5% confidence level, it was performed a t-test.

Table 4 - Tests of Normality (Cumulative Abnormal Returns)

	Shapiro-Wilk		
	Statistic	Df	Sig.
Day-9	,965	39	,254
Day-8	,987	39	,925
Day-7	,971	39	,413
Day-6	,982	39	,783
Day-5	,980	39	,704
Day-4	,964	39	,240
Day-3	,977	39	,601
Day-2	,984	39	,844
Day-1	,984	39	,830
Day 0	,956	39	,135
Day+1	,959	39	,165
Day+2	,981	39	,732
Day+3	,968	39	,326
Day+4	,974	39	,500
Day+5	,975	39	,521
Day+6	,965	39	,252
Day+7	,971	39	,399
Day+8	,973	39	,452
Day+9	,977	39	,586

The CAR did not show significance at 5% confidence level (Table 5). The lack of statistical significance has been detected in different works. Batistella et al. (2004) used an event study to verify the effects of the companies entering the New Market in BOVESPA and also did not encounter significant results. In a recent research, DIAS (2007) investigated the announcement of the constituents of ISE and did not find effects when using the event study with market model.

On the other hand, the study of Becchetti, Ciciretti and Hasan (2007), using a market model for Domini 400 Social Index, revealed significant CAR for the exclusion of companies from the index. Neverthelesss, this study did not report positive CAR for the inclusion on the index. Dias (2007), when employing the event study methodology with control groups, found significant positive CAR (in windows close to the announcement date) for the companies included on ISE.

Table 5 – Test t (Cumulative Abnormal Returns)

	Test Value = 0			
	t	Df	Sig. (2-tailed)	Power (1-β)
Day-9	,658	38	,514	0,098
Day-8	,571	38	,571	0,086
Day-7	-,003	38	,997	0,050
Day-6	-,377	38	,708	0,066
Day-5	-,327	38	,746	0,062
Day-4	,345	38	,732	0,063
Day-3	,526	38	,602	0,081
Day-2	,924	38	,361	0,147
Day-1	,678	38	,502	0,101
Day 0	,668	38	,508	0,100
Day+1	,523	38	,604	0,080
Day+2	,218	38	,829	0,055
Day+3	,477	38	,636	0,075
Day+4	,629	38	,533	0,094
Day+5	,302	38	,764	0,060
Day+6	,274	38	,785	0,058
Day+7	,131	38	,896	0,052
Day+8	-,106	38	,916	0,051
Day+9	,038	38	,970	0,050

Even though the results did not suggest a relation between the inclusion in ISE and abnormal returns of the stocks, the relation may still exist. Curran and Moran (2007), for instance, showed a trend that announcement of inclusion in the FTSE4Good leads to positive movements in share price. However those authors did not find statistical significance for this result.

There are a few possible explanations for the lack of significant results. First is the fact that the investors do not consider that companies with good CSR practices may have better

financial performance than companies that do not have. Thus, investor will not pay "extra" for companies joining social indexes.

For the Brazilian index, it should be also noted that some of the companies listed in ISE already did part of social responsible indexes around the world. For instance, Petrobras, Banco Itaú, Cemig, Itaúsa, Aracruz, Bradesco and Usiminas were constituents of the DJSI. Therefore, being included in a Brazilian social index may not be a very relevant new, since investors already knew that these companies present good social parameters.

An alternative perspective considers that the companies included in ISE were gradually moving towards social responsibility. Along this path, they were communicating its actions to the stock market. Therefore, the inclusion in the index could mean just a public confirmation of the measures that the company took in the past and that the investors were already aware of. For instance, before publishing a social balance, the companies had already taken measures and attitudes towards improving their CSR practices and probably have been communicated this process to the market. In line with the semi-strong form of market efficiency (FAMA, 1970), the social efforts of the companies should already been incorporated on the share prices before the announcement of the index.

In the previous perspectives we are assuming market efficiency. Another possibility, not investigated in previous studies, is the low statistical power of the test. In this sense, not finding evidence of significance CAR might be related to the lack of the statistical power of the t-test performed. The power of the test is the probability of correctly rejecting the null hypothesis when the hypothesis should be reject. It is defined by three distinct factors: alfa (level of significance or type-1 error probability), the size of the sample used for the test and effect size (the degree to which the phenomenon exists in the population). According to Hair et al. (2005), the recommended minimum level for the statistical power of the test is 80%.

In this work, the power of t-test was measured using post hoc power analyzes, considering a level of significance of 5% and a sample size of 39 companies. The results showed a power of the test below 15% (Table 5), much below the recommended level of 80%. Therefore, this result allows to infer that a low power of t-test is a possible reason for the lack of significance.

5. Concluding remarks

The objective of this work was to identify evidences of value creation (through the increase of share prices) for companies who received public acknowledgement (becoming part of the constituents of ISE index) of good sustainability practices. In other words, did the creation of ISE created value to the companies?

The results of this research did not allow to reject the null hypothesis that announcements of companies being included in ISE does not generate positive abnormal returns for those companies. Considering that the null hypothesis was not rejected, there was no evidence of positive abnormal returns. On the other hand, there was also no evidence of negative abnormal returns.

The lack of significant results have been found in previous distinct work for international indexes (CURRAN, MORAN, 2007) and also for the Brazilian index (COSTA, 2007; DIAS, 2007) and it does not necessarily mean absence of relation between good social practices and

creation of value. As discussed in section 4, there are some possible explanations for the lack of relation. Among the possible explanations, the low power of t-test is a possibility that was found in this paper, but that has not been acknowledged in other works.

Sustainability indexes are recent and ISE was created only three years ago. Therefore, there is a wide spectrum of research that still can be done on the matter. Would be important that future research strive to amplify the samples (eg. including different markets) and use different methodological approaches. Also, we recommend that future works analyze the power of the test considered.

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