



Economic and Financial Impact of Corporate Sustainability on Sustainable Competitive Advantage

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Abstract

The balance between environmentally sustainable, socially ethical and economic growth has been investigated in the literature of business strategy. However, studies do not show whether or not a for-profit organization can gain sustainable competitive advantage. Some limitations refer to non-experimental studies that do not control spurious effect of confounding variables, as well as not using variables that capture the intangible aspects of sustainable practices. To overcome these limitations, this study examined whether adherence to corporate sustainability practices - the company's presence in the Corporate Sustainability Index (CSI) - is itself a source of sustainable competitive advantage, controlling spurious effects. By means of experimental design using control group, we used Generalized Estimation Equations with dependent variables Tobin's Q, Return on Assets and Financial Leverage and, as control, firm size, industry, and year of data collection. The results indicate that participation in the CSI does not affect the degree of leverage of firms, but positively influences the return on assets and the market value above the average of other companies in the same industry throughout the years. Thus, sustainable practices bring financial benefits above the average of other companies in the same industry throughout the years, making them a sustainable competitive advantage.

Keywords: Corporate Sustainability Index; Corporate Financial Performance; Resource-Based View.

Introduction

Corporate sustainability is a market strategy characterized by social and environmental initiatives and corporate governance. Its inter-related economic, social and environmental dimensions are thought to yield competitive advantage which can generate economic value for both owners and stakeholders in the long term (GHOUL *et al.*, 2011).

With this in mind, the São Paulo Stock Exchange BM&FBOVESPA (2013) set up the Corporate Sustainability Index (CSI) with a view to creating an investment environment compatible with contemporary society's demands for sustainable development and to stimulate ethical responsibility in corporations. It started in 2005 and is considered a tool for the comparative analysis of the performance of companies listed in the BM&FBOVESPA, based on economic efficiency, environmental balance, social justice and corporate governance.

A study by Barney (1991) on the theory of the resource-based view (RBV) of companies may explain why those listed in the CSI can perform better than others who do not adopt such practices. Participation in the CSI means that a company becomes a member of a group of difficult access, and accordingly, membership is regarded as a source of sustainable competitive advantage. For Lippman and Rumelt (1982), difficult imitability of resources is associated with their rarity, controlled access and/or exclusive use. Furthermore, difficulty of imitability is related to difficulties of replication, mobility, or resource transfer among companies and in the same way could also be associated with the uncertainty of obtaining investment.

Grant (1991) defines organizational resources as tangible or intangible, in the sense that tangible resources are those that can be recorded on company balance sheets while intangible resources are those that are neither physical nor financial, such as is participation in the CSI. For Perez and Famá (2006), intangible resources, such as corporate social and environmental responsibility, are exceptional assets, with unique features which could differentiate one company from another and obtain competitive advantage. Thus, the generation of wealth in a company is directly related to its intangible assets, given that such assets would be responsible for stronger economic performance and generation of value for its shareholders.

One of the crucial issues related to these theoretical proposals is that there is no empirical clarity as to whether the adoption of sustainable practices generates greater financial or economic returns for a company in relation to its competitors. Although there are studies along these lines investigating this view, such as those of

Silva and Quelhas (2006), Tupy (2008), Figueiredo *et al.* (2009) and Macedo *et al.* (2012), they disregard relevant aspects, such as the use of indicators which would genuinely represent the characteristics of intangibility associated with the adoption of sustainable practices and conducting natural experiments to control spurious effects such as company size, industry and temporal events.

Thus, to filling in existing gaps, this study analyzed whether adhering to corporate sustainability practices over a 5-year period was a source of sustainable competitive advantage capable of generating over time an above-average economic and financial impact for organizations in different industries. So, by means of a natural experiment, this study set out to compare a group of CSI participant companies with a control group of companies using an economic measure of market value creation, Tobin's Q ratio, which captures the effects of intangibility inherent to the practice of corporate sustainability, a measure of returns on assets, ROA, and a debt measurement tool, Financial Leverage. The study controlled the effects of company size, activity industry and time in order to obtain more statistically robust results.

2. Sustainability and Corporate Economic / Financial Performance

Sustainable development refers to the ability of a generation to meet their own needs without compromising the ability of other generations to do the same. The World Commission on Environment and Development (2013) states that sustainable development involves the balanced use of natural resources, within the limits of the needs and well-being of the present generation, as well as preserving them in the interest of future generations.

According to the Ethos Institute (2013), many companies benefit from initiatives linking progress and sustainable development. In this sense, certain corporate actions can lead to sustainable development which together could have a strategic function. These include economic, social and environmental variables (GOMES and TORTATO, 2011) and can address issues such as the quest for longevity, long-term profitability and commitment to company stakeholders.

The ability to identify risks and opportunities becomes more relevant with the intensification of sustainability practices in organizations. The Ethos Institute (2013) lists some of these practices: (1) cost reduction by reducing environmental impacts; (2) increased revenue due to the improved environment through benefiting the local economy; (3) reduced risks through involvement with the interested parties; (4) improving the company's image by increasing environmental efficiency; (5) devel-

opment of human capital through more effective management of human resources; and (6) increased access to capital through better corporate governance practices.

With this in mind, the Corporate Sustainability Index (CSI) was created by Bovespa in 2005 (MARCONDES; BACARJI, 2012) in order to measure and select a portfolio of companies compatible with the sustainable development demands of companies and stimulate the ethical responsibility of corporations. Specifically, the CSI reflects the returns of a portfolio made up of actions of companies, known for their commitment to social and environmental responsibility and corporate sustainability.

According to the CSI document (MARCONDES; BACARJI, 2012), the stocks must cumulatively meet the following criteria, listed in the index: they must be among the 150 stocks with highest negotiability index measured in the twelve months prior to the beginning of the review process; they must have been traded in at least 50% of auctions in the twelve months prior to the beginning of the review process; and meet the sustainability criteria endorsed by the CSI Board.

In relation to this last criterion, BM&FBOVESPA has drawn up a questionnaire to measure the performance of issuers of the 150 most frequently traded shares in BOVESPA. It is based on the concept of the *triple bottom line* (TBL), which involves an in-depth assessment of environmental, social, economic and financial factors (MARCONDES; BACARJI, 2012). These factors were divided into seven sets of criteria: (1) policies or indicators of commitment to economic, financial, social and environmental issues; (2) indicators of programs, goals and monitoring of economic, financial, social and environmental aspects; (3) the use of financial performance indicators; (4) legal compliance, which assesses compliance with the legislation on competition, the environment and the consumer code, etc.; (5) general criteria which ascertain, for example, the company's position on global agreements and whether the company publishes social balance reports; (6) criteria for the nature of the product, ascertaining, for example, whether the company's product damages or puts consumer health at risk, etc.; and (7) corporate governance criteria (values and ethical standards).

Responses of the companies are analyzed by cluster analysis, which identifies groups of companies with similar performance and indicates the group with best overall performance. Companies in this group make up the final CSI portfolio, which has a maximum of 40 companies, approved by the Council (*BOLSA DE VALORES DE SÃO PAULO*, 2013).

The effects of including corporate sustainability in the economic and financial results of organizations have been studied for both developed and developing markets. The results show that corporate sustainability positively influences economic and financial performance and fosters the competitive advantage of companies as it

is a factor taken into account by investors when making their investment decisions and by consumers in their purchasing decisions (COWTON 1994; TSOUTOURA, 2004; VILLALONGA, 2004; LO; SHEU, 2007; ARENDT; BRETTELL, 2010; LO; SHEU, 2010; GHOUL *et al*, 2011).

One of the most important studies which analyzed this perspective of the Brazilian market is that by Tupy (2008) which compared the economic and financial performance of companies whose shares have different stock exchange indexes. One group of companies covers shares with social and environmental preservation practices (CSI) and the other group do not cover such characteristics (IBrX). The results showed that, when measured by the Economic Value Added (EVA), companies in the CSI added greater economic value than the IBrX companies, and that other variables, such as market value and equity, were not significant.

Another study by Macedo *et al.* (2012) made a comparative analysis of the accounting and financial performance of socially and environmentally responsible companies and other companies without such involvement. This was done by applying data envelopment analysis (DEA) to information on profitability, profit margins, asset turnover, liquidity, debt and immobilization of companies in the electricity distribution industry of the BM&FBOVESPA over the 2005-2007 period. The results indicate that socially and environmentally responsible companies have statistically superior accounting and financial performance.

In support of this idea, from February 2005 to November 2010, a comparative study was made involving two hundred company-members of the All Country World Index (ACWI). In this study based on multifactor models, a hundred companies adopted corporate sustainability practices while the others did not. This study found that the hundred companies committed to clean capitalism obtained returns of 42.54% compared to 29.52% for its competitors (GLOBAL 100, 2012).

From the studies presented, it is believed that the adoption of sustainability practices and participation in company portfolios, such as the CSI in Brazil which represents this reality, can be understood as intangible and long-lasting assets and thus a source of sustainable competitive advantage between organizations (BARNEY, 1991). This corollary emphasizes the importance of this research, because unlike the studies identified in the literature, it uses an indicator, Tobin's Q, which includes the impact of the use of intangible assets in the analysis of the economic performance of companies. It also compares the financial performance measures of competitors and uses a control group, all of which facilitate in checking whether the adoption of sustainable practices is really a source of competitive advantage for organizations.

It also sets out to identify the effects of this strategy on leverage and returns on company assets, because if a company is to be part of the CSI portfolio, it must make large investments (*BOLSA DE VALORES DE SÃO PAULO*, 2013), such as introducing new technologies with a view to using raw material more efficiently, improving its corporate image or that of its product, reducing problems with environmental responsibility, and improving working conditions.

Thus, meeting all the criteria presented could lead to uncertainty in terms of the investments required for the adoption of practices related to corporate sustainability. The requirements related to social and environmental issues, imposed for participation in the CSI could lead the company to invest its capital in projects which yield positive net equity value. In this sense, the return on the assets of companies committed to corporate sustainability would be higher than that of those which do not adopt such practices. In addition, if firms are to undertake such investments they need capital, which can be obtained through equity or from third parties and, if the company chooses the latter, there is an increase in financial risk because of the debt incurred (*TEIXEIRA et al.*, 2011). However, when *Teixeira et al.* (2011) considered the debt contracted by the companies they did not find any significant results for the 2003-2008 period. Thus, it is expected that this empirical fact would remain valid for the 2007-2011 period and would have no significant relation to debts. Controlling company size, industry and the year, the first two hypotheses of this study allow for a more robust inference of the relationship analyzed:

Hypothesis 1: Companies included in the CSI portfolio have higher performance in terms of return on assets in relation to other companies in the same industry that are not part of the portfolio, when the variables of time, industry and company size are controlled.

Hypothesis 2: Companies included in the CSI portfolio present no significant relationship in terms of debt (financial leverage) in relation to other companies in the same industry that are not part of the portfolio, when the variables of time, industry and company size are controlled.

The RBV is based on the assumption that strategic resources are heterogeneous, do not have perfect mobility between companies and are stable over time. Strategic resources include all assets, capabilities and organizational processes, controlled by a company which enables it to design and implement strategies that improve its efficiency and effectiveness (*BARNEY*, 1991).

The RBV rests on two fundamental assumptions: (1) resources and skills are heterogeneously distributed between companies, and (2) resources do not have perfect mobility to provide a lasting benefit. When added together, these two assumptions differentiate the set of individual resources that companies have and which are difficult to imitate, thereby generating competitive advantage if they are persistent over time (BARNEY, 1991).

In this sense, the organization's resources are divided into three categories: (1) physical capital including technology, facilities and equipment, geographical location and access to raw materials; (2) human capital, including training, experience, intelligence and relationships between managers and workers at an operational level; and (3) organizational capital, including formal and informal planning, monitoring and coordination of systems and the relationship between groups and the company and between the company and the environment (BARNEY, 1991).

The RBV considers the strategic assets owned by the company as the main determinants of the difference between the economic performance of companies in the same industry, so that, if a company is able to create more economic value than its competitors, competitive advantage is generated (PETERAF; BARNEY, 2003).

For Barney (1991) the source of the sustainable competitive advantage of a company is mainly based on the heterogeneity of the firm and the immobility of its resources. Thus, the more useful the resources owned by the company, the greater the generation and maintenance of competitive advantage (BARNEY, 1991).

For this study the approach of company heterogeneity and immobility of resources are represented by the listing of the company in the CSI, as participation in the CSI index depends on achieving an organizational structure shaped to meet corporate sustainability requirements, based on economic efficiency, environmental balance, social justice and corporate governance. For the RBV, the attributes of companies are resources which can enable an organization to achieve higher levels of economic performance relative to other companies in the course of time (FULMER *et al.*, 2003).

Thus, from among the different ways of comparing the economic performance of a company, we chose a measure of generating added-value, Tobin's Q. The decision to consider a value-added measure is based on the financial theory (ROSS *et al.*, 1995; BRIGHAM; HOUSTON, 1999) which states that the purpose of a business is to increase the wealth of its shareholders, that is, add market value, and not simply increase the profitability of the organization. In this context, the third hypothesis of this study arises, which like the two others already established, controls the effects of company size, industry, and the year studied on the explanatory variables:

Hypothesis 3: *Companies listed in the CSI present superior economic performance relative to other companies in the same industry which are not part of the portfolio, when the variables of time, industry and company size are controlled.*

3. Method

To test the hypotheses, we carried out a research via natural experiment, to compare the economic and financial performance of a group of companies listed in the CSI (experimental) with a group of non-CSI listed companies (control) in the same industry and during the same period of time. The dependent variables were Tobin's Q (market value), ROA (profitability) and the Financial Leverage (indebtedness). The control variables were natural logarithm of total assets as a proxy for company size, the industry to which each company belonged and the years of data collection (2007-2011).

The covariant "company size" was included because the CSI is mostly made up of large companies, as a result of the selection criteria imposed by the stock exchange, and this could bias the results of this research.

Sampling and data collection. Based on 160 firm-observations, the sample combine 32 publicly listed companies over 5 years (Table 1). These companies are divided into two equal size groups clustered by industry and time: one treatment group with 16 listed firms in the CSI of BM&FBOVESPA and the control group with 16 non-listed firms in the CSI of BM&FBOVESPA. The selection of the sample took place in four stages: first, a criterion was established that only 'open-capital' companies trading on the Brazilian market and not participating in the financial industry would be chosen, as the market value of financial companies is affected by other industry variables and, in addition, questionnaires to measure corporate sustainability are designed differently (ROSSI Jr., 2008); second, to select the companies for the CSI list, composed of a total of 38, it was decided to select all those with continuous availability of Tobin Q data, Financial Leverage and ROA, which meant that the period for analysis would include from 2007 to 2011; third, after selecting the CSI participating companies, the control group was divided into industries, and within each industry, the remaining 16 companies were randomly selected to equal the number of companies in the CSI, if they had data recorded over the same period; and fourth, the natural logarithm of the total assets of each company selected for the sample were calculated, which, as already mentioned, were used as a proxy for company size.

Table 1 – Preview of listed companies in Bovespa with data on the 2007- 2011 period

Name	Industry (Bovespa)	Name	Industry (Bovespa)
BRF Foods	Food & Drink	Taesa	Energy
JBS	Food & Drink	Tractebel	Energy
Light S/A	Food & Drink	Braskem	Chemical
Minerva	Food & Drink	Millennium	Chemical
Lojas Renner	Trade	M G Poliest	Chemical
Natura	Trade	Unipar	Chemical
Viavarejo	Trade	Celul Irani	Pulp & Paper
AES Tiete	Energy	Fibria	Pulp & Paper
Cemig	Energy	Suzano Papel	Pulp & Paper
Cesp	Energy	Ferbasa	Steel & Metal
Coelce	Energy	Forjas Taurus	Steel & Metal
Copel	Energy	Gerdau	Steel & Metal
CPFL Energia	Energy	Gerdau Met	Steel & Metal
Eletrobras	Energy	Mundial	Steel & Metal
Energias BR	Energy	Embraer	Vehicles & parts
Energisa	Energy	Marcopolo	Vehicles & parts

Source: Research data.

After defining the study sample, the panel data were built from the combination of time series (years) and cross-sectional observations (companies). All the financial data collected for use in the econometric model were secondary, obtained through the *Economática* database or calculated from the companies' financial statements accessed through the *DIVEXT* (External Disclosure ITR/DFP/IAN) of the Securities and Exchange Commission.

Analysis. To analyze the functional relationship between the variables, we used Generalized Estimating Equations (GEE), which are very efficient econometric modeling tools for panel data, because they are not just restricted to the normality assumptions of the response variable, but also to the enlarged assumption of the exponential family of distributions, which makes the model more flexible for various types of data (LATORRE; CARDOSO, 2001).

To compare the results obtained in the GEEs, we calculated the Quasi-likelihood under the Independence model Criterion (QIC), which is a measure of choice between correlated structures, when a set of terms is given. As a decision parameter, the lower the value of the QIC, the better the correlation matrix analyzed. Thus, the study reported the QIC of the best matrix for Tobin's Q, an unstructured matrix, the first order auto-regressive matrix for the ROA, and the fourth order dependent matrix for Leverage. It was also decided to demonstrate the explained variance using the R^2 indicator and to use graphs to illustrate the estimates.

Operationalizing the dependent variables. Tobin's Q, the first dependent variable considered, is a representative performance index for the market value of a company, which is defined as the ratio between the value of company assets, including its debts, and the replacement value of its physical assets in a given period. Tobin's Q shows the company's valorization potential, that is, the wealth aggregated by the market as a reflection of its performance. Famá and Barros (2000) found that the average Tobin Q is often used in research as a proxy for the company's value, expressed in terms of performance which makes it an indicator to compare one company with another.

Famá and Barros (2000) review the main applications of Tobin's Q and the main developments of the model originally proposed by James Tobin. According to them, constructs have been built based on the original theory to test it in practice, and of these studies, the simplified one proposed by Chung and Pruitt (1994), in which asset replacement value is considered the same as total asset value at book value, demands less computational effort and better applicability of data. Thus, for this study, Tobin's Q was calculated using the simplified Chung and Pruitt model (1994), which can be represented as follows:

$$Tobin's\ Q = \frac{MVA+D}{TA}$$

(1)

Where: MVA = market value added (number of shares x share price); D = short-term debt - high liquidity current assets; TA = total company assets measured at book value.

The dependent variable ROA measures the profitability generated by assets (net operating profit) on the total assets of the company. This can be obtained using the following equation:

$$Return\ on\ assets\ (ROA) = \frac{Net\ operating\ profit}{Total\ Asset}$$

(2)

The dependent variable Financial Leverage represents the percentage of inclusion of third-party funds in the company's capital structure, and is therefore able to measure the indebtedness level of such a company. According to Assaf Neto (2012), Financial Leverage is made up of the ratio between total third-party fund raising (costly) and the total of its own resources and can be represented as follows:

$$\text{Financial Leverage} = \frac{\text{Current liabilities} + \text{Non-current liabilities}}{\text{Net equity}}$$

(3)

After obtaining annual values of Tobin's Q, the ROA and the Financial Leverage for each company, the indicator of each company was relativized for the industry average in each year. ROA and Financial Leverage values did not present normal distribution. Thus, these values were turned into natural logarithms, which then presented normal distribution, and allowed data to be standardized for comparison of all companies across industries. For the analysis of the Tobin Q, a value equal to 1 means that the added value of that company in that year is equal to the average in the industry to which it belongs. A value less than 1 means that it is below the industry average (competitive disadvantage) and a value above one means it is above the industry average (competitive advantage). With regard to ROA and Leverage analyses, a 0 level means that the company is within the industry average for that year. Negative values indicate that it is below average (competitive disadvantage) and positive values show that it is above the industry average (competitive advantage).

Table 2 presents the descriptive data of the dependent variables. Comparatively, it was seen that the average for the three indices (Tobin's Q, Financial Leverage and ROA) in the sample of companies participating in the CSI is above those in the sample of the control companies. And the variability in the Financial Leverage and ROA indices, represented by standard deviation, is higher for the control companies, which indicates a higher degree of risk for these companies in relation to those that belong to the CSI.

Table 2 – Descriptive statistics of the sample for each dependent variable (2007 to 2011)

Statistics	Rates % (dependent variables)		
	Tobin's Q	Financial Leverage	ROA (Return on Assets)
General Average Sample	1.44	1.27	4.76
Standard error General Sample	0.91	7.76	8.66
Average CSI Companies	1.58	2.15	7.30
Standard error CSI Companies	1.15	3.87	7.93
Average Control Group	1.26	0.33	2.38
Standard error Control Group	0.55	10.31	8.76

Source: Research data prepared by the authors.

Operationalizing independent and covariate variables. For the econometric model estimated in this study, participation in the CSI, treated as a dummy, is considered an independent variable and is assigned a value of 1 for the participant companies and 0 for the others.

In order to infer the influence of CSI participation on the response variables proposed in this paper, following the proposals of Allayannis and Weston (2001) and Lo and Sheu (2007), it was necessary to exclude the effect of other variables which could impact the desired results. Thus the covariates, company size, industry and the year studied were adopted, and when their effects on the explanatory variables were controlled, they allowed for a more robust inference of the relationship analyzed here.

4. RESULTS AND DISCUSSION

Table 3 shows the summary of the econometric modeling using generalized estimating equations for financial and economic performance variables. Although some BOVESPA activity industries appeared to be statistically significant when compared to the reference industry, they are not reported because they are beyond the scope of this research.

The first hypothesis of this research investigated whether the companies listed in the CSI present a higher performance in terms of return on assets, as measured by ROA, in relation to other companies in the same industry which are not part of the index, with company size and temporal and industry effects controlled. The results presented in Model 1 indicate that the fact that the company is part of the CSI portfolio influences its profitability, as measured by ROA. More specifically, it was found that the ROA of companies which are not part of the CSI is approximately 1.19 lower than those in the index ($B = - 1.19$). Even though it considers a different profitability indicator, this result corroborates studies which report that increased profitability would be expected from companies adopting environmental, social and ethical practices (COWTON, 1994; TSOUTOURA, 2004; VILLALONGA, 2004; LO; SHEU, 2007; ARENDT; BRETTELL, 2010; LO; SHEU, 2010; GHOUL *et al.*, 2011; TEIXEIRA *et al.*, 2011; MACEDO *et al.*, 2012).

However, this corollary is not confirmed by research conducted by Bauer, Koedijk and Otten (2005) or Cummings (2000), who presented evidence that the relationship between corporate sustainability and the ROI of organizations is not statistically significant. Cummings (2000) argues that strong performances indicating higher returns could be long-term. Our research found that the superior performance in ROA occurs right in the very first year and is maintained with a slight improvement over time, as can be seen in Chart A, Figure 1. The more robust control of other intervening variables and the use of the control group in this research might have been responsible for detecting this effect.

The second hypothesis of this study investigated whether the companies listed in the CSI did not present a significant relationship in their degree of Financial Leverage over other companies in the same industry which are not part of the index, with company size and temporal and industrial effects controlled. The results in Model 2 indicate that this hypothesis is sustained, because the fact that the company is part of the CSI does not influence its degree of leverage. It is understood that investments in corporate sustainability neither increase nor decrease the capital structure financed through equity or government subsidies/benefits, as already shown by Teixeira *et al.*, (2011).

This is due to the fact that the preference of companies committed to corporate sustainability is reflected in the investment decisions of market agents. They believe that such companies are better able to sustain their competitive advantage and generate aggregate economic value in the long run, because they are better prepared to face economic, social and environmental risks (LINS; WAJNBERG, 2007; GHOU et al., 2011).

Table 3 – Econometric modeling using Generalized Estimating Equations (GEE)

Variables	Panel 1		Panel 2		Panel 3	
	Return on Assets		Financial Leverage		Tobin's Q	
	B	Stan dard Error	B	Stan dard Error	B	Stan dard Error
(Constant)	-201.08***	68.52	-104.58	135.19	-55.74**	29.00
CSI=control group	-1.19***	0.40	-0.05	0.14	-0.86***	0.33
CSI=experimental group	0 ^a	-	0 ^a	-	0 ^a	-
Industry=Food & Drink	0.04	0.15	-0.28**	0.15	-0.06	0.10
Industry=Trade	-0.78***	0.16	-0.16	0.17	-0.40***	0.06
Industry =Energy	-0.80***	0.18	-0.06**	0.05	-0.44	0.25
Industry =Pulp and Paper	0.01	0.10	-0.01	0.12	0.15	0.10
Industry =Chemical	0.28	0.16	-0.28	0.17	0.10	0.08
Industry =Steel & Metal	-0.50***	0.11	0.18**	0.09	-0.17***	0.04
Industry=Vehicles & parts	RI	RI	RI	RI	RI	RI
Year	0.10***	0.04	0.05	0.06	0.03**	0.01
Total Assets Log	-0.44***	0.10	-0.09	0.08	-0.21***	0.05
QIC	166.34		98.73		108.69	
R²	54.1%		38.9%		28.1%	

Source: Research data. ** p ≤ 0.05; *** p ≤ 0.01; RI: Reference industry.

The third and final hypothesis of this research investigated whether the companies listed in the CSI portfolio present a higher economic performance, as meas-

ured by Tobin's Q, relative to other companies in the same industry, which are not part of the portfolio. The results shown in Model 3 indicate that at a 1% significance level, companies not belonging to the CSI present an approximately 0.86 lower economic performance than those belonging to the portfolio, irrespective of company size, year or business industry ($B = -0.86$).

The results shown in Model 3 corroborate studies by Lo and Sheu (2007; 2010), who used panel data and Tobin's Q to analyze the impact of corporate sustainability on companies in the United States, and also a study by Rossi Jr. (2008), who used Tobin's Q to analyze the impact of social responsibility on the value of shares of companies listed in the CSI. These studies showed that corporate sustainability positively influences the value of the company as measured by Tobin's Q. This present research also found similar results, but demonstrates as well that it could be a sustainable competitive advantage as it generates better performance in terms of the company's market value when compared to its competitors and over a prolonged period, as can be seen in Chart B, Figure 1. This may possibly be due to investors' future expectations about the cash flow of sustainable enterprises and the signaling of higher growth prospects. These two facts together could contribute to enhancing company shares and, consequently, market value.

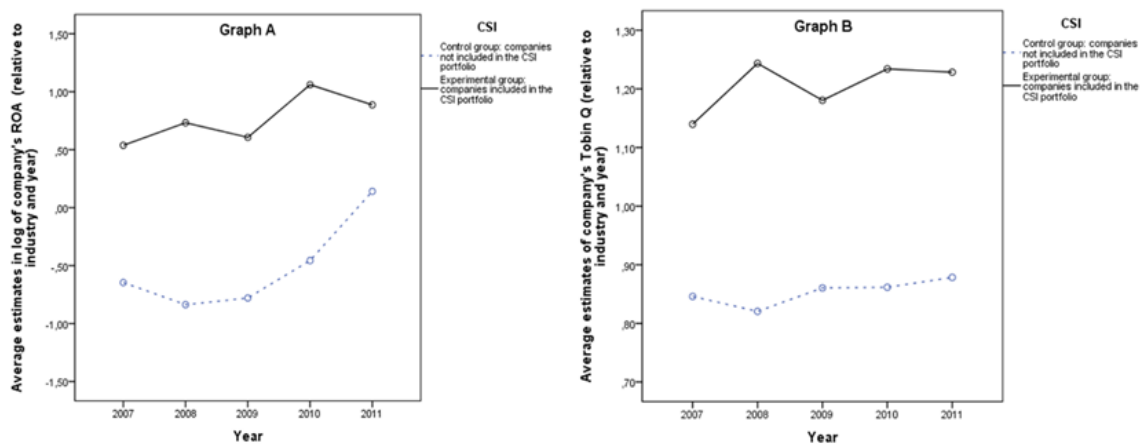


Figure 1 - Graphs of temporal impact of the Corporate Sustainability Index on financial performance (Chart A) and on economic performance (Chart B)

In summary, the results of this study showed that participation in the CSI portfolio impacts the return on assets. The economic indicator of market added value is higher for companies listed in the CSI, when compared to those that are not, irrespective of company size, time or industry. It therefore generates competitive advantage for companies. Graphs A and B also show that it generates sustainable effects, by remaining higher over time.

However, the CSI does not impact the degree of corporate leverage (third-party debt), that is, although the need for investment if practices related to corporate sustainability are to be adopted is recognized in the literature, it does not qualify as a determinant of organizational debt, which is in line with the findings of Teixeira *et al.* (2011). Thus, based on the RBV perspective structured by Barney (1991), it is believed that participation in the CSI portfolio could be considered a source of sustainable competitive advantage, as the RBV considers the attributes of companies as resources which could enable an organization to reach higher levels of performance in relation to other companies over time. The three models showed this aspect, as the leverage of companies is not significantly affected even if there is a need for high investments to adopt the corporate sustainability practices.

5. Concluding Remarks

Sustainable development is an ongoing process of reconciling economic growth with environmental well-being. In this sense, the corporate industry has sought a balance between what is feasible in economic terms and what is ecologically sustainable or socially and ethically desirable in order to gain sustainable competitive advantage (SILVA; QUELHAS, 2006).

The results of this research indicate that joining the group of companies listed in the CSI leads to an increase in profitability and company market value. Hence in order to join the CSI, organizations are encouraged to undertake certain sustainability initiatives, such as adopting policies or indicators of commitment in terms of economic, financial, and social and environmental issues; having program indicators, outcomes and monitoring of economic, financial, social and environmental aspects; monitoring their performance; fulfilling what is legally binding; assessing compliance to legislation on competition, the environment and the consumer code; adopting general criteria to question the company's position on global agreements; publishing social balance reports; adopting criteria for the nature of the product and finally adopting corporate governance criteria.

Development that reconciles economic efficiency with the social and ecological well-being is perceived by investors. This means that companies which are versed in these sustainable practices appear more competitive than their rivals and can take advantage of this situation. This has been shown in our study.

The limitations of this study include the reduced number of companies analyzed, and the fact that it did not use other indicators, such as Economic Value Added, Market Value Added, and Total Leverage, which would have increased the reliability of the results. Thus, for future research it is suggested that a specific model be set up

to verify the extent of the impact of corporate sustainability as a competitive strategy for better organizational performance.

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