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RETURN PREMIUMS OF SUSTAINABLE COMPANIES LISTED ON THE SPANISH STOCK MARKET

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Abstract

The purpose of this paper is to analyze whether companies with a greater commitment to corporate social responsibility (SRI companies) perform differently on the stock market compared to companies that disregard SRI.

Over recent years, this relationship has been taken up at both a theoretical and practical level, and has led to extensive scientific research of an empirical nature involving the examination of the relationships existing between the financial and social, environmental and corporate governance performance of a company and the relationship between SRI and investment decisions in the financial market. More specifically, this work provides empirical evidence for the Spanish market as to whether or not belonging to a group of companies the market classes as sustainable results in return premiums that set them apart from companies classed as conventional, and finds no differences in the stock market performance of companies considered to be SRI or conventional.

Keywords: Socially responsible investment; FTSE4GoodIbex; sustainability premium; stock market performance; discriminant analysis; cluster analysis.

1 - INTRODUCTION

According to the definition of the Social Investment Forum (SIF, 2009) socially responsible investing (SRI) is the process of investment that takes into account social, environmental and corporate governance impacts in a financial context and/or investment in the community and shareholder activism. This concept enables previously disregarded variables to be included in traditional financial models.

Ever since Moskowitz (1972) raised the issue of the profitability of the financial markets and their relationship with social corporate responsibility (SCR) indexes, research on this relationship has intensified and evolved, adapting and incorporating variables for measuring results and selecting investment. At theoretic level, Preston and O´Bannon (1997) define the different frameworks of the said relationship, pointing out that the nature of the same may be positive, negative or neutral. Among the opinions that support the existence of a negative relationship would be the classical investment theories that mirror the neo-classical argument of Friedman (1970) and Tirole (2001), who argue that in a competitive market a company that reduces its profits in order to meet multiple social goals may tend to weaken financially. Similarly, Baumol (1991) believes SCR is inviable in a competitive market because it means sacrificing profits. Shleifer (2004) goes even further and argues that the pressure of competition may push companies in the other direction, in other words, to behave unethically. But perhaps the most convincing argument is that of Renneboog *et al.* (2008), who understands that restricting the universe of "investable" companies by screening seriously limits the possibility of diversification, as it results in wasted investment opportunities.

These theses have been refuted by authors who argue that SCR generates value for the company, as in the case of the stakeholder theory (Freeman, 1984) or the positive synergies of Waddock and Graves (1997). From the stock market point of view, if the investor realizes there are companies that fail to respect the environment and make a negative contribution to society, a "disinvestment" effect will be produced from these companies toward other more respectful, socially responsible companies (Heinkel *et al.* 2001). Merton (1987) presents similar arguments and suggests that if fund managers

adopt negative screening, the pollutant companies will be present in fewer portfolios, which will reduce the opportunity of sharing the risk among the other investors. Reading these reflections leads us to think that the capital costs of these companies will increase due to the reduction in demand for investment portfolios, which will generate increased financing costs and a consequent reduction in profits. Ultimately converted into stock market prices, investors will demand a return premium from those shares not considered to be socially responsible (Galema *et al.* 2008).

Some studies include the time horizon as a key factor. Thus, they suggest that companies investing in SCR create more value in the long term for their shareholders although the market does not reflect this in the short term (Renneboog et al. 2008). In the same way, those companies that ignore SCR may destroy value for the shareholder in the long term due to the loss of reputation and the costs of bidding processes. In the opinion of Heal *et al.* (2005), SCR plays a vital role in anticipating and minimizing future conflicts between the company and society, thereby reducing future costs. Ultimately, socially responsible and anticipatory behaviour is more practical and less costly than adopting a reactive stance.

The importance of the stakeholder theory is stressed by Jensen (2001), who points out that the value of a company in the long term cannot be maximized if interest groups are ignored. The study conducted by Besley and Ghatak (2006) argues that companies that partake in SCR are the ones that maximize profit in a competitive market.

In the opinion of Allen *et al.* (2007) companies geared to their interest groups enjoy higher prices, which leads to an increase in value compared to those that are geared only to their shareholders. According to Adam and Shavit (2007), if all companies were publicly ranked in accordance with SRI index parameters, investments made to improve performance in the area of social responsibility would generate rewards in terms of image and reputation and would result in a consequent increase in profits.

Other works focus on the importance of the information supplied to the market and point out that companies implementing SCR transmit signs of quality and a healthy reputation (Fombrun and Shanley, 1990), inspire more trust and credibility in society (Fisman *et al.* 2006), and attract highly motivated personnel (Brekke and Niborg, 2005). All of which will contribute to an increase in the value of the company in the future.

One of the most noteworthy studies of empirical literature is that of Margolis and Walsh (2001), who analyzed 122 studies on the CSR-Financial performance relationship. According to these authors, the majority of the research suggests the existence of a positive or neutral relationship between social and financial performance. Nevertheless, a negative relationship appears in some of the studies, although it should be pointed out that the cause of this negative relationship is the impact certain negative activities (illegal corporate practices, drugs, tobacco, etc) have on the market.

More recently, work on the review of literature conducted by the consulting company Mercer (2007, 2009) on financial results of SRI continue to endorse the positive results revealed in previous reviews.

The quantitative analyses in relation to sustainability in the stock market may be grouped in accordance with their different approaches. Firstly, empirical works analyzing the short-term reaction of the financial markets to socially responsible/irresponsible activity by companies with the purpose of determining to what extent this activity serves to explain the existence of abnormal performance around the date certain activity is made public (Fernandez *et al*. 2009).

Secondly, we would include research dedicated to measuring the performance of ethical indexes or ethical collective investment institutions and comparing them to the performance of indexes or investment institutions that do not use ethical criteria in the selection of assets or generation of codes of conduct and techniques for drawing up ethical ratings and indexes (Fernandez and Matallín 2008).

Our work, which could be included in the first group of empirical works, attempts to provide empirical evidence as to whether or not when a company belongs to a group of companies the market considers to be sustainable companies it hasa return premium that sets tit apart from companies considered to be conventional in the Spanish stock market. Our results reveal that we cannot treat Spanish SRI companies as a homogeneous block, and we do not therefore have sufficient evidence to determine whether these companies achieve a (positive/negative) return premium in the Spanish stock market. Given that we cannot clearly separate them from conventional companies, we have no way of knowing if their stock market performance is better or worse.

This work is structured as follows: firstly we shall provide a description of the econometric data and techniques used, followed by a presentation of the results and a discussion on the conclusions reached from these results.

2. DATA AND METHODOLOGY

2.1. DATA

FTSE4Good is a stock market index of social responsibility, and as such is an indicator of the price behaviour of the most significant securities in the market, although in this case the market sector in question is that of companies considered to be SRI. It was created in July 2001 by FTSE in partnership with the Ethical Investment Research Service (EIRIS) and UNICEF (the United Nations Children´s Fund). The criteria for selecting companies are based on generally accepted international principles. Activities involving nuclear energy and the manufacture of cigarettes and arms have restricted their access, and their admission criteria include management of the environment and climate change, human and labor rights, labor standards in the supply chain and the reduction of bribery.

FTSE4GoodIbex has been published in Spain since 2008, belongs to the same family of indexes and is composed of listed Spanish companies that meet the selection criteria. This index was created under an agreement between the Spanish stock exchange (BME) and FTSE. As of 31 December 2009, the index was made up of 30 companies from the Spanish stock exchange, which are also part of the FTSE Spain All Cap Index. Table 1 shows the structure of the sample of firms used as the base for our analysis.

Table 1: Sample structure

Number of companies	**Ibex35**	**Ibex Medium**	**Ibex Small**	**Other**	**Total**
Conventional	12	-	-	-	12
ISR	23	4	2	1	30
Total	35	4	2	1	42
% on total number	**Ibex35**	**Ibex Medium**	**Ibex Small**	**Other**	**Total**
Conventional	29%	-	-	-	29%
ISR	55%	10%	5%	2%	72%
Total	83%	10%	5%	2%	100%

For the empirical analysis we have analyzed the daily prices of the companies listed on the Spanish stock market and that were included in a conventional (Ibex 35 and Ibex Medium) or sustainable (FTSE4Good Ibex) stock market index between 02/02/2008 and 31/12/2009. We worked with a total sample of 58 companies, 28 of which are classified as conventional and 30 as sustainable. For the purposes of this classification any company included in both stock market indexes was considered to be sustainable. Table 2 lists the sample firms and the index they belong to.

Price data was obtained from the Madrid stock exchange web page (www.bolsamadrid.es) and was adjusted by payment of dividends, capital increases and splits.

Table 2: Companies

Group I Conventional	Ticker	Index	Groupo II ISR (FTSE4GoodIbex)	Ticker	Index
ABERTIS	ABE	Ibex 35	ABENGOA	ABG	Ibex 35
ACCIONA	ANA	Ibex 35	ANTENA 3	BA3T	Ibex Medium
ACERINOX	ACX	Ibex 35	ARCELORMITTA	MTS	Ibex 35
ACS	ACS	Ibex 35	BA. PASTOR	PAS	Ibex Medium
ALMIRALL	ALM	Ibex Medium	BA. SABADELL	SAB	Ibex 35
AUX.FERROCAR	CAF	Ibex Medium	BA. SANTANDER	SAN	Ibex 35
BA. POPULAR	POP	Ibex 35	BANESTO	BTO	Ibex 35
B.A. VALENCIA	BVA	Ibex Medium	BANKINTER	BKT	Ibex 35
CEM.PORT.VAL	CPL	Ibex Medium	BBVA	BBVA	Ibex 35
COR.ALBA	ALB	Ibex Medium	BME	BME	Ibex 35
D.FELGUERA	MDF	Ibex Medium	CRITERIA	CRI	Ibex 35
EBRO PULEVA	EVA	Ibex 35	ENAGAS	ENG	Ibex 35
ENDESA	ELE	Ibex 35	FCC	FCC	Ibex 35
FAES FARMA	FAE	Ibex Medium	FERROVIAL	FER	Ibex 35
GRIFOLS	GRF	Ibex 35	FLUIDRA	FDR	Ibex Small
GR.C.OCCIDENTE	GCO	Ibex Medium	GAMESA	GAM	Ibex 35
IBERDROLA	BIBE	Ibex 35	GAS NATURAL	GAS	Ibex 35
INDRA A	IDR	Ibex 35	I. RENOVABLES	IBR	Ibex 35
JAZZTEL	JAZ	Ibex Medium	IBERIA	IBLA	Ibex 35
NH HOTELES	NHH	Ibex Medium	INDITEX	ITX	Ibex 35
SACYR VALLE.	SYV	Ibex 35	MAPFRE	MAP	Ibex 35
TEC. REUNIDAS	TRE	Ibex 35	OHL	OHL	Ibex 35
TUBACEX	TUB	Ibex Medium	PRISA	PRS	Ibex Small
TUBOS REUNIDOS	TGR	Ibex Medium	PROSEGUR	PSG	Ibex Medium
VIDRALA	VID	Ibex Medium	R.E.C.	REE	Ibex 35
VISCOFAN	VIS	Ibex Medium	REPSOL YPF	REP	Ibex 35
ZARDOYA OTIS	ZOT	Ibex Medium	SOL MELIA	SOL	Ibex Medium
ZELTIA	ZEL	Ibex Medium	SOS CORPORACIÓN	SOS	M.C.
			TELECINCO	BTL	Ibex 35
			TELEFONICA	TEF	Ibex 35

In accordance with the classical investment theory (Markowitz 1953) we found it convenient to use risk and return variables for the analysis. For such, the variables used for the companies´ stock market performance are return and standard deviation as a measure of risk. Daily return was obtaining using $R_t = \ln(p_t) - \ln(p_{t-1})$. Risk is calculated as the standard deviation of daily returns.

Table 3 shows the average annual returns and standard deviation for each group of companies, both conventional and sustainable. The table shows how the sustainable companies obtained lower returns for 2008 and greater returns for 2009 compared to the conventional companies. With regard to volatility, the sustainable companies recorded greater levels over the sample period.

Table 3: Return and Standard Deviation

Mean anual return	**2008**	**2009**
Conventional Companies	-51%	14%
ISR Companies	-64%	18%
Volatility anual	**2008**	**2009**
Conventional Companies	3.02%	2.11%
ISR Companies	3.10%	2.71%

2.2 METHODOLOGY

Our work strives to determine whether or not SRI companies have a return/risk performance statistically different to the performance of the conventional companies, reason for which we used two complementary approaches.

First of all we carried out a discriminant analysis, which is a multi-variant individual classification technique which presupposes the existence of two or more well-defined a priori groups (conventional and SRI companies) to describe the differences between these groups based on certain previously established variables. These have been defined as follows:

- Group 1 – Conventional Spanish companies included in Ibex35 and Ibex Medium, but not in FTSE4GoodIbex
- Group 2 – SRI companies; sustainable Spanish companies included in the FTSE4GoodIbex index.

We used the following as classifying variables:

- X_1: Average daily return of the series, obtained using $R_t = \ln(p_t) - \ln(p_{t-1})$.
- X_2: Risk, calculated as the standard deviation of the series of daily returns.

The discriminant analysis aims to discover linear functions of the classifying variables (return and risk of the companies) whose values separate or discriminate the two defined groups: conventional companies and SRI companies. These functions, known as discriminatory functions, are linear combinations of the original variables of the equation:

$$\mathbf{Y} = a_0 + a_1X_1 + a_2X_2 + \ldots + a_pX_p$$

where p is the number of explanatory variables (in our case p = 2) and the coefficients $\{a_0, a_1, \ldots, a_p\}$ are chosen in such a way that ensures maximum separation between the existing groups, in other words, the values with these discriminant Y functions in the two groups are the most different possible, but each one of the groups simultaneously has the least possible internal dispersion.

This work intends to use the discriminant analysis with *predictive* ends. This means that the discriminant **Y** function will be used to determine to which group (conventional or SRI companies) each of the companies analyzed belongs to, in accordance with their characteristics of return and risk. This "a posteriori" classification compares the classification with the "a priori" provided by the market, as we should not forget we have defined as SRI companies those included in FTSE4GoodIbex.

We are using the discriminant analysis to establish a priori the number of groups into which the sample should be divided. We have ultimately defined 2 groups, but an

alternative way of approaching the issue would be to conduct a cluster analysis. This technique enables us to classify the companies included in the study in several groups in accordance with their performance in terms of return/risk, but without imposing a priori any restrictions with regard to the number of existing groups.

Cluster analysis is a multi-variant statistical technique, the purpose of which is to divide a set of individuals into groups (clusters) in such a way that the profiles of the individuals of the same group are very similar among themselves (internal cohesion of the group) and those of the individuals from different clusters are distinct (external isolation of the group).

Our hierarchical cluster analysis uses Ward´s algorithm, where initially each case is a group and larger groups are gradually formed by merging groups close to each other until there is only one. Under this approach the researcher should halt the merger process when the groups are at a distance significantly greater than those merged previously. We continued to use the return/risk of the companies as relevant variables.

3. RESULTS

Due to the special economic and financial circumstances affecting the period under analysis (the Lehman brothers crash, the subprime mortgage crisis and subsequent slide into a widespread economic crisis), we have used distinct sub-divisions of the overall sample to carry out the empirical work. We were therefore able to determine up to what point the development of the financial events at Spanish and global level have influenced the results of the empirical analysis. Firstly, we used comprehensive annual data corresponding to the financial years 2008 and 2009; and secondly, we divided the periods into semesters (1S 2008, 2S 2008, 1S 2009 and 2S 2009).

Despite the different stages of development of the financial crisis, the results obtained from the different sub-periods analyzed are quite homogeneous.

3.1 DISCRIMINANT ANALYSIS

Panel A in table 4 presents the results of the discriminant analysis conducted with annual data. On comparing the original and the final classification groups it may be noted that there are numerous companies whose final classification does not coincide with their initial classification.

In fact, in the year 2008 only 67% of the companies listed under FTSE4GoodIbex would classify as SRI companies with regard to their performance in terms of return/risk, whilst this percentage drops to 53% in 2009. If we concentrate on the percentage of total coincidence, which takes into account the conventional companies that have been "correctly" classified and the SRI companies that have also been "correctly" classified, this percentage would be 64% for 2008 and 57% for 2009.

Panel B in Table 4 shows the six-monthly data. In this case variation is not only seen in the membership groups diagnosed. The total coincidence percentages vary between 57% and 60%, whilst the percentage of companies which are listed under FTSE4GoodIbex have been classified as SRI companies via the discriminant analysis only fluctuates between 47% in the 2nd semester of 2008 and 50% in the two semesters of 2009.

In light of these results it may be said that the explanatory variables selected (daily average return and risk) have not managed to successfully separate the group of companies. In other words, the SRI companies fail to perform homogeneously in terms of return/risk and it would not be correct to make statements of the type "the SRI companies present a better/worse financial performance than the conventional companies".

Table 4: Discriminant Analysis

Panel A: Annual Data

2008

Origin Group	Group Assigned by Discriminant Analysis	
	Conventional	ISR
Conventional	**58%**	42%
ISR	33%	**67%**
	Total Coincidence = 64%	

2009

Grupo Origen	Group Assigned by Discriminant Analysis	
	Conventional	Emp. ISR
Conventional	**67%**	33%
Emp. ISR	47%	**53%**
	Total Coincidence = 57%	

Panel B: Semestral Data

S1- 2008

Origin Group	Group Assigned by Discriminant Analysis	
	Conventional	ISR
Conventional	**58%**	42%
ISR	43%	**57%**
	Total Coincidence = 57%	

S2- 2008

Origin Group	Group Assigned by Discriminant Analysis	
	Conventional	ISR
Conventional	**58%**	42%
ISR	53%	**47%**
	Total Coincidence = 60%	

S1- 2009

Origin Group	Group Assigned by Discriminant Analysis	
	Conventional	ISR
Conventional	**75%**	25%
ISR	50%	**50%**
	Total Coincidence = 57%	

S2- 2009

Origin Group	Group Assigned by Discriminant Analysis	
	Conventional	ISR
Conventional	**83%**	17%
ISR	50%	**50%**
	Total Coincidence = 60%	

The results obtained from our discriminant analysis reveal that we cannot treat Spanish SRI companies as a homogeneous block, and we do not therefore have sufficient evidence to determine whether these companies achieve a (positive/negative) return premium in the Spanish stock market. Given that we cannot clearly separate them from conventional companies, we have no way of knowing if their stock market performance is better or worse. It should be explained that the period under analysis fully coincides

with the global financial and economic downturn, reason for which it should not be ruled out that the performance of the companies over this turbulent period was more influenced by the systemic character of the crisis than the individual characteristics of each company.

In order to assess the statistical significance of the discriminant functions obtained, we shall use Wilks´ lambda statistic, which measures the variance produced within each group in relation to the total variance irrespective of groups. Values close to 1 indicate a strong resemblance between the groups whilst values close to 0 indicate a big difference. In turn, Wilks´ lamba statistic enables us to contrast the null hypothesis that the centers of the groups are equal and there are no differences between the same.

Table 5: Lambda Wilks Statistics

	Lambda Wilks	P-Valor
Year 2008	0,961	0,46
Year 2009	0,913	0,17
S1 - 2008	0,945	0,33
S2 - 2008	0,998	0,97
S1 - 2009	0,924	0,21
S2 - 2009	0,885	0,09

Table 5 shows the results of Wilks lambda statistic and its p-value. The results are homogeneous for all the periods studied, meaning the statistic has no significance in any case. Perhaps it should be noted that in the second semester of 2009 the p-value is far lower than in the previous three semesters and it would be significant if we had worked at a significance level of 10%. This result would coincide with the figures detailed in the last panel of Table 4, which shows the results of the discriminant analysis for the same period (2nd semester of 2009). As can be seen, 83% of the conventional companies have been correctly classified via the discriminant analysis, whereas the level of classification for the sustainable companies stands at 50%. In general, the results obtained are similar to the previous ones, that is to say companies in FTSE4GoodIbex do not perform differently to the remainder of the companies analyzed.

3.2 CLUSTER ANALYSIS

In the first part of this study we "forced" companies to separate into two groups and contrasted empirically that in reality the companies from these groups do not perform homogeneously in terms of return/risk, but another way of approaching the study is to "allow" companies to be grouped without determining a priori the number of groups nor the group a certain company belongs to. We were therefore able to ensure the results obtained are not distorted by a restriction which perhaps fails to reflect the stock market performance of the companies analyzed.

Table 6: Cluster Analysis

Panel A: Annual Data

2008

	Conventional	ISR
Group 1	14	19
Group 2	6	5
Group 3	8	6

2009

	Conventional	ISR
Group 1	19	17
Group 2	9	12
Group 3	0	1

Panel B: Semestral Data

S1- 2008

	Conventional	ISR
Group 1	16	17
Group 2	12	13

S2- 2008

	Conventional	ISR
Group 1	24	26
Group 2	4	4

S1- 2009

	Conventional	ISR
Group 2	16	13
Group 3	5	8
Group 1	6	6
Group 4	1	2
Group 5	0	1

S2- 2009

	Conventional	ISR
Group 1	19	18
Group 2	6	3
Group 3	3	2
Group 4	0	7

Table 6 is a summary of the results obtained from the cluster analysis. Panel A shows the results obtained using annual data. 3 groups were formed in the year 2008 and all three included both conventional and SRI companies. 2009 was similar, although there were only 2 groups plus a third with a single member which performed as an outsider. In general one can see an absence of standard performance in relation to both conventional and SRI companies, as these or the others companies blend into the clusters in a discreet manner.

Panel B in Table 6 shows the results of the cluster analysis using six-monthly data. The first thing that draws our attention is that the number of clusters is not repeated. Thus, there are two clusters for the first and second semesters of 2008, whilst there are three for the annual data of 2008. Exactly the opposite happens in 2009, where there are 4 clusters for each semester and 2 using annual data, plus an outsider for the first semester only. Nevertheless, the heterogeneity of the distribution of conventional and SRI companies within each cluster is maintained, and in many cases the two types of company are split almost equally.

4. CONCLUSIONS

The main purpose of this work has been to analyze if companies with a greater commitment to socially responsible investment perform differently to conventional companies on the stock market.

At a theoretical level, the debate that began with Moskowitz (1972) on the influence the socially responsible performance of a company has on its stock market returns is still open. This issue, which has been raised at both theoretical and practical levels, has led to extensive research on the relationship between SRI and traditional investment decisions in the financial markets.

In this sense, our work provides empirical evidence for the Spanish market as to whether or not belonging to a group of companies the market classes as sustainable

results in return premiums that set them apart from companies classed as conventional. We have therefore defined as sustainable companies all those listed under the FTSE4GoodIbex index, whilst conventional companies are those that are listed under Ibex35 but are not considered to be sustainable.

We used discriminant analysis and cluster analysis to analyze the existence of significant performance in terms of return and risk between these two groups of companies, using daily average return and standard deviation as classifying variables. The period under analysis (2008 and 2009) fully coincides with the development of the global financial and economic crisis that is still in evidence to this date.

The results taken as a whole do not reveal differences in the stock market performance of the companies with regard to their being included or not in the FTSEGoodIbex sustainability index. In fact, we have not found a significant link between the average daily return of sample shares listed on the Spanish market and the standard deviation of the return that enable us to classify conventional and sustainable companies in different groups.

The six-monthly results reveal more variability, but these should be special characteristics of the period chosen for the empirical research, which coincided fully with the outbreak of the stock market crisis in September 2008 after the collapse of the Lehman brothers.

The results obtained from our discriminant and cluster analysis reveal we cannot treat SRI companies as a homogeneous block, and we do not therefore have sufficient evidence to determine whether these companies achieve a (positive/negative) return premium in the Spanish stock market. Given that we cannot clearly separate them from conventional companies, we have no way of knowing if their stock market performance is better or worse.

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