DO INVESTORS REACT TO ENVIRONMENTAL FRIENDLY NEWS? AN ANALYSIS FOR SPANISH CAPITAL MARKET*

*Francisco J. Callado-Muñoz**, Natalia Utrero-González****

Abstract

This work adds to the recent debate in corporate social responsibility (CSR) and its effects on performance and firm value. By analysing Spanish companies participating in the IBEX-35 stock-exchange index, this paper empirically tests whether there is a significant price reaction to environmental friendly announcements. Using event studies methodology, the distinction among sectors allows for a better understanding of investors reaction. Results show first, that investors do act in response to this kind of practices and second, that the sign of their reaction depends crucially on the business of the firm and the sector where it operates. In this sense, results may help in reconciling the opposite views regarding the effects of CSR policies.

Keywords: Corporate social responsibility, event studies.

1. Introduction

In recent years firms have greatly increased the amount of resources devoted to corporate social responsibility (CSR) activities. CSR may be defined as actions on the part of a firm that appear to advance the promotion of some collective good, such as social and environmental preoccupations, beyond the immediate interests of the firm/shareholders and beyond legal requirements (McWilliams and Siegel (2001)). There are diverse reasons for the demand of increased CSR, from corporate scandals, such as Enron and Worldcom, to an increased concern expressed in many countries that globalization will lead to new corporate practices that will ignore important environmental and social issues. However, firm ultimate interests to introduce CSR practices are less clear cut.

Traditional economic theory claims that firms should only care about profit maximization. Any departure from this objective would only distort the optimal allocation of resources. According to these theoretical propositions, optimal resource allocation would maximise the social welfare relative to the initial endowment. Therefore, any intervention meant to improve the wellbeing of society would end up by reducing social welfare. However, investments that allow recognised environmental certification (ISO 14000 or EMAS) are increasingly becoming a *sine qua non* for firms seeking to export to countries with stricter environmental laws, such as Germany and other northern European countries. Firms are becoming aware that being at the forefront in the CSR field give them a decisive competitive advantage in business operations. Therefore, in a society that emphasises the wellbeing of multiple stakeholders, management may be expected to maximise social welfare. This social welfare defined by the sum of the various stakeholders' surpluses and not just the maximisation of shareholders' profits or executives' benefits, Freeman et al. (2006). The question is what effects have CSR activities on shareholders' wealth.

According to the stakeholder theory (Jones, 1995; Donaldson and Preston, 1995), corporate social responsibility (*CSR*) is seen as a mechanism to achieve greater financial performance. By behaving in a responsible way, firms obtain the continued support from their stakeholders. A support that is necessary to have access to valuable resources that secure the long-term survival and success of the firm (Freeman, 1984). Therefore, it is important that there exists a previous social demand or acceptance of CSR activities. In this case, despite the costs induced by CSR activities, profits may be positively affected if CSR are considered either altruistic or profit maximizing initiatives.

Following the debate on the effects of CSR announcements, this paper intends to assess to what extent and on what conditions, this kind of announcements made by Spanish corporations may give a positive signal to stock markets. In particular, the stock price reaction of companies from different sectors that form IBEX-35 stock index of the Spanish market is investigated using "event studies"

methodology. For that, different announcements and communications about environmental issues are identified. The distinction among sectors allows for a better understanding of investors reaction to CSR practices and may help in reconciling the two opposed views previously discussed.

The work structure is as follows. Section 2 discusses the CSR concept and reviews briefly previous literature. Section 3 presents the data and the methodology used. The results are exposed in section 4 and finally section 5 concludes.

2. Corporate social responsibility and literature review

As it has been highlighted in the introductory section, CSR is a very broad concept. Features included go from employee welfare, community programs or transparency to good corporate governance practices and environmental protection or charitable donations. CSR practices can be divided between those of internal sphere, that affect more directly firm operational decisions, and those related to the external dimension, that refer to suppliers, clients and impact in the society, Hillman and Keim (2001). Due to the multidimensionality of the concept, it is usually difficult to measure the results and consequences of CSR policies. These practices have effects inside the organization, but many of them have observable results only in the long term. In addition, it does not exist a certificate similar to the one of quality that could serve as a signal for the market. This fact has caused that CSR is sometimes considered a collection of specific practices or occasional initiatives motivated by public relations or other marketing benefits for the company.

With respect to previous literature, the interest on CSR activities dated back from the seventies. Basically there are two opposite positions. On the one hand, stakeholder theory suggests that taking into account the interest of stakeholder groups, that is behaving responsibly, creates value. Therefore, obtaining positive CSR results has a positive impact on stakeholder relationship and therefore on long run firm profitability (Freeman, 1984). Accordingly, Small and Graff Zivin (2005) show that the application of CSR policies is suggested to have a positive market valuation. On the contrary, economic theorists neglect the link between social responsibility and profit maximising or simply claim that CSR will encounter higher costs and difficulties. The former are represented by Friedman (1970) who claim that CSR activities such as providing amenities to a community or improving environmental issues should not be called social responsibility since these actions are entirely justified in the corporation self-interest. Hellwig (2000) among others represents the latter authors that, consider that companies would undergo a punishment because CSR practices that imply resources' distortion, are negative for the firm.

In the same line, Tirole (2001) argues that putting in place managerial incentives and control structures that implement the stakeholder society concept may be very costly because it can increase agency costs. Similarly, Jensen (2001) highlights that stakeholder theory offers a multiple value objective function while purposeful corporate behaviour requires a single value objective function. Accordingly, Sundaram and Inkpen (2004) highlight the difficulty to determine who the relevant stakeholders are and whose values should be taken into account in manager decision making.

Recent theoretical developments on particular policies, do not obtain clear conclusions either. Pagano and Volpin (2005) described how firms use concessions to workers – a particular dimension of a firm's *CSR* – as an entrenchment mechanism to prevent take-over threats. Barnea and Rubin (2005) argued that improvements in *CSR* can be connected to expropriation of small shareholders by large blockholders which, in turn, reduce financial results.

Related to environmental policies, traditional economists understand that environmental rules and investments impose private costs on industries. Two main reasons justify this thesis. First, firms are required to allocate resources to pollution reduction, which may be unproductive from a business perspective or delay more productive investments. Second, environmental investments may increase costs and reduce production efficiency. Porter (1991) and Porter and van der Linde (1995) challenged this traditional view. They state that environmentally friendly practices lead not only to social benefits, but may, very often, also result in private benefits for companies. Ambec and Barla (2002) who formalised what is now referred as the Porter hypothesis, show that environmental practices reduce agency costs. Cespa and Cestone (2002) show that this is the case even when polluting technologies are more profitable, because small shareholders will be willing to support better practices to prevent inefficient agreements with managers. Further, they emphasise the importance of society awareness to implement non polluting policies[57]. Some papers suggest that, higher empirical environmental performance may be an indication for investors of good management although it may be also signal lower than expected costs. In contrast, poor environmental results are bad news for investors as they anticipate increased future liability costs and intensifying regulator scrutiny. This is especially true for polluting intense and more regulated firms. This debate suggests that investors' reaction to environmental announcements may be affected by the nature and technology of the economic sector where the firm operates. The above debate shows that the expected effect of environmental policies and other CSR practices is not obvious *ex ante*.

---

[57] Recent empirical evidence suggests that green labels appear to have had some impact either through higher prices or market share, Ambec and Barla (2005).

Empirical works are not conclusive either. Some find a positive relationship (Posnikoff (1997), Mahoney and Roberts (2002), Gupta and Goldar (2004) and Chen (2004)) and some others a negative or not significant impact of CSR practices (Wright and Ferris (1997) and Teoh et al. (1999)). A growing empirical literature examines the relationships between firm's environmental and financial performance. Works on environmental issues obtain different results as well, although they usually show that bad (good) unexpected news about a firm's environmental performance result in significant negative (positive) abnormal returns. The first work on the effects of environmental management on firm performance is the one from Klassen and McLaughlin (1996). They focus on the impact of the environmental policies in stock price. Using "event study" methodology, they find that good news measured as environmental performance awards provide a positive and significant abnormal yield and that the market reacts negatively to the bad news, measured as environmental crisis. Becchetti et al. (2005) study the impact of social responsibility index inclusion, with environmental content, on corporate performance. They find lower return on equity for index inclusion but at the same time negative effects if excluded from the index.

With respect to the Spanish markets, results are not concluding either. Giner (1992) claims that environmental information is positively valued, whereas Verona and Déniz (2001) conclude that this positive relationship is weak. Fernández et al. (2005), however, do not find any significant relationship between CSR, including environmental policies, and stock price, but they use a small sample of Spanish firms (7 companies). We, instead, use all the companies participating in the IBEX-35 index for a three year period (2003-2005) and analyse environmental news as well as sustainability index inclusion. Further, the period analysed coincides with the increasing public interest in environmental issues and climate change (Ecodes (2003)). This is especially important since the existence of a social demand is said to be a necessary condition to implement responsible practices. Moreover, we classify firms using Spanish market sector classification in order to evaluate whether reactions are associated to more (or less) intense polluting sectors announcements. Therefore, this paper contributes to the literature analysing the environmental aspect of CSR and investigating the most important firms in the Spanish market.

3. Data and methodology

The reaction of the stock price for companies that belong to IBEX 35 to environmental announcements is studied for the period 2003-2005. As environmental announcements, we consider news relative to sustainable index inclusion or exclusion and news on environmental investments, such as reducing pollution plant building or R&D pollution reduction efforts. In order to identify this type of announcements we have analysed different sources. First of all, the CNMV[58] data base, to have information about relevant actions taken by firms related to investments and the environment. Second, the annual reports on CSR and on financial statements. Third, the Lexis-Nexis data base that collects all company articles published in the main economic newspapers. When the same announcement is found in more than one source, we use the date of the first published.

Once analysed the potential environmental announcements, we can distinguish three kind of news that reveal different degree of commitment. First, the promotion of environmentally friendly practices through the sponsoring of conferences and university initiatives. Second, the active participation in R&D projects associated to research centres or universities and third, investment in green technologies.

Further, we have information about three sustainable indexes participation. One is the FTSE4GOOD that incorporates CSR criteria for the selection of the constituent companies. On the one hand, the index excludes the companies that develop activities in certain sectors; on the other, it includes the companies that show sufficient observance of environmental sustainability, human rights and transparency in the relations with stakeholders. Actually, to be accepted to this index, companies should count on formal environmental instruments. The commitment of the firm is evaluated through an independent rating. A second index considered is the Dow Jones STOXX Sustainability Index. This index composition accurately represents the top 20% of the leading sustainability companies in each of the Dow Jones Sustainability Indexes. Its composition is also based on independent valuation of different CSR criteria. Again, as in the case of FTSE4GOOD, the environmental aspect of firm management and performance is one of the important aspects analysed in constructing the index.

Finally, the third index considered is the ASPI Eurozone index which selects the 120 best rated companies in the Eurozone on the basis of Vigeo[59]'s CSR ratings. This index is committed to the promotion of the increasingly accepted "triple bottom

---

[58] Comisión Nacional del Mercado de Valores is the nacional authority analogous to U. S. SEC.

[59] Vigeo is a European CSR independent rating agency. Vigeo presents a tripartite shareholding structure consisting of institutional investors, European trade unions and European companies of worldwide scope. It was created in 2002 to promote CSR reliable company ratings meeting the needs of investors and of company directors. These ratings are based on the principles and objectives formulated by internationally recognised conventions, recommendations and codes of conduct (UN, ILO, OECD...), while taking into account local and regional legislation and industry-specific agreements.

line" definition of corporate sustainability whereby social, environmental and financial performance are seen as equal and interdependent to the promotion of long term shareholder value. Contrary to FTSE4GOOD, the ASPI eurozone index do not seek to exclude any company as a result of its involvement in any specific activity. However, the nature and management of any existing or potential risks associated with such involvement will play an important role in Vigeo's rating of such a company.

In general terms more than 95% of the announcements found can be considered positive news, in the sense that there is news on the introduction of environmentally friendly practises and the inclusion and maintenance in sustainability indexes. The news that can be considered as negative is associated to the functioning of the European Market for CO_2 emissions (from January 2005) and affect to the electricity sector, in particular to one company. Due to lack of this type of observations, we decide to restrict the analysis to positive announcements[60].

The firms considered form part of the IBEX 35 index that collects the 35th most traded stocks. These belong to different industrial sectors. There are stocks from energy firms, which are very regulated and present polluting technology, as well as firms belonging to other sectors such as finance, real state, consumer goods etc. Following the theoretical debate, those polluting intensive sectors may be more affected by future legal restrictions and therefore current announcement may present more intense investor reactions. Using Spanish market stock classification, we distinguish four main groups: consumer goods and services, petrol and power, real state and financing services and basic industry and construction.

Some filters have been applied in order to isolate the events of interest. In particular, when events coincide in time[61] with other relevant events, such as dividends, stock options plans or takeover announcements, they are taken out of the sample. The final sample presents 102 events. Table 1 presents a summary of the announcements analyzed per economic sector.

3.1. Methodology

The method used to analyse the reaction to environmental practices is "event studies". This methodology has been successfully implemented previously to study market reaction to quality awards (Hendricks and Singhal, 1996), auditing reports (Pucheta et al. 2004) or splits (Gomez Sala, 2001) among others. With this type of methodology the

semi-strong hypothesis of efficiency of the market of capitals is assumed. That is to say, new public information is continually assessed, valued and reflected in the stock price. Thus, the publicly traded share price includes current and expected firm financial performance.

The first step is to define the event that is analysed. Once defined the event, the effect that each event has in the stock price has to be calculated. For it, we proceed in two stages:

First: Estimation of "normal" expected return for each stock[62]. This expected return is obtained by means of a valuation model. In this case, similar to previous studies with this methodology (see Klassen and McLaughlin 2001), we use the market model, CAPM that seems most appropriate. This model relates the return of a certain stock to the market return.

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \qquad (1)$$

Where R_{it}, is the return of stock i at time t, R_{mt}, is market return at time t, ε_{it}, is the residual term of stock i at time t and α_i, β_i are the parameters. The return variables are expressed in logarithms and R_{it} includes dividend payout. As Market index, two indexes are considered: the IGBM and the IBEX-35 index[63]. The calculation of the expected return is made within the period that goes from 170 days to 20 days before the event. This period is known as estimation window (-170, -20). Therefore, we take into account a long period previous to the announcement (151 days). Since the estimation period ends 20 days before the event date, the risk that the estimated returns are affected by information about the event is minimised.

Second: Calculation of the abnormal outcome caused by the event. The abnormal return is defined as the difference between the actual and predicted return during the event window. The calculations are made for different event window lengths around the announcement day, since it has been indicated that results can be sensible to the event window.

$$AR_{it} = R_{it} - E(R_{it}) \qquad (2)$$

In particular, we consider *t* days around the event date where *t* = (-7, 7). This period has been chosen taking into account previous papers. Once AR_{it} are estimated the average *AR* for each day of the event day is computed:

---

[60] The enlargement of the sample to include year 2006 and inclusion of this kind of events subject to data availability are part of future research.

[61] When other events are present during the event window, the environmental event is also not considered for the final sample.

[62] This return is obtained dividend adjusted. Furthermore, it has been eliminated all events that coincides (or during its event window) with other information that can affect stock prices such as merger announcements, dividends pay-out and the like.

[63] Both indexes are computed by Madrid Stock exchange. None has a fixed composition, on the contrary there is a regular revision and only the stocks that comply with certain requirements. IGBM includes more than 120 stocks while IBEX-35 includes the 35 stocks with highest trading volume. The correlation among them is very high (0.96).

$$AR_t = \frac{1}{N} \sum_{i=1}^{N} AR_{it} \qquad (3)$$

Further, we compute cumulative abnormal returns for different sub-periods in the pre and post announcement date:

$$CAR_t = \sum_{t=\tau_1}^{\tau_2} AR_t \qquad (4)$$

However, abnormal returns estimated through OLS could be biased due to persistent volatility of daily returns. *GARCH* approximation proposed by Engle and Bollerslev (1986) allow the correct treatment of this volatility persistence. In particular, following Bollerslev et al (1994) the market model has been corrected through a GARCH (1, 1) in order to control the conditional heteroskedasticity of financial returns. Therefore, the variance of each stock is modelled as:

$$\sigma^2_t = \omega + \delta \varepsilon^2_{t-1} + \phi \sigma^2_{t-1} \qquad (5)$$

A second problem associated to financial assets is infrequent trading. However, since the stocks of our sample present the highest trading volume in the Spanish market, we do not consider this is a serious concern.

Once estimated *AR* and *CAR* through OLS and GARCH (1, 1), we contrast whether they are statistically significantly different from zero and which sign they present. This allows to determine if environmental CSR policies are valued by investors and if they are valued positive or negatively by the market. In particular, we present a parametric test (*t-student*)[64].

4. Results

Results for *AR* and *CAR* for index participation and environmental news (using information from table 1) appear respectively in table 2 and 3. Panel A and B collect the results when the market model is estimated through OLS and GARCH (1, 1) respectively.

With respect to the analysis of index inclusion, table 2 shows the *AR* from the estimation together with the corresponding test. In table 2.1 the IBEX35 index is introduced as proxy for the market return. Table 2.2 introduces IGBM instead. Results are qualitatively similar, therefore are robust to the use of different proxies for market return.

Results suggest that the communication of the inclusion or maintenance in a sustainability index has different effects depending on the sector analysed. Consumer goods and services' sector present a positive and significant *AR*, while petrol and industrial sectors present significantly negative *AR*.

---

[64] We have used a nonparametric test (rank test, *normally distributed*) as well and results mainly replicate significant levels found with the *t-test*. Results are not shown for brevity but are available from the authors upon request.

Finance sector returns are not affected by index inclusion. In particular, the consumer sector shows a significant positive *AR* five days before and two days after the event day (t=0). The average abnormal return in day -5 is 0.48% and 0.47% when OLS and GARCH (1, 1) are used to estimate the market model respectively. However, in day t=0 the value of t statistic is not significant, therefore the day when the event is known there are not abnormal returns, that is, the expected effects of sustainability index inclusion announcements are already discounted at the day of the event. At the bottom of the table, some *CARs* for different windows are computed. *CARs* for the periods (-7, +7) and (0, +7) for the consumer sector are positive and significant for the OLS model. For the GARCH (1, 1), *CARs* are positive as well, but weakly significant. This positive sign imply that investors react favourably to the communication of index inclusion or maintenance. On the contrary, petrol and industrial sectors present negative significant *AR* for six and two days before the event day respectively. Further, for the period (-7, +7) present negative significant *CARs* in both cases. Again, there are not significant *ARs* around the date of the announcement. Further, financial and real state sector do not present significant *AR* or *CAR* in the days and period analysed. Therefore, the same kind of announcement presents different reactions for different sectors. Those more polluting intense sectors such as petrol and industry are penalised by investors, while consumer goods' investors are willing to pay a mark up for *green* stocks. Additionally, consumer goods' investors value positively the external auditing provided by consulting firms and institutions elaborating sustainability indexes. The negative *AR* of petrol and industry sectors may imply that this external evaluation is not enough to value CSR initiatives.

Table 3 presents results for environmentally friendly news. Table 3.1 and 3.2 collect the results for IBEX 35 and IGBM respectively. Results differ from those just commented for sustainability index inclusion in three dimensions. First of all, investors react less significantly to announcements related to environmental friendly news with independence of the sectors which they are investing in. Second, results for IGMB present weaker significance levels (table 3.2). Third, more polluting sectors present positive *AR*, while less polluting sectors show negative *AR*. In particular, consumer goods' sectors present a negative significant *AR* four days before the announcement day. Petrol and industry sectors show positive significant *AR* five and seven days before the event days. In this case, the days around the communication of the event do not present positive or negative significant *AR* and none of the period analysed before or after the event present significant *CARs*.

Looking at results for sustainability indexes and environmental practices altogether, there are some interesting insights. Investors of more polluting

sectors react negatively to index participation and positively to environmental initiatives. Hence, investors are more concerned about practices that may have potential direct benefits to firms, such as R&D investments and collaborations than actions that only pursuit to be accepted in sustainability indexes. Sustainability indexes, as CSR, are multidimensional and evaluate different issues before accepting a firm to form part of the index. Therefore, investors may consider investments that comply with these indexes to distort firm resources, especially to those firms operating with polluting technologies and prefer investments with clearer impact on firms' functioning. Similar results are found by Becchetti et al. (2005) when introducing industry controls for a sample of American firms.

This evidence is reversed when we consider less polluting sectors. In this case, investors value positively sustainability index inclusion. A possible interpretation is that in these sectors investors are less worried by polluting reduction initiatives, since they are not controlled for and are less important in these sectors. On the contrary, sustainability index inclusion acts as a positive signal for the market. This could mean that investors look at CSR practices from a broader perspective that is precisely the usual purpose and aim of these indexes.

5. Conclusion

In this work we analyse the incorporation of environmental CSR measures by Spanish quoted companies during the period 2003-2005 and its effects in the stock price. For it, the date of environmental announcements has been identified and the simple abnormal yields have been calculated. With the information compiled, we can distinguish the effects of these policies controlling for both the different sectors where firms operate and the different kinds of announcements made. This analysis helps to have a better understanding of the consequences of environmental CSR practices and disentangle previous contradictory evidence.

Results show that the set of environmental CSR practices is valued by shareholders and that this valuation clearly depends both on the firm sector and on the type of news. Reaction of market prices is negative for less polluting sectors, such as consumer goods and services, when announcements have to do with environmental practices. The same occurs for more polluting sectors, such as power and petrol, when the index inclusion is analysed. This result is in agreement with the funds diversion thinking (Hellwig, 2000). However, index inclusion and environmentally friendly news are positively valued by investors of less polluting and more polluting sectors respectively. This result could be more in line with the view of the stakeholder theory (Freeman, 1984) or better with the reverse of the funds diversion argument.

These mixed results offer some interesting insights. On the one hand, more polluting firm

investors are more concerned about practices that may have future benefits to firms, such as development of green or cost reducing technologies. On the other, shareholders consider investments that comply with sustainability indexes to distort firm resources, especially to those firms operating with polluting technologies and prefer investments with clearer impact on firms' functioning. On the contrary, investors from less polluting companies are less worried by polluting reduction investments, since they are not legally regulated and therefore they do not expect to face strict restrictions. Index inclusion, actually, acts as a positive signal to the market of firm awareness for social responsible actions from a broad perspective. This is precisely the usual purpose and aim of these indexes.

Therefore, results of this analysis suggest that investors and consumers do not view environmental CSR practices as a whole but react differently to alternative firm policies. Capital market investors stress and value the more relevant aspects of each company commitment with CSR (taking into account the sector in which it operates) and refuse complementary and perhaps less important practices that could mean a diversion of firm resources. In a way, they reconcile the two opposed views of the effects of CSR policies previously discussed.

References

1. Ambec, S. and P. Barla (2002) "A theoretical foundation of the Porter Hypothesis", *Economics Letters*, 75(3): 355-360
2. Ambec, S. and P. Barla (2005) "Can Environmental Regulations be Good for Business? An Assessment of the Porter Hypothesis", GREEN, cahier de recherché 05-05.
3. Barnea, A. and A. Rubin (2005) "Corporate social responsibility as a conflict between owners", Mimeo.
4. Becchetti L., S. Di Giacomo and D. Pinnacchio (2005) "The Impact on Productivity and Efficiency of US Listed Companies" Departmental Working Papers 210, Tor Vergata University, CEIS.
5. Bollerslev, T., R. Engle and D. Nelson (1994) "ARCH models" in Engle R. and McFadden, D. (ed.) *Handbook of econometrics*, volume 4, chapter 49.
6. Cespa, G. and G. Cestone. (2002) "Stakeholder activism, managerial entrenchment, and the congruent of interest between shareholders and stakeholders", UPF WP.
7. Chen, Y. (2004) "Valuation of voting scheme changes", *Journal of corporate ownership and control,* 4.
8. CSR Europe. (2003) *Equipping Europe for CSR and sustainable development*, Brussels, CSR.
9. Donaldson, T.L. and L.E. Preston (1995) "The stakeholder theory of the corporation: concepts, evidence, and implications", *Academy of Management Review*, 20, 65-91.
10. Engle, R. and T. Bollerslev (1986) "Modelling the persistence of conditional variances", *Econometric Review* 5.
11. Fernández, M. A., V. Arago, J.C. Matallin and L. Nieto (2005) "¿Reaccionan los inversores del Mercado

bursátil español ante las noticias de responsabilidad social de las empresas?. AEFIN Foro de Finanzas.

12. Freeman, E. (1984) *Strategic Management: A Stakeholder Approach*. Boston, MA: Pitman.

13. Freeman, R. E., A. Wicks and B. Parmar (2006) "Stakeholder theory as a basis for capitalism", For presentation to the International Economics Association Conference, Trento, Italy.

14. Friedman, M. (1970) "The Social responsibility of business is to increase its profits", *New York Times Magazine*, 13, 32-33.

15. Fundación Ecología y desarrollo (2003) *Anuario sobre responsabilidad social corporative en España*, Zaragoza, Fundación Ecología y desarrollo.

16. Giner, B. (1992) "Contabilidad y medio ambiente". IV Congreso Nacional de Economía. Memoria Ponencias y Comunicaciones, Sevilla, pg. 664-668.

17. Gomez Sala, J. C. (2001) "Rentabilidad y liquidez alrededor de la fecha de desdoblamiento de las acciones", *Investigaciones económicas*, 25(1): 171-202.

18. Gupta, S. and B. Goldar (2003) "Do stock markets penalise environment-unfriendly behaviour?. Evidence from India. WP 116. Centre for Development economics. Delhi School of Economics.

19. Hellwig, M. (2001) "On the economics and politics of corporate finance and corporate control" en X. Vives (ed.), *Corporate governance: theoretical and empirical perspectives*, Cambridge, Cambridge University Press.

20. Hendricks, K. and V. R. Singhal (1996) "Quality awards and the market value of the firm: an empirical investigation", *Management Science*, 42: 415-436

21. Hillman, A. and G. Keim (2001) "Shareholder value, stakeholder management, and social issues: what is the bottom line?", *Strategic Management journal* 22: 125-139

22. Jensen, M.C. (2001) "Value maximization, stakeholder theory, and the corporate objective function", *Journal of Applied Corporate Finance*, 14, 8-21.

23. Jones, T.M. (1995) "Instrumental stakeholder theory: A synthesis of ethics and economics", *Academy of Management Review*, 20, 404-437.

24. Klassen, R. and C. McLaughlin (1996) "The Impact of Environmental Management on Firm Performance", *Management Science* 42, 1199–1214.

25. Mahoney, L. and R. Roberts (2002) "Corporate social and environmental performance and their relation to financial performance and institutional ownership: empirical evidence on Canadian firms", School of Accounting University of Central Florida. (http://accounting.rutgers.edu)

26. McWilliams, A and D. Siegel (2001) "Corporate social responsibility: a theory of the firm perspective", *Academy of Management Review* 26(1), 117–127.

27. OCDE (2001) *Responsabilité des enterprises : iniciatives priveés et objectifs publics,* Paris, OCDE

28. OIT (2004) *A fair globalization: creating opportunities for all.* www.oit.org

29. Pagano, M. and P. Volpin (2005) "Managers, workers, and corporate control", *The Journal of Finance*, 60, 841-868.

30. Porter, M. (1991) "American's Green Strategy", *Scientific American*, 264, 168.

31. Porter, M and C. van der Linde (1995) "Towards a New Conception of the Environmental-Competitiveness Relationship", *Journal of Economic Perspectives* 9, 97-118.

32. Posnikoff, J.F. (1997) "Disinvestment from South Africa: They did well by doing good", *Contemporary Economic Policy* (15), 76-86.

33. Pucheta, M., A. Vico and M.A. García (2004) "Reactions of the Spanish capital market to qualified audit reports", *European Accounting Review*, Vol. 13, No. 4

34. Sacconi, L. (2004) "Corporate social responsibility (CSR) as a model of "extended" corporate governance. An explanation based on the economic theories of social contract, reputation and reciprocal conformism", *Liuc Papers n. 142, Serie Etica, Diritto e Economia*, 10: 1-48

35. Shleifer, A. and R. Vishny (1997) "Review of the Literature on corporate finance", *Journal of Finance*: 52: 737-783.

36. Small, A. A. and J. Graff Zivin (2005) "A Modigliani-Miller Theory of Corporate Social Responsibility" Topics in Economic Analysis and Policy 5

37. Sundaram, A. and A. Ipken (2004) "The corporate objective revisited" *Organization Science*, 15: 350-363

38. Teoh, S.H., I. Welch and C.P. Wazan (1999) "The Effect of Socially Activist Investment Policies on the Financial Markets: Evidence from the South African Boycott", *Journal of Business* (72), 35-89.

39. Tirole, J. (2001) "Corporate Governance", *Econometrica* 69: 1-35.

40. Verona, M.C. and J.J. Déniz (2001) "Reacción del mercado de acciones española ante anuncios de carácter medioambiental: Una aplicación del estudio de eventos". *Revista española de financiación y contabilidad,* 30 (110): 1037-1069.

41. Zingales, L. (1998) "Corporate governance", en P. Newman (ed.), *The new Palgrave dictionary of economies and the law*, London, Macmillan.

42. Wright, P. and S.P. Ferris (1997) "Agency conflict and corporate strategy: the effect of divestment on corporate value". *Strategic Management Journal*, 18:77-83.

Table 1. Summary of environmental CSR announcements

	Consumer Goods & Serv	Petrol & Power	Finance & Real State	Industry & Construction
Sustainability Index	4	5	2	5
Environmental friendly Policies	4	69	3	10

Table 2.1. Effects of Index participation (N=16). Market index: IBEX

	Panel A: Estimation of market model through OLS								Panel B: Estimation of market model through GARCH(1,1)							
	con-serv-com		petrol		financial		ind-const		con-serv-com		petrol		financial		ind-const	
Day	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t
-7	0.17361	0.3926	0.3041	1.2536	0.4145	1.0000	-0.4099	-1.1198	0.2512	0.6445	0.3082	1.2613	0.391	1.0000	-0.3719	-1.0581
-6	0.1406	0.746	-0.2093	**-3.8473**	0.0055	1.0000	-0.237	-0.7118	0.1984	0.9551	-0.2071	**-3.3513**	-0.0147	-1.0000	-0.2056	-0.6
-5	0.484	**3.0399**	-0.3757	-1.5466	0.2368	-1.0000	-0.1774	-0.2206	0.478	**3.22**	-0.3832	-1.507	-0.2658	-1.0000	-0.1174	0.8896
-4	0.428	1.1156	0.4581	1.451	0.04891	1.0000	-0.3138	-0.4493	0.4265	1.1356	0.4472	1.4598	0.0275	1.0000	-0.2811	-0.4013
-3	-0.2747	-1.0142	-0.3368	-1.1694	-0.1813	-1.0000	0.3562	1.6288	-0.1792	-0.8836	-0.33	-1.1305	-0.2135	-1.0000	0.3766	1.7524
-2	0.5737	1.4701	-0.6429	-1.8321	-0.1967	-1.0000	-1.08	**-3.0708**	0.6637	1.7902	-0.6328	-1.9238	-0.2323	-1.0000	-1.037	**-2.9785**
-1	0.4882	0.7395	-0.5444	-0.9832	-0.2202	-1.0000	-0.0736	-0.087	0.5531	0.8488	-0.5283	-0.9193	-0.2506	-1.0000	-0.0365	-0.0435
0	-0.1878	-0.4062	-0.0116	-0.0264	0.2891	1.0000	0.04928	0.1628	-0.1341	-0.2604	-0.0262	-0.0581	0.2558	1.0000	0.08449	0.2871
1	0.7373	1.1472	0.3909	1.8688	0.3869	1.0000	-0.3936	-0.9312	0.7771	1.177	0.4165	1.9034	0.3657	1.0000	-0.3613	-0.861
2	0.593	**2.7076**	-0.3007	-2.7311	0.597	1.0000	-1.0577	-1.7724	0.6231	**3.0628**	-0.3096	**-2.6918**	0.5808	1.0000	-1.0229	-1.7247
3	0.7275	2.0649	0.3416	0.8909	-0.7589	-1.0000	0.4829	0.5207	0.6938	2.0459	0.3541	0.9381	-0.788	-1.0000	0.5041	0.5463
4	-0.4487	-2.1382	0.4397	0.7887	0.3243	1.0000	0.513	1.1568	-0.4219	-1.9442	0.4578	0.838	0.299	1.0000	0.5279	1.1678
5	0.4591	2.172	-0.3269	-0.8262	-0.0775	-1.0000	-0.8238	-1.4741	0.4913	**4.0127**	-0.3203	-0.7877	-0.1055	-1.0000	-0.8077	-1.4355
6	-0.2021	-0.3095	-0.7784	**-2.3176**	0.2004	1.0000	0.3038	0.5834	-0.2016	-0.301	-0.8113	**-2.3712**	0.1789	1.0000	0.3351	0.6402
7	0.2118	1.8222	-0.313	-1.2808	0.0278	1.0000	0.1202	0.3726	0.1993	1.6714	-0.3346	-1.3532	0.0019	1.0000	0.1601	0.4909
(-7,7)	3.9047	**4.393**	-1.9055	**-3.8511**	0.6232	1.0000	-2.7415	**-2.9948**	4.4195	**8.7072**	-1.9088	**-3.2172**	0.2301	1.0000	-2.254	**-2.2338**
(-7,0)	2.2577	2.1891	-1.3614	-1.8016	-0.3027	1.0000	-1.5894	-1.3053	2.2577	2.1891	-1.3614	-1.8016	-0.3027	-1.0000	-1.5894	-1.3053
(-5,0)	1.5115	1.4456	-1.4535	**-2.1873**	-0.4971	-1.0000	-1.2394	-1.0472	1.808	2.0752	-1.4535	-1.9993	-0.6789	-1.0000	-0.0118	-0.8845
(-3,0)	0.5994	0.6885	-1.5359	-2.056	-0.3091	-1.0000	-0.7482	-0.9818	0.9003	1.1006	-1.5264	-1.9232	-0.4407	-1.0000	-0.6132	-0.7931
(-1,0)	0.3004	0.3868	-0.5561	-1.239	0.0689	1.0000	-0.0244	-0.0292	0.4189	0.4967	-0.5545	-1.1539	0.0051	1.0000	0.0479	0.0572
(-1,1)	1.0378	0.9981	-0.1652	-0.434	0.4559	1.0000	-0.418	-0.5486	1.1961	1.0247	-0.1379	-0.3035	0.3708	1.0000	-0.3134	-0.4117
(0,1)	0.5495	0.5136	0.3792	0.7546	0.6761	1.0000	-0.3443	-0.5323	0.643	0.5653	0.3903	0.7581	0.6215	1.0000	-0.2768	-0.437
(0,3)	1.8701	1.2575	0.4201	0.4493	0.5142	1.0000	-0.9191	-1.7031	1.9559	1.2852	0.4349	0.4629	0.4142	1.0000	-0.7956	-1.53
(0,5)	1.8805	1.3326	0.5329	0.4994	0.761	1.0000	-1.2299	-1.4699	2.0293	1.3076	0.5723	0.5358	0.6077	1.0000	-0.0107	-1.2371
(0,7)	1.8911	**2.3992**	-0.5585	-0.7144	0.9893	1.0000	-0.8058	-0.64	2.0276	2.2251	-0.5736	-0.7515	0.7887	1.0000	-0.58	-0.4426

t accounts for the *t-student*. Bold numbers are statistically significant

Table 2.2. Effects of Index participation (N=16). Market index: IGBM

	Panel A: Estimation of market model through OLS								Panel B: Estimation of market model through GARCH(1,1)							
	con-serv-com		petrol		financial		ind-const		con-serv-com		petrol		financial		ind-const	
Day	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t
-7	0.279	0.4872	0.1891	0.6171	0.5105	0.7775	0.2201	0.6247	0.2307	0.5476	0.2129	0.7147	0.4932	0.7125	0.2243	0.6775
-6	0.1525	0.7382	-0.0995	-1.1212	-0.1054	-0.1759	-0.0326	-0.0537	0.1753	0.8114	-0.079	-0.9441	-0.113	-0.1752	-0.0054	-0.0091
-5	0.478	**3.22**	-0.3832	-1.507	-0.2658	-1.0000	-0.1174	-0.1479	0.4248	**3.0182**	-0.2207	-0.8632	-0.245	-0.6534	1.1202	0.7152
-4	0.4265	1.1356	0.4472	1.4598	0.0275	1.0000	-0.2811	-0.4013	0.4065	1.2559	0.4543	1.5795	-0.465	-0.8409	-0.6112	-0.6554
-3	-0.1792	-0.8836	-0.339	-1.1305	-0.2135	-1.0000	0.3766	1.7524	-0.2328	-0.8695	-0.1864	-0.6084	-0.7705	**-36.1200**	0.032	0.1052
-2	0.6637	1.7902	-0.6328	-1.9238	-0.2323	-1.0000	-1.0379	**-2.9785**	0.6865	1.7916	-0.4265	-1.3274	0.2582	0.2686	-0.6374	-1.5716
-1	0.5531	0.8488	-0.5383	-0.9193	-0.2506	-1.0000	-0.0365	-0.0435	0.4819	0.7479	-0.557	-0.9529	1.01	0.5083	-0.1656	-0.2097
0	-0.1341	-0.2604	-0.0262	-0.0581	0.2558	1.0000	0.0844	0.2871	-0.1677	-0.3633	-0.0149	-0.0363	-0.2526	-0.4696	0.5852	1.1053
1	0.7771	1.1777	0.4165	1.9034	0.3657	1.0000	-0.3613	-0.861	0.8121	1.2051	0.4333	1.9628	0.8513	1.3721	-0.4695	-1.0726
2	0.6231	**3.0628**	-0.3096	**-2.6918**	0.5808	1.0000	-1.0229	-1.7247	0.7613	**4.0195**	-0.3268	**-2.4527**	0.5501	0.3802	-1.0182	-1.9228
3	0.6938	2.0459	0.3541	0.9381	-0.788	-1.0000	0.5041	0.5463	0.7486	1.9143	0.1997	0.506	-0.6309	-0.9140	0.1907	0.3229
4	-0.4219	-1.9442	0.4578	0.838	0.299	1.0000	0.5279	1.1678	-0.4489	-2.1749	0.4569	0.8028	1.4224	1.6018	0.525	1.3469
5	0.4913	**4.0127**	-0.3203	-0.7877	-0.1055	-1.0000	-0.8077	-1.4355	0.3994	**2.1108**	-0.3958	-0.8939	0.523	0.9127	-0.8249	-1.7227
6	-0.2016	-0.3041	-0.8113	**-2.3712**	0.1789	1.0000	0.3351	0.6403	-0.2038	-0.3278	-0.753	**2.3095**	-0.2434	-0.7693	0.3614	0.7677
7	0.1999	1.6719	-0.3346	-1.3532	0.0019	1.0000	0.1601	0.4909	0.2911	**3.1016**	-0.3581	-1.8448	-0.2235	-0.7283	0.212	0.8879
(-7,7)	4.4195	**8.7072**	-1.9088	**-3.2172**	0.2301	1.0000	-2.254	**-2.2338**	4.3749	**7.4882**	-1.5612	**-4.8999**	2.1641	**6.4757**	-0.4812	-0.1822
(-7,0)	2.257	2.1891	-1.3614	-1.8016	-0.3027	-1.0000	-1.589	-1.3053	2.0152	1.8493	-0.8173	-1.6416	-0.0849	-0.0973	0.5421	0.2031
(-5,0)	1.808	2.0752	-1.4625	**-1.9993**	-0.6789	-1.0000	-1.0118	-0.8845	1.6092	1.8619	-0.9513	-1.3717	-0.4651	-0.2104	0.3233	0.1706
(-3,0)	0.9003	1.1006	-1.5264	-1.9232	-0.4407	-1.0000	-0.6132	-0.7931	0.7777	1.1384	-1.1849	-1.8205	0.245	0.1026	-0.1858	-0.1553
(-1,0)	0.4189	0.4967	-0.5545	-1.1539	0.00518	1.0000	0.0479	0.0572	0.3241	0.4235	-0.5719	-1.2583	0.7573	0.5226	0.4196	0.3536
(-1,1)	1.1961	1.0247	-0.1379	-0.3035	0.3708	1.0000	-0.3134	-0.4117	1.1362	1.1169	-0.1386	-0.3564	1.6087	1.9414	-0.0499	-0.0512
(0,1)	0.643	0.5653	0.3903	0.7581	0.6215	1.0000	-0.2768	-0.437	0.6443	0.5911	0.4184	0.9761	0.5987	0.5168	0.1157	0.2083
(0,3)	1.9599	1.2852	0.4349	0.4629	0.4142	1.0000	-0.7956	-1.53	2.1542	1.3537	0.2913	0.3161	0.5179	0.2705	-0.7118	-1.1976
(0,5)	2.0293	1.3076	0.5723	0.5358	0.6077	1.0000	-1.0753	-1.2371	2.1047	1.3552	0.3524	0.3454	2.4634	5.4295	-1.0116	-1.2795
(0,7)	2.0276	**2.2251**	-0.5736	-0.7515	0.7887	1.0000	-0.58	-0.4426	2.1919	2.0669	-0.7588	-1.0497	1.9964	1.8535	-0.4381	-0.3936

t accounts for the *t-student* test. Bold numbers are statistically significant

Table 3.1. Effects of environmental friendly news (N=96). Market index: IBEX 35

	Panel A: Estimation of market model through OLS								Panel B: Estimation of market model through GARCH(1,1)							
	con-serv-com		petrol		financial		ind-const		con-serv-com		petrol		financial		ind-const	
Day	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t
-7	-0.087	-0.101	0.0977	0.9477	0.031	0.0899	-0.3837	**-1.9108**	-0.1789	-0.215	0.0259	0.2596	0.084	0.2296	-0.4381	**-2.244**
-6	-0.3695	-0.4176	-0.0147	-0.1679	-0.609	-1.0284	-0.1382	-0.2938	-0.3812	-0.5386	-0.0751	-0.874	-0.3917	-0.6082	-0.246	-0.5204
-5	0.4978	1.7166	0.1366	**1.6709**	0.3569	1.4416	0.3861	0.5902	0.3833	1.1894	0.1161	1.4038	0.5265	2.4637	0.3656	0.5875
-4	-0.5895	**-2.8041**	0.0852	0.8273	0.4344	1.4020	0.0058	0.0126	-0.5518	-1.6001	0.1141	1.1952	0.2729	1.1255	-0.1083	-0.2843
-3	-0.1259	-0.2092	0.1486	1.2895	-0.2872	-1.2213	0.4924	0.7998	-0.3888	-0.6384	0.1174	0.9617	-0.3323	-1.6731	0.5055	0.8266
-2	0.2422	0.4415	0.0924	0.7774	-0.6255	-0.9046	0.4405	0.6677	0.3301	0.6198	0.0501	0.4536	-0.46	-0.6949	0.2071	0.3527
-1	0.3789	0.4197	-0.0242	-0.2526	-0.8961	-0.7091	-0.5024	-1.2685	0.2555	0.2494	-0.0874	-0.9419	-0.983	-0.8437	-0.4142	-0.9203
0	-0.5559	-1.7908	-0.0374	-0.349	-0.0609	-0.3668	0.2727	0.6751	-0.4775	-1.1617	-0.058	-0.6062	0.1355	0.6522	0.1806	0.4434
1	0.1581	0.7616	0.0717	0.6629	0.2978	1.8129	0.1414	0.2919	-0.0015	-0.005	0.0273	0.2715	0.1152	0.3097	0.0844	0.1922
2	-0.1487	-0.2844	-0.0533	-0.6622	-0.0358	-0.0578	0.2094	0.7467	-0.119	-0.216	-0.0699	-1.0418	0.0608	0.0900	0.1058	0.3624
3	-0.2336	-0.375	-0.0984	-1.1691	-0.2821	-1.4159	0.4027	1.0642	-0.2943	-0.4042	-0.1026	-1.3016	-0.1471	-0.6477	0.3855	1.0677
4	1.259	1.3868	-0.1267	-1.5226	0.4418	0.8886	0.3506	1.4203	1.259	1.3868	-0.1267	-1.5226	0.4418	0.8886	0.3506	1.4203
5	0.4681	0.9321	0.082	0.9107	0.5856	2.1840	0.4681	1.0256	0.5528	1.2512	0.1115	1.3261	0.6163	1.9574	0.4358	0.9629
6	-0.1055	-0.1081	0.0847	0.8764	0.7289	1.2050	-0.2554	-0.6277	0.1691	0.1572	0.0894	1.0667	0.5076	0.6654	-0.4026	-1.0192
7	0.0599	0.0963	-0.0533	-0.6784	-1.0156	-1.1955	-0.0061	-0.0199	0.0924	0.1501	-0.0524	-0.648	-1.1304	-1.5844	-0.1186	-0.4122
(-7,7)	0.5041	0.4911	0.4287	1.2534	-1.0657	-0.6171	1.8485	0.7516	0.6491	0.4285	0.0799	0.2543	-0.6837	-0.6282	0.8932	0.5678
(-7,0)	-1.0093	-0.506	0.2034	0.8641	-1.1481	-0.5336	0.0522	0.0379	-1.0093	-0.506	0.2034	0.8641	-1.1481	-0.5336	0.0522	0.0379
(-5,0)	-0.4491	-0.2386	0.2525	1.3909	-0.8403	-0.4507	0.7363	0.6859	-0.4491	-0.2386	0.2525	1.3909	-0.8403	-0.4507	0.7363	0.6859
(-3,0)	-0.0607	-0.0389	0.1794	0.9612	-1.8698	-0.9212	0.7033	0.6983	-0.2806	-0.1663	0.0222	0.119	-1.639	-0.8804	0.479	0.6373
(-1,0)	-0.177	-0.2238	-0.0616	-0.4174	-0.9571	-0.6867	-0.2296	-0.3554	-0.222	-0.2708	-0.1454	-1.0118	-0.8474	-0.6844	-0.2336	-0.3456
(-1,1)	-0.0188	-0.0196	0.0105	0.0556	-0.6592	-0.4859	-0.0882	-0.1319	-0.2235	-0.2057	-0.1181	-0.6836	-0.7321	-0.7012	-0.1491	-0.2369
(0,1)	-0.3977	-1.7933	0.0343	0.2374	0.2369	2.2394	0.4141	0.8732	-0.479	-0.9803	-0.0306	-0.2252	0.2508	1.4126	0.2651	0.6901
(0,3)	-0.7801	-0.851	-0.1175	-0.6981	-0.0811	-0.2408	1.0263	1.4391	-0.8924	-0.6022	-0.2032	-1.4203	0.1645	0.2750	0.7564	1.3451
(0,5)	0.6026	0.4673	-0.1243	-0.6113	0.8163	0.7380	1.8097	**1.8856**	0.9193	0.4319	-0.2184	-1.2566	1.2227	0.8801	1.5429	**2.0843**
(0,7)	0.557	0.3656	-0.0929	-0.3874	0.5297	0.7508	1.548	1.5651	1.1809	0.5063	-0.1814	-0.8949	0.5999	0.4060	1.0216	1.7083

t accounts for the *t-student* test. Bold numbers are statistically significant

Table 3.2. Effects of environmental friendly news (N=86). Market index: IGBM

	Panel A: Estimation of market model through OLS								Panel B: Estimation of market model through GARCH(1,1)							
	con-serv-com		petrol		financial		ind-const		con-serv-com		petrol		financial		ind-const	
Day	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t	Art (%)	t
-7	-0.1787	-0.2019	0.1116	1.1085	-0.0228	-0.0636	-0.3008	-1.4347	-0.0944	-0.1071	0.106	1.054	-0.023	-0.0640	-0.3	-1.4574
-6	-0.4226	-0.4471	-0.026	-0.2903	-0.5495	-0.6649	-0.1333	-0.3135	-0.4026	-0.4245	-0.0341	-0.3916	-0.542	-0.6608	-0.1504	-0.3588
-5	0.3833	1.1894	0.1161	1.4038	0.5265	2.4637	0.3656	0.5875	0.4905	1.5793	0.1156	1.4455	0.3493	1.1509	0.3419	0.5434
-4	-0.5518	-1.6001	0.1141	1.1952	0.2729	1.1255	-0.1083	-0.2843	-0.5793	**-2.3914**	0.0532	0.5287	0.4772	1.1696	0.0052	0.0117
-3	-0.3888	-0.6384	0.1174	0.9617	-0.3323	-1.6731	0.5055	0.8266	-0.0065	-0.1003	0.1241	1.0808	-0.3174	-1.3368	0.4229	0.7294
-2	0.3301	0.6198	0.05018	0.4536	-0.46	-0.6949	0.2071	0.3527	0.2282	0.4213	0.07581	0.654	-0.7275	-1.1128	0.44	0.6622
-1	0.2555	0.2494	-0.0874	-0.9419	-0.982	-0.8437	-0.4142	-0.9203	0.3164	0.3621	-0.0385	-0.3857	-0.8677	-0.6541	-0.4809	-1.2348
0	-0.4775	-1.1617	-0.058	-0.6062	0.1355	0.6522	0.1806	0.4434	-0.7392	-2.1808	-0.0549	-0.5056	-0.0035	-0.0239	0.3136	0.8326
1	-0.0015	-0.005	0.0273	0.2715	0.1152	0.3097	0.0844	0.1922	0.1475	0.6415	0.0456	0.4298	0.3868	1.5409	0.1002	0.2071
2	-0.119	-0.216	-0.0699	-1.0416	0.0608	0.0900	0.1058	0.3624	-0.2018	-0.4192	-0.0733	-0.8968	-0.0649	-0.0899	0.1981	0.733
3	-0.2943	-0.4042	-0.1026	-1.3016	-0.1471	-0.6477	0.3855	1.0677	-0.2243	-0.3846	-0.1146	-1.3392	-0.3429	-2.1725	0.3846	1.0144
4	1.259	1.3868	-0.1267	-1.5226	0.4418	0.8886	0.3506	1.4203	0.8057	1.1028	-0.0956	-1.2062	0.2474	0.4332	0.6449	1.6827
5	0.5528	1.2512	0.1115	1.3261	0.6163	1.9574	0.4358	0.9629	0.3624	0.6493	0.05931	0.6512	0.5181	2.3648	0.5234	1.1264
6	0.1691	0.1572	0.0894	1.0667	0.5076	0.6654	-0.4026	-1.0192	-0.0972	-0.1036	0.08493	0.8589	0.8155	1.3901	-0.2152	-0.5638
7	0.0924	0.1501	-0.0524	-0.648	-1.1304	-1.5844	-0.1186	-0.4122	-0.0104	-0.0166	-0.0483	-0.6034	-0.9579	-1.0220	-0.0217	-0.0683
(-7,7)	0.6491	0.4285	0.0799	0.2543	-0.6837	-0.6282	0.8932	0.5678	-0.0638	-0.0408	0.2052	0.6218	-1.0526	-0.5160	2.2091	0.8257
(-7,0)	-1.0093	-0.506	0.2034	0.8641	-1.1481	-0.5336	0.0522	0.0379	-0.8457	-0.4105	0.3472	1.4667	-1.6546	-0.6538	0.5924	0.3415
(-5,0)	-0.4491	-0.2386	0.2525	1.3909	-0.8403	-0.4507	0.7363	0.6859	-0.3487	-0.1739	0.2754	1.3967	-1.0896	-0.5062	1.0429	0.7041
(-3,0)	-0.2806	-0.1663	0.0222	0.119	-1.639	-0.8804	0.479	0.6373	-0.2598	-0.1618	0.1065	0.5803	-1.9162	-0.9910	0.6957	0.6804
(-1,0)	-0.222	-0.2708	-0.1454	-1.0118	-0.8474	-0.6844	-0.2336	-0.3456	-0.4226	-0.5258	-0.0934	-0.6116	-0.8712	-0.6459	-0.1672	-0.269
(-1,1)	-0.2235	-0.2057	-0.1181	-0.6836	-0.7321	-0.7012	-0.1491	-0.2369	-0.275	-0.2908	-0.0478	-0.2566	-0.4844	-0.3246	-0.0647	-0.0958
(0,1)	-0.479	-0.9803	-0.0306	-0.2252	0.2508	1.4126	0.265	0.6901	-0.5915	-1.8844	-0.0092	-0.0646	0.3833	2.2134	0.4161	0.8327
(0,3)	-0.8924	-0.6022	-0.2032	-1.4203	0.1645	0.2750	0.7563	1.3451	-1.0177	-1.1422	-0.1972	-1.1185	-0.0246	-0.0607	0.9989	1.3315
(0,5)	0.9193	0.4319	-0.2184	-1.2566	1.2227	0.8801	1.5429	**2.0843**	0.1504	0.1207	-0.2335	-1.1066	0.7409	0.6333	2.1674	1.6996
(0,7)	1.1809	0.5063	-0.1814	-0.8949	0.5999	0.4060	1.0216	1.7083	0.0427	0.0303	-0.1969	-0.7694	0.5985	1.0178	1.9304	1.4523

t accounts for the *t-student* test. Bold numbers are statistically significant