DO FINANCIAL MARKETS CARE ABOUT SOCIAL AND ENVIRONMENTAL DISCLOSURE?
Further Evidence and Exploration from the UK[1]

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ABSTRACT

Financial markets have increasing global power and that power can manifest itself in environmental degradation, social injustice and limitations on the ability of quoted companies to undertake activities which, although experimental and financially fragile, can be seen as socially and environmentally responsible. Markets' power does not seem to be balanced by their responsibility. Social and environmental disclosure is one possible way in which markets may be re-educated towards more sustainable modes of behaviour. It is in this context that this paper seeks to explore whether stock market participants in the UK exhibit any discernible reaction to the social and environmental disclosures made by the largest 100 companies. Several tests are undertaken to explore any of the ways in which share price behaviour might reflect large company disclosures about their environmental and other social activities. No relationship of any kind is found. The problem with findings of no reaction is that many explanations offer themselves. The paper concludes by exploring these with particular emphasis on the moral case for greater and better quality disclosures and for further tests which might explore whether markets have historically impounded and discounted for the predilection to disclose.

1. Introduction

The continuing expansion, globalisation and, ultimately, power of financial markets is a matter of increasing concern to many, (see, for example, Schmidheiny and Zorraquin,, 1996; Rich, 1994; Korten, 1999; Suranyi, 1999). Not only is there a growing anxiety about the re-distributional effects that such markets encourage but they also act to limit the discretion and range of options available to the management of quoted companies. In a short-term economic sense this may not be important but if companies must be amongst the major institutions through which environmental responsibility, social justice and, eventually, sustainability are to be delivered companies need the ability to experiment, take longer perspectives and undertake actions of which financial markets may disapprove, (Schmidheiny, 1992; Hawken, 1993; Hawken et al, 1999). Financial markets are variously seen as the biggest single impediment and the single biggest opportunity for international capitalism to re-invent for itself a new form compatible with the exigencies of sustainability. In the absence of an apparent will to closely regulate financial markets, it must fall to incentive, cajolery and persuasion to persuade markets to act in a manner less incompatible with social, environmental aims of sustainability. A potentially major factor in achieving this ambitious re-direction must, inevitably, be information and, in particular, information about organisations' social and environmental activities. This is a role currently fulfilled – albeit inadequately[3] – by corporate social and environmental disclosure through, particularly, the corporate annual report, (see, for example, Muller, et al., 1994).

Such disclosure, being as it is within the annual report, might well be assumed to have shareholders as its primary target audience – and as we saw above, they are almost certainly the most important audience for this material. However, in a recent review of the extant literature concerning the relationship(s) between corporate social responsibility, social reporting and the stock market, Richardson et al., (1999) concluded that research in the field is still relatively inconclusive and largely under-specified. Even without examining the ontological and epistemological assumptions of the literature, there were sufficient problems of definition, measurement and under-specification of models, the authors argued, to require continuing debate and examination of the issues. (See also Ullmann, 1985).

The present paper seeks to contribute to just one aspect of this continuing debate – that of the relationship between stock market behaviour and corporate social and environmental disclosure. More particularly, this paper seeks to present evidence on the relationship(s), if any, between the data reported by large UK companies on their social and environmental activities and the share price returns of those companies. The evidence presented is derived from both cross-sectional and nine years'

[3] The voluntary nature of most social and environmental disclosure currently makes the bulk of such disclosure relatively undemanding. The more recent growth in production of stand-alone social and environmental reports has demonstrated that some organisation are quite capable of producing substantial disclosure should they wish to do so. It is not ability that is currently lacking but willingness.

longitudinal data and seeks to control for the two factors most typically associated with social and environmental disclosure - company size and industry sector.

The paper is structured as follows. The next section explores the motivation for the study and, thereby, seeks to broaden the debate about the importance of both financial markets and social and environmental disclosure. Section 3 then reviews the, surprisingly sparse, prior literature. Sections 4, 5 and 6 present, respectively, the data, the method and the results. The conclusions and implications are discussed in the final section.

2. Financial Markets and Social and Environmental Disclosure

Broadly speaking, the research into corporate social and environmental disclosure has not been primarily motivated by concerns for shareholders and other financial participants as such. Rather, one branch of the research has been concerned to examine the how social and environmental disclosure reflects and discharges the responsibilities and subsequent accountabilities of the organisation. This research has taken a *societal* point of view and has been motivated by democratic concerns to rights to information and the means by which organisational behaviour might be controlled by society, (see, for example, Medawar, 1976; Gray et al., 1988; 1991; 1996). The second branch of research into social and environmental disclosure has been rather more *managerialist* in orientation and sought to explore (i) how the company uses such disclosure to manage its stakeholders and (ii) how such disclosure might used to secure the legitimacy of, either, the individual corporation or, more broadly, corporate capitalism itself. (See Arnold, 1990; Arnold and Hammond, 1994; Gray et al., 1995a for a discussion of these issues).

Of more direct relevance, a less dominant aspect of the research has sought to explore what, if anything, social and environmental disclosures might mean for shareholders. There are several themes to this research.

In the first place, researchers have sought to establish whether investors find social and environmental disclosures decision-useful. This research, in keeping with much research into financial reporting theory (see, for example, Belkaoui, 1986) has employed a variety of methods to investigate the actions, attitudes and behaviours of the individual investor (see especially Epstein and Freedman, 1994) as well as the more familiar explorations of aggregate financial market response to such disclosures. (It is this latter research which is reviewed in the following section of the paper). There are several factors that commend this research to our attention.

Despite fairly convincing evidence that investors often show more than a passing interest in social and environmental disclosures (see, for example, Benjamin and Stanga, 1977; Chenall and Juchau, 1977; Firth, 1978; 1979; 1984; Epstein and Freedman, 1994), it is still traditional to assume that investors are only interested in maximising their risk-adjusted returns from investment, (see, for example, Benston, 1982; Skogsvik, 1998; but see also Rivoli, 1995). Under such an assumption, there is no immediate or obvious reason for shareholders to have any interest in the social and/or environmental aspects of their investment. And yet, governments continue to

increase the requirements governing the disclosure of social and environmental data in corporate reports and corporate management, themselves, continue to produce *voluntary* disclosures in the annual report. Whilst a commentator wedded to a `free market' perspective might well find the apparently irrational imposition of additional information costs by the government on the corporation and its stockholders unsurprising, the potential wastefulness of the corporate management (in voluntarily producing non-price sensitive data) might do so.

This potential `wastefulness' by corporate management would fly directly in the face of "conventional" market wisdom (and, see, for example, Friedman's famous comments on the matter) unless it could be shown that such data has price relevance. Could such data represent signals to the investor? Could the signal suggest that, for example, the company is aware of potential social or environmental costs and has taken steps to manage them? Could it be that it is aware of the actions of pressure groups and has responded to avoid potential problems? Perhaps it signals awareness of growing liabilities upon which the company is acting accordingly or suggests that the company is managing and exploiting its high level of reputation with niche consumer groups.

As we shall see, although investors are apparently exhibiting an increasing demand for social and environmental disclosure, there is no evidence (as far as we are aware) of proven links between the price sensitivity of the social and environmental data and the substantial changes in economic circumstances that these data could be signalling. Thus it remains an open question as to whether or not corporate management are exhibiting wastefulness in undertaking voluntary social and environmental disclosures or successfully signalling their competence to the market. In essence, research has not advanced us much beyond Ullmann's (1985) often-repeated observation that it pays to be good but not too good.

The reasons it pays the company to be good(ish) are purely financial in nature[4]. As the apparent general awareness and concern in society for such matters as environmental degradation, habit destruction, global climate change, human rights, and stakeholder involvement, continues to increase (see, for example, Brown and Flavin, 1999), it certainly seems likely that the number of potential areas in which social or environmental activity can have relatively direct financial consequences must increase. These consequences can be of a cost-saving nature (see, for example, McMillan, 1996); cost or liability avoidance (see, for example, Gunthorpe, 1997; Hughes, 2000); revenue-generating (see, for example, McIntosh et al, 1998) or even simple signals of best-in-class management practices (see, for example, Stone, 2000). In such a climate, social and environmental issues continue to rise as areas of potential risk requiring careful management by prudent organisations.

[4] There is a potential tautology here in that something which `pays' is more likely to be financial than not. See Gorz (1989) and Thielemann (2000) for particularly good analyses of the colonisation of human values by the economic.

The foregoing offers an *a priori* argument for why social and environmental data may have potential impact on shareholders' decisions as to whether or not to buy, hold or sell shares. But, the crucial thing is that such an analysis presupposes that investors are *only* interested in the financial aspects of their investment, (see also Richardson et al, 1999). And this, by default, produces the normative moment that suggests (implicitly) that investors *should* only think of financial aspects of their investment decisions.

There is no evidence, as far as we are aware, that all investors are exclusively interested in a purely financial appraisal of their investments. Indeed, the very significant growth in ethical investment funds (see, for example, Antonio et al., 2000) probably suggests quite the reverse. Therefore, as Belkaoui, (1976) argues, there is no *a priori* reason why we should assume that all investments are always treated as purely economic events. Consequently, social and environmental disclosures may well offer an important source of direct input to these `ethical' investors' decisions.

There is a further normative element to this, however. Unless one takes the most primitive of ethical, economic and social reasoning, it is probably impossible to argue that the only morality which attaches to the investor is to make the most economically effective investment – as measured by personal financial returns. (See Jacobson, 1991; Thielemann, 2000; Collison and Frankfurter, 2000). To do so takes us into the old chestnut that `rich means good', `richer means better', and any detrimental social and environmental effects arising from the use to which the investment is put and from which the returns are derived are of no moral concern to the investor. (The typical right-wing, `free-market' view would be likely to suggest that this is fault of the government to properly regulate the system and/or the fault of those who suffer the detriment for not exercising their economic choice in an apposite manner). Consequently, social and environmental disclosure can actually be seen as an educative process whose purpose is either to explain the social and environmental complexities underlying the investment or to show the investor what moral choices are being made.

Finally, social and environmental disclosure may have to play a crucial role in moves towards sustainability, (Leggett, 1996; Suranyi, 1999; Gray and Bebbington, 2000; and see also Case, 1999). That is, there is increasing recognition (see, for example, Schmidheiny and Zorraquin, 1996) that moves towards sustainability (or, more realistically, moves away from un-sustainability) cannot be achieved if financial markets remain as rapacious, self-serving and short-termist as there are currently. There would appear to be an absence of any international political will – or, perhaps international political ability (but see Bailey et al., 1994a; 1994b; Kolk et al.,1999) - to control financial markets to a much greater degree than is currently the case. As a consequence, even the very best run, well-intentioned and intelligently informed of companies - if quoted – currently has very little room for discretionary actions of a socially or environmentally responsible nature. Any major activity by the company management which investors cannot see as being of a relatively direct and foreseeable economic benefit to the organisation is, *a priori,* likely to be penalised by either the selling of shares of motions to move the corporate management. The sorts of activities – and, indeed, experiments – that will need to be explored if we are to discover if `sustainable capitalism' is a possibility or a pipe-dream are unlikely to enamour

themselves immediately to financial markets. (See Cordeiro and Sarkis, 1997; Leggett, 1996)

Consequently, financial markets need to be `educated' (see, for example, Schmidheiny and Zorraquin, 1996) about the social and environmental challenges that sustainability presents to each and every company. Although social and environmental disclosure is, as yet, not delivering this quality of educative disclosure, (see, for example, Gray 2000) it seems inevitable that social and environmental disclosure must play a major part in seeking out the possibilities of transformation that may exists in financial markets.

3. The Prior Literature

It is apparent from the foregoing that although social and environmental disclosure may not yet be an obviously substantive part of mainstream corporate activity, it is a growing area of concern to all parties and, more especially, has both significant instrumental potential (see, for example, Lehman, 1999) and a strong moral force and potential (see, for example, Owen et al., 1997; Mathews, 1995). Given the increasing power and importance of financial markets and their intrinsic indifference to non-financial matters, social and environmental disclosure becomes a very important link between the financial hyper-reality and the lifeworld (Thielemann, 2000; Mackintosh et al, 2000)[5]. It is in this context that this study takes its moment.

Although there has been a considerable body of research over the years into such matters as the social and environmental performance of companies and financial indicators of one sort and another (including share price response) there would appear to have been very few studies which have directly examined the relationship between social and environmental disclosure and financial markets.

That is, whilst a range of studies have examined share price response to releases of information about the company, typically EPA or CEP information releases, these studies are treating the information as a direct analogue of the underlying activity and investigating how investors might react to changes in social or environmental *behaviour*. (See, for example, Jaggi and Freedman, 1992; Pava and Kreuze, 1996; Edwards, 1998).

Of more direct interest to us here, is to look at the reaction to the disclosure process itself and, in particular, self-disclosure made by the individual company. What we find, as so often, is that the results – which are predominantly from the USA - are inconclusive and, probably, not generalisable beyond the US. Belkaoui (1976) was explicitly looking for, what he called, the "ethical investor" effect. The disclosure he

[5] The discussion here obviously simplifies the relationship between investor, morality and company (see, for example, Reilly and Kyj, 1990; Jackall, 1988) and the notion that we should hope to see any relationship between financial variables and such disclosure does not go unchallenged (see, for example, Hines, 1984; Cooper, 1988).

examined was that of disclosure of environmental fines. He claims to have found the ethical investor effect and reports a positive and significant relationship between share returns and corporate disclosure. Anderson and Frankle (1978) challenge Belkaoui's reasoning and research design and, reworking Belkaoui's data report a *negative* relationship between disclosure and share price performance. Anderson and Frankle (1980) went on to undertake their own analysis and report the outcome as inconclusive – although their appeared to be some positive relationship between share returns and whether a company was disclosing or non-disclosing, the results were not statistically significant. Ingram (1978) identified that there are different areas of disclosure and whilst he reports there is no relationship between share returns and disclosure he does conclude that there may be a positive relationship in the case of environmental disclosure. Finally, Jaggi and Freeman (1982) conclude that environmental disclosure in heavily polluting companies does have information content.

All of these are US studies and the results are clearly inconclusive, (see also Richardson et al., 1999). There has been little further direct investigation of this area – presumably because the Ernst and Ernst (1978) database of social disclosures was discontinued after 1978. Consequently, it seems apposite to not only try and look at more recent data but also to undertake a test in a country, the UK, where the matter has not previously been investigated systematically.

The opportunity to do this is presented by the Centre for Social and Environmental Accounting Research (CSEAR) database of UK social and environmental disclosure by the top 100 UK companies. This database, in keeping with the majority of prior research which has examined such disclosure (see, for example, Gray et al, 1995a; 1996) concentrates on the largest companies which tend to provide the most extensive and innovative disclosure. Furthermore, the database contains disclosures from the top companies from 1988 to (at the time of writing) 1997 and, thereby, presents the opportunity to undertake both cross-sectional and longitudinal tests. In addition, the database differentiates between areas of disclosure (that is, environmental, community, employee, customer and `other') as well as allowing distinctions to be drawn between mandatory and voluntary disclosures. The prior literature (but see also Gray et al, forthcoming) has hinted that (i) environmental disclosures appear to be the most likely to be of interest to financial markets[6] and (ii) that discretionary (i.e. voluntary) disclosure is far the more likely to represent a signal to markets than those disclosures which are required of all firms. Consequently, it is upon total disclosure, voluntary disclosure and environmental disclosure that we concentrate in what follows.

4. Data

Data on the "Top 100" companies (chosen from the *Times 1000*) over a 10 year period between 1988 and 1997 are included in this study. Information on these firms is

[6] A hint which is also plausible on an *a priori* basis in that environmental activities are the most likely to have direct financial impacts on the company (see, for example, McMillan, 1996).

stored in the CSEAR database[7] and was gathered for this investigation. In particular, total corporate social reporting (CSRTOT) and two of its constituent parts total voluntary disclosure (VOLTOT) and total environmental disclosure (ENVTOT) are examined to investigate whether there is a statistical relationship between these variables and share returns. The variables represent the number of pages in a company's annual report allotted to social and environmental issues and were constructed using content analysis.

Only financial statements from the "Top 100" companies each year are featured in the CSEAR database. This criterion restricted the initial sample considered in the present paper to 168 firms (i) as new companies with large market capitalisation were promoted into the list because of changes in valuation from one year to the next and (ii) as a number of companies disappeared because of merger, takeover or a fall in share value. Three further criteria were adopted when determining the final sample. First, companies had to be present in the database for at least five of the ten years covered in order to perform some of the longitudinal tests conducted in the paper. Second, share price data had to be available for each company in Datastream both for the year before and the year in which the disclosure took place in the financial statements. This additional restriction was necessary so that share returns could be computed

$$R_{i,t} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \qquad [1]$$

where $R_{i,t}$ is the return earned by company i in the year t, $P_{i,t}$ is the price of share i at the end of year t, $P_{i,t-1}$ is the price at the start of the year. Finally, details on company size (sales) and sectoral membership were necessary for some of the empirical analysis which was undertaken and companies where such information was not obtainable were omitted from the investigation.

The final sample consisted of 660 (CSRTOT, VOLTOT and ENVTOT) disclosures for 100 firms over the 9-year period during which share returns were calculated. Some 41 of the companies had 9 observations in the sample, 10 had 8 observations, 6 had 7 observations and the remaining 43 had 6 or less observations respectively in the final analysis. Descriptive details for the sample are provided in Table 1.

A visual inspection of this table reveals that the 100 companies in the sample are not evenly distributed between the 14 sectors analysed; two sectors have 17 firms while three sectors have only 2 constituent companies. The size of company in each sector also varies widely. It ranges from a low of £1.973m in the Textile industry to a high of £13.813m in the Chemical sector while the mean turnover figure was £4.860m for all firms. The typical company in the sample included 5.86 pages of corporate social reporting in its annual report of which 1.67 pages related to voluntary data that were not required to be published under current legislation; most disclosures therefore related to mandatory matters which companies are obliged to publish. This fairly low

[7] See Gray et al (1995b) for a detailed discussion about how this database was constructed and a comprehensive overview of its contents from 1988 to 1994.

level of disclosure is common across all sectors although firms in environmentally sensitive industries such as Pharmaceuticals and Chemicals had the highest average CSRTOT (8.09 and 6.47 pages respectively) among the groups studied. Environmental disclosure is fairly small for the sample companies at 0.75 pages and only a few sectors (Pharmaceuticals Chemicals, General Manufacturing and Extractive Industries) have average disclosure levels of more than 1.00 page devoted to this topic in their annual reports[8]. Finally, average annual returns for the sample firms varied from a low of –0.097 for companies in the Construction sector to a high of 0.162 for companies in the Aerospace and Defence industry, however, this latter excellent performance should be treated with caution as the sample only related to two firms. The tremendous variety in stock market performance for firms in the different sectors is confirmed by an analysis of the standard deviation figures. Returns were particularly volatile in the Textile sector (STDEV = 0.540) but remarkably stable for shares in the General Manufacturing industry (STDEV = 0.156). Surprisingly, the poor performance of construction companies in the sample was associated with relatively high levels of risk (STDEV = 0.390) suggesting that shareholders in these firms fared badly for the particular years which are covered in the analysis.

Overall, this UK data set presents a new opportunity to examine the relationship between corporate social and environmental disclosures and share returns and should provide a useful comparison to the US-based work in the area. To date, the absence of a non-US database is probably one of the main reasons why there has been no substantial work on this topic in the UK.

5. Method

Four different tests are conducted to determine whether a link exists between corporate social and environmental disclosures and share returns. First, Pearson Correlation co-efficients are calculated which examine the degree of linear relationship between the variables being studied. The correlations are estimated between returns and each of CSRTOT, VOLTOT and ENVTOT across the whole sample, for different sectoral groupings and for every year from 1989 to 1997. Because of the relatively small numbers in several of the industries, three sectoral groups were constructed for the statistical analysis of the paper: Group A includes Mechanical and General Engineering, Retail and General companies, Group B includes Chemical, Pharmaceutical General Manufacturing companies and Group C includes all the other firms; these groupings attempted to combine companies from similar industries together while facilitating a policy of differentiating between Groups to the largest extent possible.[9]

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[8] An increasing number of companies produce stand-alone environmental (and, indeed, social) reports as the period of study progresses. These are excluded from the analysis for a variety of reasons, not least being that the annual report is primarily targeted at shareholders whilst the environmental report is not.

[9] This sectoral coding resulted in 368 observations n Group A, 92 observations in Group B and 206 observations in Group C.

Second, regression analysis is employed to determine whether there is a linear relationship between company disclosures and share returns. In particular, the following equation was estimated:

$$R_{i,j,k} = \alpha_i + \beta_j DIS_{i,j,k} + e_{i,j,k} \quad [2]$$

Where $R_{i,j,k}$,is the annual return for company i in sector j over the year k in which the social and environmental information is disclosed, and $DIS_{i,j,k}$ is the disclosure. The regression is estimated separately; namely CSRTOT, VOLTOT and ENVTOT across the 14 different sectors spanned by the data. The co-efficients (β_j) are then examined and tested against the null hypothesis that no relationship exists between the variables being examined.

Third, the analysis is extended by determining whether a non-linear relationship exists between social and environmental disclosures and share returns. Specifically, returns are split into three categories – low, medium and high. Where the share return in the year is less than –0.015 the company is placed in the "low" category, if the return is between –0.015 and 0.015 it is put in the medium category while if the return is greater than 0.015, it is assigned to the high category.[10] These cut-off points were chosen to ensure that the number of observations in each category was large enough to facilitate statistical testing. [11] They were also associated with breaks in the share return distributions based on a visual inspection of the data set. Each of CSRTOT, VOLTOT and ENVTOT disclosures were also grouped into three categories – small, medium and large – depending on the numbers of pages which were devoted to these issues in the corporate report. For CSRTOT, the small category included those firms with up to 4.00 pages of social and environmental information in their annual reports, the medium category included those companies with between 4.0 and 7.2 pages of social and environmental disclosures in the annual reports and the large category included firms with more than 7.2 pages of such disclosures in their annual report.[12] The cut-off points for the voluntary disclosures were different since such information only represented a small fraction of the total corporate social disclosures provided by companies. In particular, if less than 0.6 of a page in the financial statements was devoted to VOLTOT, the disclosure was categorised as "small", if between 0.6 and 2.08 pages were devoted to VOLTOT, the disclosure was classed as "medium" and if more than 2.08 pages were devoted to VOLTOT, the disclosure was labelled "large".[13] Finally, the environmental disclosures were split into three categories based on another set of cut-off points. If less than 0.10 of a page was given over to ENVTOT matters, the disclosure was termed "small", if between 0.10 and 1.00 pages

[10] Other cut-off points were tested for the low, medium and high categorisation but the results remained virtually unchanged. These findings are available form the authors upon request.

[11] Based on the cut-off points, 120 observations were classed as low return, 301 as medium return and 236 as high return firms.

[12] These cut-offs resulted in 214, 248 and 198 companies being classified as small, medium and large CSRTOT disclosers.

[13] With these cut-off points, some 217 observations related to relatively "small" amounts of VOLTOT information, 258 related to "medium" amounts of VOLTOT data and 185 related to "large" amounts of VOLTOT news.

contained ENVTOT information, the disclosure was called "medium" and if more than 1.00 page of the annual report dealt with ENVTOT issues, the disclosure was labelled "large".[14] Other cut-off points could have been selected but a graph of each data series suggested that these points highlighted natural breaks which distinguished between different amounts of firms' disclosures.

With the three categories of disclosure – small, medium and large – a chi-square test of association was conducted with the different share return groupings - low, medium and high –:

$$\chi = \sum_{n=1}^{3} \sum_{m=1}^{3} \frac{(O_{n,m} - E_{n,m})^2}{E_{n,m}} \qquad [3]$$

Where $O_{n,m}$ is the observed frequency for row and columns and $E_{n,m}$ is the expected frequency for row n and column m, based on the null hypothesis of no association.. The test is repeated for the three disclosure types – CSRTOT, VOLTOT and ENVTOT and the null hypothesis of no association examined. The strength of this test is that non-linear as well as linear relationships between variables can be uncovered if they are present in the data.

Finally a General Linear Model was fitted to the share return data to investigate whether interactions between different types of disclosures (CSRTOT, VOLTOT and ENVTOT) either as main effects or as interactions with years in conjunction with size and other selected variables can explain returns. In particular, the following equation is estimated:

$$R_{i,l,k} = \tau + \theta_l + \lambda X_{i,l,k} + \gamma Y_{i,l,k} + \delta Z_{i,l,k} + \mu S_{i,l} + \\ + (\theta)_l X_{i,l,k} + (\theta\gamma)_l Y_{i,l,k} + (\theta\delta)_l Z_{i,l} + \varepsilon_{i,l,k} \qquad [4]$$

Where τ is a constant term, θ_i is a dummy variable for each year, $X_{i,l,k}$ is the CSRTOT, $Y_{i,l,k}$ is VOLTOT, $Z_{i,l,k}$ is ENVTOT, $S_{i,l}$ is the log natural of the turnover variable, λ γ δ and μ are regression coefficients, $(\theta\lambda)_l$, $(\theta\gamma)_l$ and $(\theta\delta)_l$ are the interaction coefficients, and $\varepsilon_{i,l,k}$ is the error term.

The output from this equation in terms of F-statistics and associated p-values should provide a comprehensive picture of whether investors appear to respond to certain social and environmental disclosures for different sized companies in several sectors across various time periods by changing their valuation of a company's share price and altering the return earned.

6. Results

The Pearson Correlation co-efficients for the association between annual returns and the amount of corporate social reporting in total and under two sub-categories are

[14] These cut-off points resulted in 193 small disclosures, 285 medium disclosures and 182 high disclosures.

reported in Table 2[15]. Across the whole dataset, these correlations are positive but very small ranging from a low of 0.021 for CSRTOT to a high of 0.043 for ENVTOT. The test of the null hypothesis that these correlations are equal to zero cannot be rejected at conventional significance levels as the p-values are all greater than 0.05. The clear picture which emerges from this scrutiny of the whole dataset therefore is that no linear association exists between share returns and the different social and environmental disclosures being examined.

This picture is confirmed when the correlations are calculated for the three sectoral groupings studied. Indeed, four of these nine correlations are negative suggesting an inverse relationship between share price performance and the volume of disclosure. However, the correlations are small and none are statistically significant. Interestingly, though the largest correlation is achieved by the second group (Chemicals, Pharmaceuticals and General Manufacturing firms) for the ENVTOT variable. These sectors in environmentally-sensitive industries have a positive correlation between the volume of their environmental disclosures and share returns of 0.116 which is nearly twice the size of the next highest correlation of 0.058 reported for CSRTOT. Again though, the p-value of 0.272 is still above the critical value of 0.05 thereby not allowing the null to be rejected.

The final nine rows of Table 2 display the correlations and p-values for each year from 1989 to 1997. Again, the overwhelming impression to emerge from a visual scan of these data is that the correlations vary from year to year and across each type of disclosure; for example, they are all positive in 1990, 1991 and 1992, all negative in 1996 and 1997 but both positive and negative in the other four years. The co-efficients are slightly bigger than in the other rows of the Table ranging from –0.171 to 0.175 but still fairly close to zero. Also, a sizeable number of the correlations are negative especially for the CSRTOT and VOLTOT variables which suggests that an inverse relationship exists between share returns and these variables but none of the negative values are statistically significant however.

Table 3 reports the results from estimating Equation [2] for the 14 sectors included in the study; the beta co-efficient is shown as well as its p-value. A number of findings emerge from an analysis of this table. First the results of this table are consistent with the findings of Table 2 and suggest that modelling a specific linear association between share returns and corporate disclosures on social and environmental issues while allowing for constant term in the relationship does not improve the results which are achieved to any significant extent. The p-values, in some instances, fall to just above 0.10 but are still outside the conventional significance level employed in statistical analyses of financial data. Second, the reported beta co-efficients are negative in one third of cases and positive in the other two thirds of cases. Third, the sizes of these co-efficients also vary across the sectors and over the three different variables examined – CSRTOT, VOLTOT, ENVTOT. The largest co-efficient for the

[15] All the analysis was performed with lagged disclosures as well as with the actual disclosures in the year of study. The correlation results with lagged disclsoures were slightly better with three significant co-efficients being observed (CSRTOT in 1991, VOLTOT in 1990 and ENVTOT in 1990) however one would expect 3.6 out of 36 p-values to be significant at the 10 per cent level when the null hypothesis of "no relationship" holds.

CSRTOT variable is estimated for the General Manufacturing sector (0.141) while for the VOLTOT and ENVTOT variables the largest values are achieved by the Aerospace and Defence industry (0.084 and 0.146 respectively). One conclusion which does emerge is that any analysis of the relationship between share price performance and these three variables possibly needs to consider the importance of (i) sector and (ii) category of disclosure; the variability among the co-efficients reported in Table 3 would tend to recommend such an analysis.

The chi-squared statistics in Table 4A investigate whether a non-linear relationship is present among the whole data set being studied which was not detected by the linear analysis in Tables 2 and 3. The hypothesis that "large" disclosures of social and environmental information in annual reports are associated with "high" returns because investors value such disclosures can be studied by looking at the different panels of this table and by examining their associated chi-squared statistics. No relationship, either linear or non-linear, however, emerges from an analysis of the findings. The actual number of observations in each cell does not differ from its expected value under the null hypothesis of no relationship. The chi-squared statistics are all low and below the limits necessary to reject the null. The same analysis is repeated for the observations in each sectoral grouping and the observations in each year and the results shown in Table 4B. For the three groupings, the chi-squared values range from 0.943 (with a p-value of 0.918) to 7.292 (with a p-value of 0.121) which fail to reject the null hypothesis of no (linear or non- linear) association between the return groups and the disclosure groups for each of CSRTOT, VOLTOT and ENVTOT. A similar conclusion can be drawn when the data are analysed for each year from 1989 to 1997. One chi-squared value (7.821) for CSRTOT in 1989 has a p-value that is just significant at the 10 percent level ($p = 0.098$) but with 27 chi-squared tests, one would expect just under 3 false positives for this analysis. The remaining 26 chi-squared test statistics have p-values which suggest no relationship between share returns and the disclosures being investigated in this paper.

The final table contains the statistical output from estimating the General Linear Model in Equation [5]. The F-ratios for the main individual effects are shown as well as the two factor interactions with a dummy variable for the year (YEAR). The main conclusion to be drawn from this table is that the returns earned by our sample firms vary over time; the F-ratio for the year variable has a value of 2.347 and a p-value of 0.017. None of the other main effects are significant since the F-ratios are small and the p-values greater than 0.05. Once the interaction terms are studied the year of disclosure for voluntary corporate social reporting information is marginally significant (at the 10 per cent level) but it seems as if the main influence on returns if time. By adding the other disclosure variables and size the adjusted R^2 for the model only reaches 10.4 per cent indicating that some 89.6 per cent of the cross-sectional variation in the returns of the firms being studied remain unexplained by the model.

7. Discussion and Conclusion

The bland conclusion from this investigation is that there is no association between levels of disclosure and share price returns. However, there are a number of limitations to the study which may go some way to explain the absence of any such

association. Firstly, the choice of annual share price data is an obvious area of discussion, yet the choice of monthly, weekly, or even daily data would have raised different issues each of which might have led to doubt attaching to the findings of such additional investigations. Linked with this is the notion of confounding factors that might serve to obfuscate the findings of such studies. The sheer volume of announcements made by major companies in the course of a year, a large proportion of which are likely to be price sensitive, would serve to colour the significance of any price change occurring around the time of a corporate responsibility disclosure. On the other hand the results might suggest that investors might have already assimilated the disclosures and that the share price has already adjusted in the light of such information.

However, the issues of the data used in the study were recognised at the outset, as was the difficulty in proving the subsequent, negative result; hence the range of tests undertaken. Equally, the difficulty of interpreting a negative result is acknowledged as is the possibility that a relationship of some form does exist; we just failed to find it!

Another possibility that exists is that the disclosures, in the form made in the Annual Reports, are not sufficiently detailed or precise as to properly inform investors in the terms required to influence investment behaviour. Alternatively, maybe investors are ignorant of the underlying facts that are being disclosed in such releases, which may be viewed in terms of the management of risk, as issues of good (or bad) corporate governance, or in the overall quality of the management of the company.

From the point of view of the companies who are making these voluntary disclosures there is always the possibility that investors take no notice of this form of disclosure since they view it cynically, as no more than window dressing; some, less than sophisticated, form of image management, bearing little relationship to actual performance in the realms of corporate social responsibility (for a discussion of these issues see, for example Deegan and Rankin, 1999). Or might it be that Friedman's ideas on socially responsible accounting are correct and that the expenditure of resources on matters which do not add value are no more that inherently wasteful?

It is the view of the authors that this is unlikely to be the case insofar as the increase in social responsibility disclosures appears across sectors and industries. The UK Government is promoting further voluntary disclosures in the form of environmental reports which all FTSE 100 companies are being actively encouraged to provide. But what is needed is a higher quality of disclosure linked perhaps to measurable goals and targets. With these investors would be able to make informed decisions about the social and environmental performance of companies over time and they could be seen much more clearly in terms of how they discharge their accountability to wider groups of stakeholders. Because, underlying the whole subject of social and environmental disclosure is the notion that companies have an obligation to society to behave in a demonstrably ethical manner in the way they interact with the environment and in terms of the finite resources they consume.

However, there may well be scope for investigating the question in greater depth using a different methodology in order to gain a better understanding of why companies disclose social and environmental issues in the way that they do, and how

market participants assimilate this information into investment and valuation decisions.

RFERENCES AND BIBLIOGRAPHY

Anderson J. & A.Frankle (1980) "Voluntary social reporting: An Iso-beta portfolio analysis" *The Accounting Review* July (pp467-479)

Arnold P.J. (1990) "The State and Political Theory in Corporate Social Disclosure Research: A response to Guthrie and Parker" *Advances in Public Interest Accounting* Vol.3 (pp177-181)

Arnold P. and T.Hammond (1994) "The role of accounting in ideological conflictL Lessons from the South African divestment movement" *Accounting Organizations and Society* 19.2 (pp11-126)

Bailey D., G.Harte and R.Sugden (1994a) *Making transnationals accountable: A significant step for Britain* (London: Routledge)

Bailey D., G.Harte and R.Sugden (1994b) *Transnationals and governments: Recent policies in Japan, France, Germany, the United States and Britain* (London: Routledge)

Belkaoui A. (1976) "The impact of the disclosure of the environmental effects of organizational behaviour on the market." *Financial Management* (Winter): 26-31.
Belkaoui A. (1986) *Accounting Theory* (Harcourt Brace Jovanovich)

Benjamin J.J. & K.G. Stanga (1977) "Difference in disclosure needs of major users of financial statements" *Accounting and Business Research* Summer (pp187-192).

Benston G.J. (1982) "An analysis of the role of accounting standards for enhancing corporate governance and social responsibility" *Journal of Accounting and Public Policy* Vol.1 No.1 (pp5-18)

Brown L.R. and C.Flavin (1999) *State of the World 1999: Special Millenium Edition* (London: Earthscan)

Case P, (1999) *Environmental Risk Management And Corporate Lending: A global perspective* (Cambridge: CRC/ WoodheadPublishing Ltd)

Chenall R.H. & R.Juchau (1977) "Investor information needs: An Australian study" *Accounting and Business Research* 26 Spring (pp111-119)

Collison D. and G. Frankfurter (2000) "Are we really maximizing shareholder wealth? Or: What Investors must know if we do" *The Journal of Investing* 9(3) Fall (pp55-63)

Cooper D.J. (1988) "A social analysis of of corporate pollution disclosures: a comment" *Advances in Public Interest Accounting* Vol.2 (pp179-186)

Cordeiro J.J. and J.Sarkis (1997) "Environmental proactivism and firm performance: Evidence from security analyst earnings forecasts" *Business Strategy and the Environment* 6(2) May (pp104-114)

D'Antonio L, T.Johnsen and B.Hutton (2000) "Socially responsible investing and asset allocation" *The Journal of Investing* 9(3) Fall (pp65-72)

Deegan, C. and M. Rankin (1999). "The environmantal reporting expectations gap: Australian evidence." *British Accounting Review* 31: 313 - 346.
Edwards D. (1998) *The Link Between Company Environmental And Financial Performance* (London: Earthscan)

Epstein M.J. and M.Freedman (1994) "Social disclosure and the individual investor" *Accounting, Auditing and Accountability Journal* 7(4) (pp94-109)

Ernst & Ernst (1976 et seq.) *Social Responsibility Disclosure* (Cleveland, Ohio: Ernst & Ernst)
Firth M. (1978) "A study of the consensus of the perceived importance of disclosure of individual items in corporate annual reports" *The International Journal of Accounting Education and Research* 14(1) Fall (pp57-70)

Firth M. (1979) "The impact of size, stockmarket listing and auditors on voluntary disclosure in corporate annual reports" *Accounting and Business Research* Autumn (pp273-280)

Firth M. (1984) "The extent of voluntary disclosure in corporate annual reports and its association with security risk measures" *Applied Economics* 16 (pp269-277)

Gorz A. (1989) *Critique of Economic Reason* (trans G.Handyside & C.Turner) (London:Verso)

Gray R.H. (2000) "Current developments and trends in social and environmental auditing, reporting and attestation: A review and comment" *International Journal of Auditing* November (pp247-268)

Gray R.H. and K.J.Bebbington (2000) "Environmental accounting, managerialism and sustainability: Is the planet safe in the hands of business and accounting?" *Advances in Environmental Accounting and Management* Vol.1 (forthcoming)

Gray R.H., R.Kouhy & S.Lavers (1995a) "Corporate social and environmental reporting: A review of the literature and a longitudinal study of UK disclosure" *Accounting, Auditing and Accountability Journal* 8(2) (pp47-77)

Gray R.H., R.Kouhy & S.Lavers (1995b) "Constructing a research database of social and environmental reporting by UK companies: A methodological note" *Accounting, Auditing and Accountability Journal* Vol 8, No 2, pp. 78-101.

Gray R.H., D.L. Owen & C.Adams (1996) *Accounting and accountability: Changes and challenges in corporate social and environmental reporting* (London: Prentice Hall)

Gray R.H., D.L.Owen & K.T.Maunders (1988) "Corporate social reporting: emerging trends in accountability and the social contract" *Accounting, Auditing and Accountability Journal* 1(1) (pp6-20)

Gray R.H., D.L.Owen & K.T.Maunders (1991) "Accountability, Corporate Social Reporting and the External Social Audits" *Advances in Public Interest Accounting* Vol.4 (pp1-21)

Gunthorpe D.L. (1997) "Business Ethics: A Quantitative analysis of the impact of unethical behaviour by publicly trade corporations *Journal of Business Ethics* 16(5) April (pp537-543)

Hawken P. (1993) *The ecology of commerce: a declaration of sustainability* (New York: Harper Business)

Hawken P., A.B.Lovins and L.H.Lovins (1999) *Natural Capitalism: The Next Industrial Revolution* (London: Earthscan)

Hines R. "The implications of stock market reaction (non-reaction) for financial accounting standard setting" *Accounting and Business Research* 15(57) Winter 1984 (pp3-14)

Hughes K.E. II (2000) "The value relevance of non-financial measures of air pollution in the electric utility industry" *The Accounting Review* 75(2) April (pp209-228

Ingram R.W. (1978) "An investigation of the information content of (certain) social responsibility disclosure" *Journal of Accounting Research* 16(2) (pp270-285)

Jackall R. (1988) *Moral Mazes: The world of corporate managers* (New York: Oxford University Press)

Jacobson R. (1991) "Economic efficiency and the quality of life" *Journal of Business Ethics* 10. (pp201-209)

Jaggi, B. and M. Freedman (1982). "An analysis of the information content of pollution disclosures." *The Financial Review* September (pp 142-152).

Jaggi B. & M.Freedman (1992) "An examination of the impact of pollution performance on economic and market performance: Pulp and Paper Firms" *Journal of Business Finance and Accounting* 19(5) (pp697-713)

Kolk A.,R.vanTulder and C.Welters (1999) "International codes of conduct and corporate social responsibility: Can transnational corporations regulate themselves?" *Transnational Corporations* 8(1) April (pp143-180)

Korten, D. (1999) *The Post-Corporate World: Life after capitalism* (San Francisco/West Hartford: Berrett-Koehler/Kumerian)

Leggett J. (ed) 1996) *Climate change and the financial sector: The emerging threat - the solar solution* (Munich: Gerling Akademie Verlag)

Lehman G. (1999) "Disclosing new worlds: a role for social and environmental accounting and auditing" *Accounting Organizations and Society* 24(3) April (pp217-242)

McIntosh M., D.Leipziger, K.Jones and G.Coleman (1998) *Corporate Citizenship: Successful strategies for responsible companies* (London: Pitman)

McMillan G.S. (1996) "Corporate Social Investments: Do they pay?" *Journal of Business Ethics* 15(3) March (pp309-314)

Macintosh N.B., T.Shearer, D.B.Thornton and M.Welker (2000) "Accounting as simulcrum and hyperreality: perspectives on income and capital" *Accounting Organizations and Society* 25(1) (pp13-50)

Mathews M.R. (1995) "Social and environmental accounting: A practical demonstration of ethical concern?" *Journal of Business Ethics* 14 (pp663-671)

Medawar C. (1976) "The social audit: a political view" *Accounting, Organizations and Society* 1(4) (pp389-394)

K.Mueller, J.de Frutos, K.Schussler, H.Haarbosch (1994) *Environmental Reporting And Disclosures: The Financial Analyst's View* (The European Federation of Financial Analysts' Societies)

Owen D., R.Gray and K.J.Bebbington (1997) "Green accounting: Cosmetic irrelevance or radical agenda for change?" *Asia-Pacific Journal of Accounting* 4(2) December (pp175-198)

Pava M.L. and J.Krausz (1996) "The association between corporate social responsibility and financial performance: The paradox of social cost" *Journal of Business Ethics* 15(3) March (pp321-357

Reilly B.J. & M.J.Kyj "Economics and Ethics" Journal of Business Ethics 9.9 September 1990 (pp691-698).

Rich B. (1994) *Mortgaging the Earth: The World Bank, environmental impoverishment and the crisis of development* (Boston: Beacon Press

Richardson A.J., M.Welker and I.R.Hutchinson (1999) "Managing capital market reactions to social responsibility" *International Journal of Management Reviews* 1(1) (pp17-43)

Rivoli P (1995) "Ethical aspects of investor behaviour" *Journal of Business Ethics* 14(4) April (pp265-277)

Schmidheiny S. (1992) *Changing Course* New York: MIT Press.

Schmidheiny S. & F.J.Zorraquin (1996) *Financing Change: The financial community, eco-efficiency and sustainable development* (Cambridge, Mass: MIT Press)

Skogsvik K. (1998) "Conservative accounting principles, equity valuation and the importance of voluntary disclosures" *British Accounting Review* 30(4) December (pp361-382)

Stone B. (2000) "Social responsibility and Institutional Investment: An Empirical Analysis of the Environmental Screen" *The Journal of Investing* 9(3) Fall (pp81-94)

Sunyani M. (1999) *Blind to sustainability? Stock markets and the environment* (London: Forum for the Future)

Thielemann U. (2000) "A brief theory of the market – ethically focused" *International Journal of Social Economics* 27(1) (pp6-31)

Ullmann A.E. (1985) "Data in Search of a Theory: A Critical Examination of the Relationships Among Social Performance, Social Disclosure and Economic Performance of US Firms" *Academy of Management Review* 10(3) (pp540-557)

Table 1 Descriptive Statistics for the Sample

SECTOR Number	Name	No. of Firms	No. of Observations	SIZE Mean	VOLTOT Mean	ENVTOT Mean	CSRTOT Mean	RETURN Mean	RETURN Std. Dev.
1	Food & Drink	17	114	4701	1.75	0.56	5.69	0.064	0.210
2	Textiles	4	30	1973	1.08	0.66	4.97	0.042	0.540
3	Mech. Engineering	4	33	3410	1.81	0.79	5.56	0.038	0.338
4	Electrical & I.T.	11	66	4837	1.54	0.55	6.14	0.080	0.255
5	Processing	10	59	2269	1.28	0.67	5.74	0.019	0.264
6	Chemicals	7	59	13813	2.14	1.45	6.47	0.086	0.205
7	Financial and Other Services	8	47	3514	1.17	0.57	5.10	0.099	0.288
8	Retail and Leisure	17	122	4672	1.93	0.58	5.96	0.042	0.321
9	Pharmaceuticals	3	19	7377	2.81	1.96	8.09	0.068	0.264
10	General Manufacturing	2	13	2935	1.84	1.13	7.73	0.120	0.156
11	Construction	7	35	2940	1.61	0.64	4.70	-0.097	0.390
12	Extractive Industries	2	18	3203	2.05	1.52	6.63	0.005	0.335
13	Aerospace and Defence	2	15	6406	1.18	0.39	5.74	0.162	0.398
14	General and other	6	30	2010	0.97	0.59	5.62	0.005	0.336
All		100	660	4860	1.67	0.75	5.86	0.050	0.301

Note: This Table provides descriptive statistics for the variables employed in the analyses. In particular, the sector name and number are given as well as the size, which is the average turnover value in £m. The mean number of pages devoted to total corporate social disclosure for each company in a sector (CSRTOT) is shown. This total is split into the number of pages devoted to voluntary disclosure (VOLTOT) and the number devoted to environmental disclosures (ENVTOT). Finally the mean share return and standard deviation of share returns is shown.

Table 1: Explanation of the Industry sectors used in the database

Categories taken from The Times 1000 reference book :

1. Food and drink: including tobacco, brewers, meat, distillers, wine, food manufacturing.

2. Textiles: including cloth, wool, footwear.
3. Mechanical and general engineering: including machine tools, motor vehicles, components, industrial plant.
4. Electronic and electrical engineering: including switchgear, information technology, communications, computers, optics.
5. Processing: including building materials, packaging, paper, metallurgy, printing.
6. Chemicals: including gases, coal products, oil products, paint manufacturing, plastics, detergents.
7. Financial and other services: including insurance, publishing, newspapers, media, property, leasing, transport, rental, distribution, shipping, storage.
8. Retail and leisure: including merchanting, hotels, catering, wholesale, commodity broking, motor distribution, general trading.
9. Pharmaceuticals: including animal products, veterinary products, nutritional products, toiletries, hospital and laboratory supplies.
10. General manufacturing: including household, toys and games, office equipment, glassware, miscellaneous industrial and mixed manufacturing (i.e. overlap of 3,4,5).
11. Contracting: including building, civil engineering, construction.
12. Extractive: including mining, exploration, quarrying.
13. Aerospace and defence.
14. Other: including agriculture, fisheries, animal feedstuffs, timber-growing and forestry.

Table 2 Pearson Correlation Coefficients Between Share Returns and the Amount of Corporate Social Disclosure.

	CSRTOT		VOLTOT		ENVTOT	
	Correlation	p-value	Correlation	p-value	Correlation	p-value
Total Sample	0.021	0.588	0.032	0.418	0.043	0.266
Group A	-0.005	0.922	0.029	0.587	-0.005	0.930
Group B	-0.054	0.608	-0.026	0.806	0.116	0.272
Group C	0.058	0.412	0.031	0.662	0.041	0.560
1989	-0.185	0.122	-0.115	0.341	0.058	0.629
1990	0.121	0.306	0.103	0.388	0.091	0.442
1991	0.041	0.722	0.158	0.171	0.050	0.664
1992	0.175	0.137	0.105	0.375	0.085	0.471
1993	-0.032	0.780	0.031	0.789	0.029	0.799
1994	-0.034	0.771	-0.037	0.750	0.033	0.775

1995	0.070	0.549	-0.105	0.366	0.040	0.734
1996	-0.019	0.873	-0.038	0.750	-0.089	0.453
1997	-0.166	0.198	-0.046	0.724	-0.171	0.185

Note: This table shows the Pearson Correlation Co-efficients between share returns and corporate social and environmental disclosure and two of its components (CSRTOT, VOLTOT and ENVTOT). These correlations are estimated (i) for the whole sample, (ii) for three sectoral goupings and (iii) for each of nine years. Group A consists of sectors 1,3,4,8,and 14, group B comprises sectors 6, 9 and 10, and group C includes sectors 2, 5, 7, 11, 12, and 13.

Table 3 Regression Analysis of Share Returns on the Amount of Corporate Social Disclosure.

	CSRTOT		VOLTOT		ENVTOT	
SECTOR	Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
1	-0.041	0.110	-0.009	0.479	-0.016	0.588
2	-0.072	0.580	-0.082	0.487	-0.015	0.907
3	0.042	0.599	0.029	0.492	0.072	0.409
4	0.018	0.621	-0.001	0.948	-0.005	0.895
5	0.026	0.588	0.004	0.890	0.021	0.541
6	-0.001	0.984	-0.002	0.899	0.003	0.918
7	0.063	0.210	0.045	0.104	0.004	0.925
8	0.011	0.761	0.013	0.502	-0.020	0.564
9	0.025	0.791	-0.013	0.650	0.016	0.354
10	-0.059	0.332	0.035	0.249	0.043	0.396
11	0.011	0.906	-0.033	0.564	0.025	0.798
12	0.141	0.153	0.024	0.456	0.035	0.423
13	0.080	0.566	0.084	0.473	0.146	0.532
14	0.052	0.540	0.041	0.554	0.064	0.359

Note. This table presents the results from a linear regression of share returns on each of (i) total corporate social reporting, (ii) voluntary disclosure, and (iii) environmental disclosure. The beta coefficient and its p-value are shown.

Table 4 A :A Test of Non-Linear Relationships Between Returns and Corporate Social Disclosure

Panel A		Return				
		Low	Medium	High	Total	
	Small	44	95	75	214	
CSRTOT	Medium	43	108	97	248	
	Large	33	98	67	198	$\chi 2 = 2.934$
	Total	120	301	239	660	p-value = 0.569

Panel B		Return				
		Low	Medium	High	Total	
	Small	42	95	80	217	
VOLTOT	Medium	45	124	89	258	
	Large	33	82	70	185	$\chi 2 = 1.191$
	Total	120	301	239	660	p-value = 0.880

Panel C		Return				
		Low	Medium	High	Total	
	Small	37	76	80	193	
ENVTOT	Medium	55	132	98	285	
	Large	28	93	61	182	$\chi 2 = 6.050$
	Total	120	301	239	660	p-value = 0.195

Note: This table shows the distribution of observations according to their share returns and social and environmental disclosures. A χ^2 test of the null hypothesis of no patterns in the distributions of observations across groups is also provided.

Table 4B Chi-Squared Test Statistics For The Association Between Returns (Small , Medium, Large) and the Amount of Corporate Social Disclosure.

	CSRTOT		VOLTOT		ENVTOT	
	Chi-Squared	p-value	Chi-Squared	p-value	Chi-Squared	p-value
Total Sample	2.934	0.569	1.191	0.880	6.050	0.195
Group A	1.479	0.830	1.156	0.888	7.292	0.121
Group A	5.209	0.267	3.081	0.544	0.814	0.937
Group A	6.411	0.170	0.943	0.918	7.213	0.125
1989	7.821	0.098	2.635	0.621	2.280	0.684
1990	0.875	0.928	1.472	0.832	3.002	0.558
1991	3.126	0.537	4.831	0.305	3.089	0.543
1992	6.364	0.174	1.697	0.791	2.559	0.634
1993	1.642	0.801	6.743	0.150	0.910	0.923
1994	2.035	0.729	3.202	0.524	4.192	0.381
1995	2.031	0.730	3.061	0.548	5.133	0.274
1996	3.383	0.496	3.856	0.426	5.089	0.278
1997	1.529	0.466	1.194	0.879	0.988	0.912

Note: This table summarises the results of Chi-squared tests of association between share returns and corporate social and environmental disclosures (CSRTOT, VOLTOT and ENVTOT), (i) for the whole sample, (ii) for three sectoral goupings and (iii) for each of nine years. Group A consists of sectors 1,3,4,8,and 14, group B comprises sectors 6, 9 and 10, and group C encompasses sectors 2, 5, 7, 11, 12, and 13.

Table 5 Output from Fitting a General Linear Model to Explain the Share Return Data

Source	Sum of Squares	df	F ratio	p-value.
Intercept	0.134	1	1.651	0.199
YEAR	1.526	8	2.347	0.017
CSRTOT	0.042	1	0.522	0.470
VOLTOT	0.001	1	0.012	0.912
ENVTOT	0.028	1	0.343	0.558
SIZE	0.188	1	2.308	0.129
YEAR * CSRTOT	1.127	8	1.733	0.088
YEAR * VOLTOT	0.951	8	1.463	0.168
YEAR * ENVTOT	0.648	8	0.996	0.438
YEAR * SIZE	1.595	8	2.454	0.013
Error	49.889	614		
Total	61.342	659		

Note: This table presents the results from an analysis of co-variance of share returns on the factor YEAR, on the three covariates total corporate social reporting, voluntary disclosure, environmental disclosure, and on the interactions between YEAR and each of these covariates. The adjusted R-squared value is 10.4 percent.