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Does Corporate Social Responsibility Destroy Shareholder Wealth? Evidence from the UK

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“The Social Responsibility of Business is to Increase its Profits¹”

1. INTRODUCTION

Since Milton Friedman’s controversial 1970 New York Times article on corporate social responsibility (CSR), there has been a substantial debate on both the role and nature of CSR in business. Friedman states that since managers are employed by shareholders as a result of the separation of ownership and control, the goal of the manager is thus set by shareholders and in most instances this will be to maximize the return on shareholders’ investment. Consequently, managers are only obliged to reasonably take account of any negative externalities that result from corporate activity as stipulated by legal convention and social norms. As such, any action above this minimum simply reduces shareholder wealth. Moreover, where managers’ act in a socially responsible manner, this will in most instances go against the wishes of shareholders as managers are more often than not, contractually bound to increase profits and not to undertake socially responsible activities.

This view of CSR and the corporation is not unique to Friedman. Rappaport (1986) and Jensen (2001) argue that the role of managers is to pursue shareholder wealth maximization, and thus CSR is simply an additional and unnecessary cost. Tirole (2001) meanwhile states that managerial contracts would be difficult to enforce if social responsibility performance metrics formed an explicit part of a corporate manager’s terms of employment as CSR performance is difficult to accurately measure. Profit maximization and share price increases however are observable and so managers can be

held to account for their actions, as contracts that stipulate performance metrics around these two criteria are enforceable.

Stakeholder theory, however, takes a very different perspective on the role of the corporation, and the corporate manager. Donaldson and Preston (1995) in their analysis of stakeholder theory state that despite having three main attributes, it is crucially underpinned by its normative base. In this setting there is intrinsic value in the different stakeholder relationships of the firm. By undertaking CSR activities, managers can therefore enhance the value of stakeholder relationships without disadvantaging shareholders and increase the value of the corporation.

Under the free-market view professed by Friedman and others, the market is arguably the final arbiter on whether a particular initiative is good or bad for the corporation. Although numerous studies analyze the long-term stock market and financial performance of firms that are classified as socially responsible under various benchmarks, this is not a true test of how the market perceives CSR². Moreover, the long-term stock performance of firms that are classified as socially responsible may be in part a function of demand for such stocks by sub-groups of investors (e.g. fund managers that screen their investments based on socially responsible criteria). To capture the market's perception of the value or otherwise of CSR an event that provides an external, market based classification of a firm as socially responsible is required. We therefore use the announcement of a firm's inclusion in the FTSE4Good index as this arguably provides new information to the market about a firm's CSR activities³. Consequently, we can analyze whether or not the market views CSR as value enhancing⁴.

As a result of the conflicting predictions between the Friedman (1970) rational free market view of CSR, that it is simply an excess cost imposed upon shareholders, and the stakeholder view, that there is intrinsic value in developing key stakeholder relations, this paper addresses two issues. First, we analyze how the stock market, and thereby investors, react to corporations being classified as socially responsible. Using the announcement date of firm inclusion in the FTSE4Good index we apply an event study methodology to capture the stock market response to this new information about the firm. If investors believe that the new information contained in this announcement signals a decrease in firm profitability (i.e. the Friedman view of CSR), then we would expect to see a significant and negative market reaction on announcement. However, if the stock market views a firm being classified as socially responsible as value enhancing (i.e. the stakeholder view of CSR), then we would expect the market reaction to be significant and positive.

The second stage of our analysis examines the firm specific characteristics that determine the market reaction to the announcement that a firm has been included in the FTSE4Good index. There are a number of different firm characteristics that have been found to be important in analyzing CSR. Prior studies have suggested for example factors such as firm size, turnover, market share, ownership, leverage, and profitability are important in explaining the social activities of firms (see for example, Lepoutre and Heene, 2006; and Adams and Hardwick, 1998). As a result we use a number of these firm characteristics to test the determinants of the market reaction to firm inclusion in the FTSE4Good index. In particular we focus on variables that are important for measuring stakeholder relationships and corporate social activity namely, firm size (Roberts, 1992), leverage

(Adams and Hardwick, 1998), profitability (Alexander and Buchholz, 1978) and employee productivity (Berman, Wicks, Kotha and Jones, 1999).

In addition to these well established variables we also consider an emerging and potentially important strand of the CSR literature, namely the corporate communication of the CSR activities of the firm (Arvidsson, 2010). As a result of the complexities of defining CSR (Freeman *et al*, 2010), and thus understanding what it is that the market is reacting to, we also analyze the visibility of the firm (Meznar and Nigh, 1995) to analyze and control for the level of corporate communication that the firm engages in.

The remainder of this article is set out as follows. In Section 2 we discuss the FTSE4Good Index and the criteria for inclusion. In Section 3 we discuss relevant literature and develop our hypotheses. Section 4 presents our data and methodology while Section 5 discusses our results, Section 6 critically reflects on the different relationships that we find. Section 7 concludes and considers areas for future research.

2. THE FTSE4GOOD INDEX

FTSE4Good was launched in July 2001. The establishment of the index had three main goals. First, to allow investors to identify companies which are socially responsible based on a range of objective and independent CSR benchmarks. Second, to create a performance benchmark that could be applied by socially responsible investment funds. Last, the promotion of greater corporate responsibility amongst firms⁵.

The inclusion of a firm in the index is based on a wide range of criteria. The first requirement is that a firm must be in the UK FTSE All-Share Index or the FTSE

Developed Index⁶. A negative screen is then applied to exclude a number of industries. Companies involved in tobacco, weapons systems and/or nuclear weapons systems either directly (whole systems) or indirectly (components), and nuclear power are excluded. For companies involved in uranium mining an industry specific screen is applied from 2006. It is therefore possible for a uranium mining firm to be included subject to stringent industry specific criteria from 2006 onwards.

If a firm is not screened out based on its industry then inclusion in the index is dependent on meeting a number of eligibility criteria. These criteria are split into five distinct areas, namely; working towards environmental sustainability; developing positive relationships with stakeholders; up-holding and supporting universal human rights; ensuring good supply chain labor standards; and countering bribery. The inclusion criteria have however evolved through time and so the criteria on environmental sustainability and upholding universal human rights were strengthened in 2002 and 2003 respectively while supply chain labor standards were introduced in 2004/5 and countering bribery standards were introduced in 2005/6.

The FTSE4Good policy committee collects the relevant information for the five eligibility criteria from a number of different sources including; scrutiny of annual reports; research of corporate websites; questionnaires; and meetings with corporate managers. To assess if a firm meets the relevant criteria within each category the policy committee works in conjunction with a number of international partners including, the Ethical Investment Research Service (EIRIS; UK), Centre for Australian Ethical Research (CAER; Australia), EthiFinance (France), Avanzi (Italy), Stock-at-Stake (Belgium), Institut für Markt-Umwelt-Gesellschaft (IMUG; Germany) and Fundación

Ecoligia y Desarrollo (FED; Spain). Through this network the research that is required for assessing a firm's suitability for inclusion is collated on a semi-annual basis and measured against the inclusion criteria. This then feeds into the semi-annual review of constituents (March and September) by the FTSE4Good policy committee.

For the purpose of the present study, the question arises if the announcement of a firm's inclusion in the FTSE4Good index will provide new information to the market (and may, therefore, generate a market reaction) or if, alternatively, information about a firm's CSR activities is already incorporated into stock prices. There are good reasons to believe that the announcement of a firm's inclusion in the FTSE4Good index provides new information to the market. First, the inclusion of a firm is decided objectively based on a wide range of externally set criteria. Consequently, the benchmarking of the level and quality of CSR within a firm is likely to be accurate as it is determined by independent experts such as EIRIS. Second, the information used to decide on a firm's inclusion is collated from a wide range of sources. Crucially, this includes a survey of the firms that are being considered and a process of consultation with the firm's management. This allows managers to convey private information about the CSR activities of the firm that can then be externally validated and quantified by an independent body (i.e. the FTSE4Good policy committee). We therefore posit that inclusion in the FTSE4Good index will convey additional information to the market about the CSR activities of a firm which allows for an analysis of how the market perceives the value of CSR.

3. RELEVANT LITERATURE AND HYPOTHESES

If inclusion in the FTSE4Good index conveys new information about a firm to market

investors, then this event can be viewed as either value enhancing or value destroying. We therefore put forward two competing hypotheses for the reaction of the stock market to a firm being included in FTSE4Good. If shareholders follow the Friedman (1970) view of CSR, then it is simply an additional cost on the owners of the firm and a form of managerial excess. As a result, the firm will be at a competitive disadvantage relative to its corporate peers as the firm has a higher cost base with no concomitant increase in corporate value (Aupperle, Carroll and Hatfield, 1985). CSR in this case is therefore a value destroying exercise and is contrary to the investor objective of increasing shareholder wealth.

H1a: The stock market has a significant negative reaction to inclusion in FTSE4Good.

Conversely, CSR may be perceived by the market as value enhancing in a way that is consistent with the Freeman (1984) stakeholder view of the corporation. From the perspective of a shareholder, if various stakeholder relationships are managed within the overarching strategy of the firm, this could enhance the overall value of the corporation. CSR may therefore be a source of competitive advantage if it is implemented in a way that is consistent with the underlying business goals and governance strategy of the firm (Maxfield, 2008).

One instance where this can be highlighted is if a firm has an effective anti-corruption policy this can lower the risk of costly law suits and fines. For example, where a corporation is found to have engaged in bribery the fines imposed on the firm can be substantial. In February 2010 BAE Systems, a UK arms manufacturer, was fined approximately £286m by the US Department of Justice in an out of court settlement over bribery charges against the firm. The company was accused of having,

“...made hundreds of millions of dollars in payments to third parties, while knowing of a high probability that money would be passed on to foreign government decision-makers to favor BAE in the award of defense contracts.”⁷

Consequently, the market may react positively to the inclusion of a firm in FTSE4Good as this signals to the market that the expected future cash flows of the firm are lower risk and more certain, as costly law suits and fines are less likely to occur.

H1b: The stock market has a significant positive reaction to inclusion in FTSE4Good.

Additional firm characteristics are also important to understand the observed market reaction to inclusion in FTSE4Good. Firm size is an important characteristic in analyzing corporate social responsibility. Although, size does not proxy for any stakeholder relationship it captures a number of characteristics that may be important in explaining any observed market reaction. One facet of whether CSR is value enhancing is the notion of ‘ability-to-pay’. Where firms have lower amounts of financial resource, the cost of CSR is likely to reduce the ability of the firm to finance its ongoing operations and undertake new investment opportunities. Consequently, CSR may reduce shareholder value in such circumstances. Firm size arguably captures this ability to pay as company size is related to both economies of scale and competitive advantage (Ball and Foster, 1982). Roberts (1992) meanwhile argues that firm size creates increased political exposure and public scrutiny, and so larger firms undertake greater amounts of corporate social activity. Moreover, increased levels of corporate social activity are also likely to occur where firms have a larger number of stakeholders who monitor the activities of the firm (Cowen et al, 1987). Larger firms may therefore undertake more corporate social activity as this limits the risk that government or regulators impose additional costs on

their operations through taxes and compliance costs if they do not act in a socially responsible manner (Adams and Hardwick, 1998). Consequently, undertaking CSR activities lowers the risk of future cash flows for large firms and so from the perspective of the investor the firm is more valuable as it offers a better risk/return payoff.

H2: Firm size is positively related to the stock market reaction to inclusion in FTSE4Good

Leverage is another important variable in analyzing the value of corporate social responsibility. Debt holders are clearly an important stakeholder group within a firm. Debt holders provide part of a company's finance and so the actions of managers will have a direct impact on this investor group. Moreover, the use of leverage in the capital structure of the firm imposes constraints on managerial perquisite consumption as they are bound to service the cost of the debt (Jensen, 1986). Leverage therefore forces managers to increase the value of the corporation as opposed to maximizing their personal wealth, as they are subject to increased scrutiny from the capital market (Easterbrook, 1984).

However, as leverage increases beyond an optimal level this imposes increased contracting costs on the firm as it is subject to additional monitoring from debt holders. In such circumstances managers will have to set out the pre-emptive rights of claimants in the event of bankruptcy, and the firm may be subject to more stringent liquidity tests and unscheduled audits (Booth, 1992). Consequently, as the firm moves closer to insolvency the needs of debt holders dominate the objectives of the firm to the detriment of all other stakeholders (Adams and Hardwick, 1998).

H3: Firm leverage is negatively related to the stock market reaction to inclusion in

FTSE4Good

The link between profitability and corporate social responsibility has also been widely investigated. In looking at firm profitability Roberts (1992) sums up the link between firm profitability and CSR as a function of the economic performance of the firm. As such, the capacity of the firm's management to undertake socially responsible activities is likely to be subordinate to the survival of the firm as an economic entity. However, as Roberts (1992) states, "*...given certain levels of stakeholder power and strategic posture, the better the economic performance of a company, the greater its social responsibility activity and disclosures.*"

This link has also been argued by a wide number of authors [see for example Ullmann (1985), McGuire et al. (1988) and Adams and Hardwick (1998)]. Moreover, Alexander and Buchholz (1978) suggest that firms who undertake socially responsible investments are better run relative to firms that do not undertake such investments. Socially responsible firms therefore signal increased managerial ability and financial performance (Alexander and Buchholz, 1978).

H4: Firm profitability is positively related to the stock market reaction of inclusion in FTSE4Good

Employees are a key stakeholder group within the firm and there is an extensive literature that shows investment and management of this stakeholder group adds value to the firm (see for example, Huselid, 1995; Delery and Doty, 1996 and Berman, Wicks, Kotha and Jones, 1998). By managing employees as a key stakeholder group and investing in the workforce of the firm, this can lead to lower employee turnover and lower absenteeism, and create higher levels of productivity (Berman et al, 1998). Investment in the

workforce of the firm has long been shown to be a source of competitive advantage (Huselid, 1995; Pfeffer, 1994; Becker and Gerhart, 1996). Moreover, the inclusion criteria for FTSE4Good firms also place large emphasis on engagement with this stakeholder group, in a number of different ways including, equal opportunities, health and safety, staff training, education and employee relations. If a firm is included in FTSE4Good it therefore indicates that this stakeholder group is well managed and may therefore signal a higher level of employee productivity.

H5: Labor productivity is positively related to the stock market reaction to inclusion in FTSE4Good

The emphasis that firms place on communicating the CSR activities and ethical activities that they undertake has increased considerably over the past decade (Arvidsson, 2010). Corporate communications managers therefore devote increasing amounts of corporate resources to communicate the CSR activities of the firm to investors. Moreover, Meznar and Nigh (1995) argue that more visible firms are under pressure to engage in public relations and to manage the public perception of their activities. As a result, more visible firms are likely to have built up more corporate communication expertise prior to the announcement of inclusion in FTSE4Good.

Although the announcement event we analyze in this study is not directly influenced by corporate communication expertise⁸, the ability of the firm to undertake effective corporate communication strategies may still influence the market reaction to inclusion in FTSE4Good. Firms which are more visible come under greater scrutiny and pressure to demonstrate that they act in ways that conform to social norms (Roberts, 1992; Meznar and Nigh, 1995; Arvidsson, 2010). As a result, high visibility firms are likely to have

greater corporate communications expertise as they do more to communicate the activities of the firm as this legitimizes the activities of the corporation (Branco and Rodrigues, 2006). However, there is a balance that needs to be struck in promoting the activities of the firm so that it becomes a meaningful communication of what the firm is doing rather than an exercise of self promotion (Borglund, 2009). As such, the announcement of inclusion in the FTSE4Good index may help to mitigate any skepticism about the communication strategy of the firm as it legitimizes the position of the firm through independent confirmation of the firm's own communication about its activities.

H6: Firm visibility is positively related to the stock market reaction to inclusion in FTSE4Good.

4. DATA AND METHODOLOGY

Our sample consists of announcements that firms traded on the London Stock Exchange (LSE) are included in the FTSE4Good index over the period July 2001 to March 2008. We use Regulatory News Service (RNS) announcements of inclusion to identify the inclusion events we use. RNS announcements for FTSE4Good inclusions are brief, factual and highly standardized in terms of their content⁹. The standardized nature by which inclusion is communicated is advantageous for our study as it prevents our results from being driven by factors such as the choice of communication channel or the tone and contents of the communication.

In order to be sampled, firms must have financial information available on the *Datastream-Worldscope* database. This leaves us with a sample of 356 index inclusions.

Following McWilliams and Siegel (1997) we then check our sample of 356 inclusions for confounding events such as dividend announcements, mergers and so on around our event window. After investigating this we find that there are no confounding events and so our final sample consists of 356 inclusion events¹⁰.

Table 1 provides an overview of our sample. Announcement dates are concentrated in a small number of days. The majority of the index additions (241) take place at the launch of the FTSE4Good on July 10th 2001. The remaining 115 additions occur biannually in March and September for the remaining years of the sample following periodic index reviews by the FTSE4Good policy committee. Although no particular period after the launch of the index is characterized by a high number of additions, the clustering of event dates over the sample period is taken into account in the empirical methods employed.

In looking at the final column of Table 1 it is apparent that the original constituents of the FTSE4Good that were included in July 2001 have, on average, a much higher market capitalization than subsequent additions¹¹. This is consistent with expectations however, as larger firms are more likely to undertake CSR activities (Roberts, 1992; Cowen et al, 1987; and Adams and Hardwick, 1998). As such the initial constituents of the FTSE4Good index are expected to be larger firms relative to firms included in subsequent years.

Event Study Estimation

We employ an event study methodology to estimate the stock market reaction to firm inclusion in the FTSE4Good index. First we estimate a market model of daily returns on FTSE market returns (Brown and Warner, 1985; McKinley, 1997). Daily stock returns

data are collected from *Datastream*. Abnormal returns (ε_{it}) are calculated over our event windows around the FTSE4Good inclusion announcement ($t=0$). For every firm added to the FTSE4Good we estimate the following regression,

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \quad t = -220, \dots, -20 \quad (1)$$

where R_{it} refers to the daily stock return for firm i to be included in the FTSE4Good. Given the clustered nature of the inclusion dates in March and September, we consecutively employ the FTSE100, FTSE350 and FTSE-All Share index for market returns (R_{mt}) to ensure that our results are not driven by a particular equity benchmark for returns to our sample firms.

Cumulative abnormal returns (CAR_i) are averaged over different event windows [$(t-1, t+1)$, $(t-2, t+2)$, $(t-5, t+5)$, $(t-10, t+1)$, $(t-20, t+1)$]. We follow Dodd and Warner (1983) and standardize abnormal returns (AR) on the event day E by the square root of their estimation period return variance ($\hat{\sigma}_i$),

$$SAR_{iE} = AR_{iE} / \left[\hat{\sigma}_i \sqrt{1 + \frac{1}{L_i} + \frac{(R_{mE} - \bar{R}_m)^2}{\sum_{m=1}^{L_i} (R_{mt} - \bar{R}_m)^2}} \right], \quad (2)$$

where L the number of days (200) used in the market model and R and \bar{R} are the equity returns and the market model return predictions, respectively. The concentration of events on a small number of days (event clustering) invalidates the assumption that abnormal returns are independently distributed across firms. We therefore use the abnormal return statistics reported in Boehmer, Musumeci and Poulsen (1991) which are unaffected by

event clustering and which also correct for increases in the variance of abnormal returns around index additions.

$$\sigma_{SAR_t} = \sqrt{\sum_{i=1}^n \left(SAR_{it} - \sum_{i=1}^n SAR_{it}/n \right)^2 / n(n-1)} \quad (3)$$

This yields the following t -statistic:

$$t = \sum_{i=1}^n \frac{SAR_{it}/n}{\sigma_{SAR_t}} \quad (4)$$

To ensure that our results are robust to the effects of outliers, we use a Wilcoxon signed rank test. The resulting z -statistic indicates if median abnormal returns are statistically different from zero (See DeLong, 2001).

5. RESULTS

In this section, we explicitly test the hypotheses developed in Section 3 of the paper. Our empirical results are split into two main parts. First, we examine the market reaction to the announcement that a firm has been included in the FTSE4Good index. Second, we explain the cross-sectional variation in the market reaction to inclusion by analyzing firm characteristics that are consistent with stakeholder theory and the determinants of corporate social activity.

Event Study Results

Table 2 shows the market reaction to the announcement that a firm is to be included in the FTSE4Good index. The results show there is a positive and statistically significant market reaction on the announcement day of firm inclusion in the FTSE4Good index.

Measured against the FTSE 100 index, firms that are to be included realize abnormal returns on $t=0$ of 0.587% (statistically significant below 1% according to the t -statistic and the z -statistic). However, similar to Curran and Moran (2007), the average CARs are not significant over longer event period windows¹².

For robustness, we also run a simple test to confirm that the announcement of inclusion constitutes an event that is noticed by market participants. We test if there is a market-adjusted increase in trading volume on the day of the announcement. Our results show that the average trading volume of the firms that are included in the index significantly increases on the announcement date when compared against the market. Investors are therefore reacting to the announcement of index inclusion.

We can therefore reject hypothesis *H1a* that the stock market views being classified as socially responsible as a cost to shareholders. However, the results presented in Table 2 do not lead us to accept our competing hypothesis *H1b* either that being classified as socially responsible is associated with increased shareholder value. Instead, we conclude at this point that while shareholders do not view being classified as socially responsible as value destroying, we do not find strong evidence that inclusion in FTSE4Good, on average, increases shareholder value.

However, despite the average event period return being statistically insignificant, the cross-sectional variation in the returns to individual firms is large. For example, Baltimore Technologies plc, Future Network plc, and Eurodis Electron plc each experience market-adjusted returns of approximately 13% on the announcement date. In the next section, we analyze some of the determinants of these differences and examine a

number of firm characteristics which have been found to be important in both stakeholder theory and in the determinants of a firm's CSR activities.

Firm Level Determinants

In this section, we examine a number of firm characteristics that have been found to be important proxies for stakeholder relationships and corporate social activity. Based on the hypotheses developed in Section 3 we examine the following firm characteristics. To capture firm size we use the log transformation of total assets (TA). Firm profitability is measured by the return on equity (ROE). Leverage (LEVER) is defined as total debt scaled by total assets. Productivity (PDCT) is defined as earnings before interest and taxes (EBIT) scaled by the number employees. In effect, this ratio measures the £-contribution of each employee to a firm's profit. Finally, following Meznar and Nigh (1995) we include a measure of firm visibility (VISIBLE) based on the number of times a firm is mentioned in the press. We construct this variable using Factiva to track the number of times that our sampled firms were mentioned in the Financial Times (London edition) during the three years before their inclusion in FTSE4Good¹³.

We also include a number of firm level control variables. First we control for past firm growth, measured by the three-year asset growth rate (GRWTH). In Addition to this we also control for the future growth opportunities of the firm by including the market-to-book ratio (MTB). This is estimated as the sum of the market value of equity and long-term debt divided by total assets.

Complete variable definitions and summary statistics are provided in Table 3 and correlations are provided in Table 4.

Univariate Tests

Table 5 divides our sample into two portfolios based on the magnitude of firm specific 5-day CARs¹⁴. The first column contains firms that are in the lowest market reaction quintile, while the second portfolio is made up of firms in the highest market reaction quintile. We report mean firm characteristics in each of the portfolios and test for differences between the two groups.

The results in Table 5 show that firms located in the top quintile (i.e. the portfolio with the largest positive reaction to inclusion in FTSE4Good), are significantly larger, by total assets (TA), than those firms that are located in the bottom quintile. This is consistent with our second hypothesis that as a result of political visibility (Roberts, 1992) their ability-to-pay (Ball and Foster, 1982) and higher levels of monitoring (Cowen et al, 1987) larger firms will experience a larger positive reaction to the announcement that the firm is socially responsible as inclusion signals that the firm is lower risk.

Our next hypothesis concerns firm leverage. In looking at debt levels (LEVER) we do not find any statistically significant difference between the level of leverage of those firms in the high market reaction quintile and low market reaction quintile. As such we cannot confirm or reject our hypothesis that leverage will have a significant negative relationship with the market reaction to inclusion.

Next we consider firm profitability measured by return on equity (ROE). From Table 5 it can be seen that we find that those firms in the high CAR quintile have a significantly higher return on equity when compared to those firms in the low CAR quintile. This is again consistent with our hypothesis that more profitable firms will experience a higher market reaction, as firms that are more profitable undertake more successful CSR

(Roberts, 1992; Ullman, 1985; McGuire et al, 1988; Adams and Harwick, 1998) and that CSR when incorporated into the overall strategy of the firm can be a source of competitive advantage (Maxfield, 2008).

For our hypothesis on employee productivity (PDCT) we suggest that there will be a positive relation between the observed market reaction to inclusion in the FSTE4Good and employee productivity. If employees are carefully managed and the firm invests in this stakeholder group this leads to lower absenteeism and staff turnover and increased productivity (Berman et al, 1998). In looking at Table 5 we can see that those firms in the high market reaction quintile have a significantly higher level of employee productivity compared to the low market reaction quintile which is again consistent with our hypothesis.

Our final hypothesis considers the level of corporate communication made by the firm (VISIBLE) whereby the market reaction to the announcement of inclusion will have a significant and positive relationship with firm visibility. From the results in Table 5, however, we are unable to accept this hypothesis.

Regression Analysis

We next estimate the cross-sectional determinants of the market reaction to firm inclusion in the FTSE4Good index. To this end we undertake OLS regressions of the 5-day CAR against firm size (TA), profitability (ROE), leverage (LEV) and employee productivity (PDCT), VISIBILITY and a vector of control variables discussed above.

In addition to this we also include a firm-specific measure of stock liquidity (LIQUID) following Amihud (2002). The market reaction may be partly impacted by the liquidity of

a stock for a number of reasons. Liquid stocks (i.e. stocks that are traded more frequently) are subject to greater outside scrutiny including press coverage. Consequently, any information on inclusion may be disseminated more quickly to market participants. Conversely, less liquid stocks (i.e. stocks that are traded less frequently) may experience a greater price reaction on announcement relative to liquid stocks. This could occur as the announcement of inclusion and the concomitant public attention generated by this event may result in much greater attention and demand for the firm's stock that is unrelated to the announcement of inclusion.

We also include inflation-adjusted yearly GDP growth as a control in our regressions (GDP)¹⁵. This control is included as it can be argued that against the background of a rapidly growing economy, the relative costs involved of undertaking CSR activities are lower compared to a period when the economy is growing normally. Finally we include a dummy variable for the original constituents of the FTSE4Good index (ORIGINAL) which equals one if the firm was included in the FTSE4Good on 10th July 2001 and is zero otherwise. This variable will therefore capture any differences in the market response depending on the timing of index inclusion.

To account for the clustered distribution of index inclusion dates, our specifications employ Huber-White sandwich estimators which allow for the dependence of observations within clusters of addition dates. In addition to this we also include fixed effects for industry and time series effects. We use Global Industry Classifications (GICs) and year fixed effects to do this. In controlling for both these factors we can ensure that any observed results are not driven by factors such as general market

sentiment i.e. bull markets and bear markets and we also ensure that any relationships we observe are not driven by industry specific factors.

$$CAR = \beta_0 + \beta_1 TA + \beta_2 ROE + \beta_3 LEV + \beta_4 PDCT + \beta_5 VISIBLE + \beta_6 CONTROL + \sum_{j=1}^9 \delta_j ind + \sum_{t=1}^7 \gamma_t year + \mu \quad (5)$$

Hypotheses Tests

The results of our cross-sectional regressions are presented in Table 6. Across all of our different model specifications our results are consistent and robust to different market model estimates for our event window cumulative abnormal returns as well as controls for liquidity and GDP growth.

Our first hypothesis on the cross-sectional determinants of the market reaction was that the market reaction would be positively related to firm size. From the results in Table 6, it can be seen that firm size is significantly and positively related to the market reaction to firm inclusion. This is consistent with the view that CSR activities are priced as value increasing for shareholders in larger firms, and so the ability-to-pay for such projects increases shareholder wealth while also benefiting other stakeholders that the firm invests in. Moreover, larger firms undertake greater levels of CSR as a result of increased public scrutiny (Roberts, 1992). In doing so, this limits the likelihood of costly government intervention, tax increases and increased regulatory compliance costs (Adams and Hardwick, 1998). The market reaction is therefore consistent with investors viewing the future cash flows of the firm as less risky and more valuable as the risk-to-reward payoff is better.

The estimate for our measure of corporate leverage is significant and negative. This is again consistent with expectations as firms with large amounts of leverage are resource constrained, and as Adams and Hardwick (1998) suggest, where leverage is high then debt holders as a stakeholder group dominate all other stakeholders. The significant and negative relation we observe is representative of the view that as a firm tends to bankruptcy the firm's resources are allocated away from other stakeholder groups towards debt holders. The market therefore does not price the announcement of highly leveraged firms undertaking CSR activities as adding value. This could occur for two reasons. First, the long-term gains that are normally generated from CSR activities are unlikely to persist as the resources that are allocated to other stakeholder groups may be diverted to bond holders in the future. Second, in the short-term, the investment in other stakeholder groups could put increased pressure on a firm trying to service its debts as the cash flow is being diverted away from interest payments.

The relationship between firm profitability and the level of CSR activities a firm undertakes is well documented in extant literature. However, from our regressions profitability, as measured by return on equity, despite having the correct sign, is statistically insignificant and so we cannot accept our hypothesis that firm level profitability is related to the market reaction to a firm's inclusion in the FTSE4Good.

From Table 6 it can be seen that higher levels of employee productivity are associated with a significant and positive market reaction. We can therefore accept our final hypothesis that the stock market reaction to a firm being classified as socially responsible is associated with higher levels of employee productivity. From the perspective of investors, if a firm is classified as socially responsible this signals to the market that the

firm invests in employees as a stakeholder group. Consequently, this implies increased value as higher productivity in the workforce is one the many benefits of investing in employees as a stakeholder group. For investors this may also indicate higher long-term profitability as there is likely to be lower absenteeism and staff turnover and so this is a potential source of competitive advantage (Huselid, 1995; Pfeffer, 1994; Becker and Gerhart, 1996; and Berman et al, 1998).

The last relationship that we consider is the impact of firm visibility. From Table 6 visibility is insignificant across all of our regressions. As a result we cannot accept our hypothesis for visibility. Despite this the inclusion of firm visibility in our analysis moderates the impact of corporate communication on the relationships that we find are significant thereby increasing the robustness of these findings.

6. DISCUSSION

Although our analysis has confirmed a number of our hypotheses, the findings of our study need careful consideration. The contribution of the study in trying to establish how the stock market reacts to firms being classified as socially responsible and what factors can explain any observed reaction can only be understood as a first step in understanding the value or otherwise that markets place on the CSR activities of firms. There are a number of issues that need to be reflected on in interpreting our results given debates within the literature and the analysis that we have undertaken.

The first issue that must be considered is the use of event study methodologies. Event studies are useful for analyzing the stock market reaction to events that may contain new

information about a firm. However, underlying this method are a number of assumptions about market participants whereby they are rational economic operators and can fully process the information that they receive. This may not always be the case. As Freeman et al (2010) show, the definition of our event signal is subject to much debate within the literature as there are so many different viewpoints on what corporate social responsibility actually is (e.g. corporate social performance, corporate governance, corporate social enterprise, etc.). Consequently, what informational content the market is actually reacting to is not necessarily an unconditional appreciation for the benefits of a firm being socially responsible.

Therefore, to ensure that the observed reaction is actually responding to inclusion events in the way we hypothesize, future research should consider different geographical markets where such indexes are applied (e.g. the U.S.). If similar results can be detected in these markets, then this adds additional robustness with regards to the relationships that have been examined in this study and the assertion that the market believes that there is value in firms that act in a socially responsible way.

Further, we hypothesized that, firms with greater communication expertise experience a higher market reaction to inclusion in the FTSE4Good. Despite the fact that our analysis is unable to confirm this hypothesis, we believe that analyzing how firms communicate their CSR activities to the market is an important and emerging stream of research in the CSR literature.

Also, for those firms with little corporate communication experience, the announcement of FTSE4Good inclusion may raise the profile of the corporation and generate interest in the firm from investors that would have been previously unaware about the company and

its activities. Consequently, understanding the effects of communications expertise on communicating CSR is a fruitful area for further research.

Finally, the growth of Socially Responsible Investment (SRI) and the increased demand for ethical investments may be a factor in any observed market reaction. As Sparkes and Cowton (2004) note, the demand for SRI is no longer confined to the fringes of the fund management industry. Instead, it is a way of investing that has gained considerable momentum within the mainstream of the industry with large institutions such as pension funds now placing ethical/responsible investment within their overarching investment strategy. As such, given the increased number and size of investors who engage in ethical investing, any reaction that is observed in our study may partly be driven by firms attracting a new investor clientele. Inclusion in FTSE4Good may therefore create demand from the type of 'ethical investor' identified by Belkaoui (1976) who would previously not have considered investing.

Future research should investigate how important corporate social responsibility is to mainstream fund managers. One possibility would be to use a more qualitative type of analysis. For instance, it would be of value to survey fund managers about whether they trade in response to CSR-related information. Doing so this would allow for a deeper understanding of the exact type of information the market is reacting to in the context of CSR.

7. CONCLUSIONS

This paper investigates whether corporate social responsibility is viewed by investors as a value destroying or value creating action by corporate managers. Friedman (1970) put forward the view that firms undertaking social investments and activities was not in society's interest as firms need only generate profits. However, there are a number of reasons to believe that by managing stakeholder relationships value can be added to the firm above the cost of undertaking such actions. From a market participant's perspective this value can come from a two sources. One potential source is increased cash flow, for example through higher worker productivity as a result of investing in the workforce of the firm. The other potential source is through less risky future cash flows, whereby CSR activities can lower the likelihood of costly law suits or increased regulatory intervention and compliance costs.

Our findings add to the existing body of literature that analyzes the financial performance of socially responsible firms. Crucially our study considers the market reaction to a firm being independently classified as socially responsible by the stock exchange where the firm is traded.

Our results indicate no strong evidence that the announcement of inclusion in the FTSE4Good index creates value. However, there is a large cross-sectional variation in the market reaction with some firms experiencing large positive event day returns and so the market clearly responds to the CSR inclusion event in different ways.

We then explain the observed market reaction in the context of stakeholder theory and firm level determinants of corporate social activity. The findings of our cross-sectional analysis show that firms that experience a positive market reaction are larger, with lower

leverage and have a higher level of employee productivity. We also considered the corporate communications expertise of the firm, although this relationship was found to be insignificant.

Our results show that the market clearly responds to the CSR inclusion event and that this can be explained by using a number of well established measures of stakeholder relationships. However, this does allow us to conclude that the market reaction is a result of market participants equating CSR to increased corporate value. In investigating the market reaction a number of other potential explanations emerged and these merit investigation in the future. In particular, future research should use qualitative data, for instance by conducting a survey of market participants to understand whether or not the market reaction we report is a result of investor clientele effects or whether it is actually an appreciation of what investors believe CSR can contribute to firm value.

Endnotes

¹ Milton Friedman, New York Times Magazine, 1970.

² See Margolis and Walsh, 2003 for a comprehensive review of the literature on the market based and accounting based performance of socially responsible firms.

³ While Curran and Moran (2007) have also analysed the stock market reaction to inclusion in FTSE4Good, our analysis is much more extensive, because it considers a substantially larger number of events and because we also analyse the determinants of the market reaction. Curran and Moran report the market reaction to a sample of 50 inclusions.

⁴ Recent work has also considered whether the CSR activity of corporations is reflected in corporate bond yields (Menz, 2010)

⁵ The following section is a summary of the inclusion criteria of the FTSE4Good index.
Source: www.ftse.com

⁶ The FTSE Developed Index is a global index and is used for international FTSE4Good indexes. Our analysis only considers the UK FTSE4Good index as this is the longest lived index.

⁷ Source: BAE Systems handed £286m criminal fines in UK and US, <http://news.bbc.co.uk>, 5th February, 2010.

⁸ A full explanation of the content and nature of Regulatory News Service disclosures and the rationale for these disclosures being unaffected by the corporate communication expertise of the firm is provided in the Data and Methodology Section.

⁹ For instance, a typical RNS announcement simply states that “FTSE advises that COMPANIES X Y Z are to be included in the FTSE4Good UK index. The change is effective after close of business on dd/mm/year.”

¹⁰ An obvious extension to this analysis is to examine deletions from the FTSE4Good index. However, very few firms are deleted over our sample period and so it is not possible to undertake meaningful statistical analysis of the firm characteristics and the market reaction to deletion.

¹¹ This is also the case for the average value of total asset with the exception being in March 2007. However this was caused by the addition of Standard Life a large insurer (with total assets worth £130 billion) which skewed the average value of the total assets.

¹² The results for all of the univariate tests are robust to employing different FTSE equity benchmarks.

¹³ Meznar and Nigh (1995) use this measure for US firms as a proxy for communications expertise arguing that more visible firms are under pressure to engage in public relations and to manage the public perception of their activities

¹⁴ Conducting this analysis with any of the other event windows under examination does not alter the results.

¹⁵ This variable is collected from the Office of National Statistics, www.ons.gov.uk.

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Table 1 Sample Overview: FTSE4Good Additions

| Announcement Date | N | Percent | Average Total Assets (£ mil) | Average Market Value (£ mil) |
|--------------------------|------------|----------------|---|---|
| 10 July 2001 | 241 | 67.51 | 11,100 | 5,442 |
| 17 September 2002 | 14 | 3.92 | 3,879 | 3,196 |
| 19 March 2003 | 7 | 1.96 | 1,039 | 476 |
| 17 September 2003 | 15 | 4.2 | 795 | 504 |
| 12 March 2004 | 11 | 3.08 | 1,123 | 632 |
| 10 September 2004 | 12 | 3.36 | 1,132 | 698 |
| 10 March 2005 | 4 | 1.12 | 389 | 267 |
| 07 September 2005 | 12 | 3.36 | 510 | 667 |
| 08 March 2006 | 9 | 2.52 | 1,371 | 1,437 |
| 13 September 2006 | 3 | 0.84 | 528 | 715 |
| 07 March 2007 | 8 | 2.24 | 18,100 | 1,860 |
| 12 September 2007 | 16 | 4.48 | 1,604 | 2,550 |
| 13 March 2008 | 4 | 1.12 | 4,621 | 4,006 |
| Total | 356 | 100 | 8,379 | 4,153 |

Source: Regulatory News Service (RNS)

Table 2 Cumulative Abnormal Returns (CAR) linked to FTSE4Good Inclusion

Table 2 shows % cumulative abnormal returns (CAR) averaged over event windows surrounding the announcement that UK firms are to be included in the FTSE4Good index. CARs are calculated using a market model against different UK equity indices (FTSE100, FTSE350, FTSE All Share). t-Stats of statistical differences are based on standardized abnormal returns as in Boehmer et al (2001). z-Stats are based on a Wilcoxon sign rank test. Next to the full sample, CAR are also reported for the subsamples of initial constituents (announced on 10 July 2001) and subsequent constituents.

| | Full Sample | | | | Initial Constituents | | | | Later Constituents | | | |
|-------------------------------------|-------------|---------|-----------|----------|----------------------|---------|-----------|----------|--------------------|---------|----------|----------|
| | N | CAR (%) | t-stat | z-stat | N | CAR (%) | t-stat | z-stat | N | CAR (%) | t-stat | z-stat |
| Market Index: FTSE 100 | | | | | | | | | | | | |
| 0 | 356 | 0.587 | (4.43)*** | (2.49)** | 241 | 0.688 | (4.00)*** | (2.31)** | 115 | 0.375 | (1.92)** | (2.04)** |
| (<i>t</i> -1; <i>t</i> +1) | 356 | 0.017 | (0.21) | (0.96) | 241 | 0.066 | (0.69) | (0.36) | 115 | -0.085 | (-0.62) | (-0.17) |
| (<i>t</i> -2, <i>t</i> +2) | 356 | -0.129 | (-0.91) | (-2.72) | 241 | -0.112 | (-0.32) | (-0.26) | 115 | -0.167 | (-0.48) | (-0.56) |
| (<i>t</i> -5, <i>t</i> +5) | 356 | -0.272 | (-0.76) | (-5.91) | 241 | -0.271 | (-0.56) | (-0.91) | 115 | -0.275 | (-0.58) | (-0.32) |
| (<i>t</i> -10, <i>t</i> +1) | 356 | -0.267 | (-0.60) | (-5.81) | 241 | -0.341 | (-0.83) | (-0.85) | 115 | -0.113 | (-0.83) | (-0.52) |
| (<i>t</i> -20, <i>t</i> +1) | 356 | -0.211 | (-0.51) | (-6.23) | 241 | -0.317 | (-0.63) | (-0.73) | 115 | 0.013 | (0.38) | (0.92) |
| Market Index: FTSE 350 | | | | | | | | | | | | |
| 0 | 356 | 0.561 | (4.25)*** | (2.24)** | 241 | 0.656 | (3.83)*** | (2.01)** | 115 | 0.361 | (1.96)** | (1.96)** |
| (<i>t</i> -1; <i>t</i> +1) | 356 | 0.018 | (0.23) | (0.91) | 241 | 0.064 | (0.67) | (0.36) | 115 | -0.078 | (-0.57) | (-1.06) |
| (<i>t</i> -2, <i>t</i> +2) | 356 | -0.123 | (0.82) | (0.62) | 241 | -0.108 | (-0.28) | (-0.21) | 115 | -0.153 | (-0.38) | (0.46) |
| (<i>t</i> -5, <i>t</i> +5) | 356 | -0.261 | (0.54) | (0.71) | 241 | -0.259 | (0.36) | (0.71) | 115 | -0.264 | (-0.49) | (-0.25) |
| (<i>t</i> -10, <i>t</i> +1) | 356 | -0.256 | (0.80) | (0.59) | 241 | -0.326 | (0.62) | (0.60) | 115 | -0.110 | (-0.79) | (-0.49) |
| (<i>t</i> -20, <i>t</i> +1) | 356 | -0.196 | (0.13) | (0.87) | 241 | -0.296 | (0.20) | (0.34) | 115 | 0.015 | (0.43) | (0.92) |
| Market Index: FTSE All Share | | | | | | | | | | | | |
| 0 | 356 | 0.557 | (4.23)*** | (2.19)** | 241 | 0.651 | (3.80)*** | (1.96)** | 115 | 0.361 | (1.96)** | (1.98)** |
| (<i>t</i> -1; <i>t</i> +1) | 356 | 0.024 | (0.30) | (0.81) | 241 | 0.072 | (0.76) | (0.26) | 115 | -0.077 | (-0.57) | (-0.04) |
| (<i>t</i> -2, <i>t</i> +2) | 356 | -0.116 | (-0.73) | (-0.50) | 241 | -0.100 | (-0.19) | (-0.09) | 115 | -0.150 | (-0.35) | (-0.43) |
| (<i>t</i> -5, <i>t</i> +5) | 356 | -0.254 | (-0.42) | (-0.58) | 241 | -0.252 | (-0.24) | (-0.58) | 115 | -0.260 | (-0.46) | (-0.21) |
| (<i>t</i> -10, <i>t</i> +1) | 356 | -0.248 | (-0.64) | (-0.40) | 241 | -0.315 | (-0.45) | (-0.40) | 115 | -0.109 | (-0.79) | (-0.48) |
| (<i>t</i> -20, <i>t</i> +1) | 356 | -0.188 | (-0.93) | (-0.68) | 241 | -0.285 | (-0.98) | (-0.12) | 115 | 0.015 | (0.43) | (0.92) |

*** statistical significance at 1%, ** significant at 5%

Table 3 Variable Definitions and Summary Statistics

Unless otherwise specified, the data refer to the last reporting date before the inclusion in FTSE4Good. Accounting data are from Worldscope, LIQUID is calculated with data from Datastream, and GDP data are from the Office of National Statistics

| Variable | Definition | N | Mean | SD | Min | Max |
|-----------------|--|----------|-------------|-----------|------------|------------|
| TA | Natural logarithm of total assets. | 356 | 13.293 | 2.007 | 8.062 | 19.927 |
| LEVER | Total debt divided by total assets. | 356 | 0.221 | 0.175 | 0.000 | 0.914 |
| ROE | Earnings before interest and tax (EBIT) divided by the book value of common equity. | 356 | 0.305 | 1.666 | -3.413 | 29.813 |
| PDCT | EBIT divided by number of employees | 356 | 37.409 | 85.900 | -62.382 | 336.629 |
| VISIBLE | Firm visibility in financial press. Total number of times that firm is mentioned in the Financial Times (London edition) during the three fiscal years before index inclusion. We add one to the measure and take the natural log. | 356 | 2.812 | 1.668 | 0.000 | 6.964 |
| LIQUID | Liquidity measure. Average daily ratio of absolute stock return to trading volume, measured over the calendar year before the addition date. We add one to the measure and take the natural log. | 356 | 0.001 | 0.001 | -0.008 | 0.001 |
| SALES | Sales divided by total assets. | 356 | 0.959 | 0.910 | 0.010 | 8.870 |
| CF | Cash flows divided by total assets. | 356 | 0.100 | 0.162 | -0.432 | 0.362 |
| GRWTH (%) | Growth in total assets over the three years before FTSE4Good inclusion. | 356 | 2.241 | 12.133 | -0.675 | 149.441 |
| EMPL | Number of employees divided by total assets. | 356 | 0.011 | 0.017 | 0.000 | 0.201 |
| MTB | (Market value of equity plus long-term debt) divided by total assets. | 356 | 2.199 | 3.792 | 0.155 | 29.441 |
| GDP | Inflation-adjusted GDP growth in the year of the index inclusions. | 356 | 0.081 | 0.326 | -1.061 | 0.696 |

Table 4 Pairwise Correlations of Firm Characteristics

The table presents pairwise correlations between variables. CARs are standardized abnormal returns using the market model over five-days surrounding the inclusion in FTSE4Good measured against the FTSE All Share index. See Table 3 for variables definitions.

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) |
|---------------|------|---------|------|-------|------|-------|------|------|------|------|------|------|-------|
| (1) CARs | | | | | | | | | | | | | |
| (2) TA | .08 | | | | | | | | | | | | |
| (3) ROE | .01 | .05 | | | | | | | | | | | |
| (4) SALES | -.04 | -.25*** | .09 | | | | | | | | | | |
| (5) CF | -.03 | .17 | .06 | .09 | | | | | | | | | |
| (6) LEVER | -.03 | .31*** | .14 | -.09 | .10 | | | | | | | | |
| (7) GRWTH | .11 | -.03 | .01 | -.06 | .00 | .13 | | | | | | | |
| (8) EMPL | -.04 | -.25 | .03 | .46** | .02 | -.14 | -.03 | | | | | | |
| (9) PDCT | .05 | .16 | .01 | -.19 | .07 | .20** | -.01 | -.14 | | | | | |
| (10) MTB | .01 | -.31*** | -.07 | -.03 | -.11 | -.18* | .00 | .01 | -.08 | | | | |
| (11) VISIBLE | .01 | .41** | .05 | -.08 | -.02 | .12 | .07 | -.02 | -.10 | -.11 | | | |
| (12) LIQUID | .00 | .18 | .01 | -.10 | .00 | .07 | .00 | -.01 | .06 | -.02 | .08 | | |
| (13) GDP | .09 | -.05 | .02 | -.12 | -.03 | -.06 | .02 | .03 | -.02 | .05 | -.01 | -.05 | |
| (14) ORIGINAL | .00 | .06 | .04 | -.11 | -.03 | .02 | .05 | .09 | .01 | .12 | -.01 | -.09 | .39** |

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 5 FTS4Good Firm Characteristics, by CAR ($t-2, t+2$)

The table presents firm characteristics by five-day cumulative announcement returns (CAR) surrounding the announcement that UK firms are to be included in FTSE4Good. CARs are based on standardized market model abnormal returns computed against the FTSE 100, FTSE350 and FTSE All Share index. Firm characteristics are presented by lowest (LOW) and top (HIGH) CAR quintile. Differences in means tests are based on a two-tailed t -test and a Wilcoxon sign rank test. Variable definitions are in Table 3.

| | LOW CAR($t-2, t+2$) QUINTILE | | HIGH CAR($t-2, t+2$) QUINTILE | | Difference | |
|-------------------------------------|--------------------------------------|---------|---------------------------------------|---------|------------|-----------------------|
| | N | CAR (%) | N | CAR (%) | HIGH-LOW | t -stat |
| Market Index: FTSE 100 | | | | | | |
| TA | 72 | 12.449 | 71 | 13.155 | 0.706 | (2.31)** [†] |
| LEVER | 72 | 0.194 | 71 | 0.195 | 0.002 | (0.05) |
| ROE | 72 | 0.044 | 71 | 0.160 | 0.116 | (1.39) |
| PDCT | 72 | -9.369 | 71 | 56.754 | 66.123 | (2.44)** [†] |
| VISIBLE | 72 | 2.526 | 71 | 2.691 | 0.165 | (0.61) |
| Market Index: FTSE 350 | | | | | | |
| TA | 72 | 12.442 | 71 | 13.121 | 0.679 | (2.23)** [†] |
| LEVER | 72 | 0.188 | 71 | 0.194 | 0.006 | (0.20) |
| ROE | 72 | 0.051 | 71 | 0.163 | 0.112 | (1.34) |
| PDCT | 72 | -9.229 | 71 | 57.119 | 66.348 | (2.45)** [†] |
| VISIBLE | 72 | 2.512 | 71 | 2.650 | 0.137 | (0.50) |
| Market Index: FTSE All Share | | | | | | |
| TA | 72 | 12.442 | 71 | 13.155 | 0.713 | (2.31)** [†] |
| LEVER | 72 | 0.188 | 71 | 0.193 | 0.005 | (0.17) |
| ROE | 72 | 0.051 | 71 | 0.165 | 0.114 | (1.36) |
| PDCT | 72 | -9.229 | 71 | 56.949 | 66.178 | (2.44)** [†] |
| VISIBLE | 72 | 2.512 | 71 | 2.676 | 0.164 | (0.88) |

* Significant at 10%; ** significant at 5%, (t-test)

[†] significant below 5% (Wilcoxon sign rank test)

Table 6 Regressions: CAR (t-2; t+2)

The table presents regressions on five-day cumulative abnormal returns (CAR) surrounding the announcement that UK firms are to be included in FTSE4Good. Regressions include fixed effects for the industry (Global Industry Classifications) and the year of index inclusion. CARs are calculated using a market model against different UK equity indices (FTSE 100, FTSE 350, and FTSE All Share). Variable definitions are in Table 3. Standard errors are in parentheses and are based on the cluster-robust variant of the Huber-White sandwich estimator which accounts for the dependence of observations within clusters of addition dates.

| | FTSE 100 | | FTSE 350 | | FTSE-All | |
|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| TA | 0.1159*** (0.0361) | 0.1159*** (0.0361) | 0.1166*** (0.0359) | 0.1166*** (0.0359) | 0.1181*** (0.0359) | 0.1181*** (0.0359) |
| LEVER | -0.8119* (0.4156) | -0.8119* (0.4156) | -0.8091* (0.4146) | -0.8091* (0.4146) | -0.8156* (0.4137) | -0.8156* (0.4137) |
| ROE | 0.0178 (0.0174) | 0.0178 (0.0174) | 0.0177 (0.0175) | 0.0177 (0.0175) | 0.0173 (0.0174) | 0.0173 (0.0174) |
| PDCT | 0.0022** (0.0001) | 0.0021** (0.0009) | 0.0021** (0.0001) | 0.0022** (0.0008) | 0.0020** (0.0001) | 0.0021** (0.0010) |
| VISIBLE | -0.0277 (0.0233) | -0.0277 (0.0233) | -0.0274 (0.0231) | -0.0274 (0.0231) | -0.0280 (0.0230) | -0.0280 (0.0230) |
| LIQUID | -51.8054 (29.2497) | -51.8054 (29.2497) | -51.5113 (28.8404) | -51.5113 (29.8404) | -50.6956 (28.9324) | -50.6956 (29.9324) |
| SALES | 0.0610 (0.0996) | 0.0610 (0.0996) | 0.0607 (0.0997) | 0.0607 (0.0997) | 0.0606 (0.0994) | 0.0606 (0.0994) |
| CF | -0.0307* (0.0143) | -0.0307* (0.0143) | -0.0309** (0.0140) | -0.0309** (0.0140) | -0.0309** (0.0140) | -0.0309** (0.0140) |
| GRWTH | 0.0027*** (0.0001) | 0.0027*** (0.0001) | 0.0027*** (0.0001) | 0.0027*** (0.0001) | 0.0027*** (0.0001) | 0.0027*** (0.0001) |
| EMPL | -0.3632 (1.6697) | -0.3632 (1.6697) | -0.3916 (1.6576) | -0.3916 (1.6576) | -0.4334 (1.6554) | -0.4334 (1.6554) |
| MTB | 0.0101*** (0.0024) | 0.0101*** (0.0024) | 0.0104*** (0.0024) | 0.0104*** (0.0024) | 0.0110*** (0.0024) | 0.0110*** (0.0024) |
| ORIGINAL | 0.0350 (0.1112) | -0.1429 (0.5855) | 0.0060 (0.0951) | -0.1556 (0.5631) | 0.0056 (0.0919) | -0.1495 (0.5561) |
| GDP | | 0.5347 (0.4581) | | 0.5286 (0.4395) | | 0.5237 (0.4337) |
| CONSTANT | -1.6238*** (0.4487) | -1.5359*** (0.4918) | -1.5993*** (0.4408) | -1.5266*** (0.4727) | -1.6081*** (0.4399) | -1.5411*** (0.4672) |
| Industry fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Time fixed effects | Yes | Yes | Yes | Yes | Yes | Yes |
| N | 356 | 356 | 356 | 356 | 356 | 356 |
| Adj. R-Sq | 0.0702 | 0.0723 | 0.0703 | 0.0721 | 0.0706 | 0.0727 |

* Significant at 10%; ** significant at 5%; *** significant at 1%