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Corporate Social Responsibility
And Its Impact On Shareholder Value

Empirical Evidence of the Value of FTSE4Good Europe Index Membership

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ABSTRACT

We explore whether an investment in corporate social responsibility (CSR) is value creating for a firm's shareholders. We start by establishing a relationship between CSR, corporate reputation and shareholder value. Assuming that membership in a recognized sustainability index signals a commitment to CSR to shareholders and potential investors, we explore both the short-term and intermediary impact on equity value for European firms that were added to, or deleted from, the FTSE4Good Europe Index between 2006 and 2011. Based on a sample of 92 additions and 67 deletions, we perform an event study with three event windows, including a pre-announcement period, an announcement period, and an effective period. Our results provide no statistical evidence that being added to the FTSE4Good Europe Index leads to a sustained increase in a firm's equity value. Although we find a statistically significant decrease in equity value during the announcement period, the results provide no statistical evidence of a sustained decrease in the equity value for firms that were deleted from the FTSE4Good Europe Index firms. Based on our findings, we conclude that an investment in CSR to seek inclusion on a sustainability index, which requires corporate actions to comply with ambitious CSR standards, is barely creating nor destroying shareholder value.

Keywords: Corporate social responsibility (CSR), event study, financial performance, FTSE4Good Europe Index, corporate reputation, shareholder value, sustainability

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LIST OF ABBREVIATIONS

AR	Abnormal Return
AD	Announcement Day
CAR	Cumulative Abnormal Return
CSP	Corporate Social Performance
CSR	Corporate Social Responsibility
DJSI	Dow Jones Sustainability Index
FTSE	Financial Times Stock Exchange

1 INTRODUCTION

The following chapter provides an introduction to this study, including a discussion of the problem and its relevance, a statement of purpose, the scope and delimitations, as well as a short outline of the disposition.

1.1 Background

The role of business in society has been discussed controversially since the publication of Bowen's seminal work in 1953 (Bowen, 1953). This discussion is historically characterized by two opposing point of views. The first one is based on the primacy of social wellbeing, and corporations are perceived to act socially responsible if, and only if, corporate outcome is "desirable in terms of the objectives and values of our society" (Bowen, 1953, p. 6). This view is opposed to a neoliberal perspective, which is based on the primacy of profit maximization and largely represents the work of Friedman (1970). The only responsibility of corporations, accordingly, is "to make as much money as possible while conforming to the basic rules of the society, both those embodied in law and those embodied in ethical custom" (Friedman, 1970, p. 34). Corporations should, accordingly, take social concerns only into account if their consideration maximizes shareholder value (Garriga & Melé, 2004).

Lately, alternative views have evolved and formed the foundation for research related to corporate social responsibility (CSR), which has become an umbrella term for the different points of view on the social role of business. (For an overview, see Whetten, Rands & Godfrey, 2002; Garriga & Melé, 2004). Interestingly, recent research is less ideological and focuses increasingly on providing management tools. For example, Porter and Kramer (2006; 2011) demonstrate how firms can create a competitive advantage from increased productivity and expanded markets if they address societal needs.

In the meantime, there is a broad consensus that the increasing awareness of CSR puts a growing pressure on managers to make financially sound decisions whilst taking into account the firm's responsibility towards society and reputation.

Nevertheless, measuring the impact of CSR on a company's value can be quite difficult. Thus far, CSR has been measured in terms of corporate social performance (CSP) which is "a business organization's configuration of principles of social responsibility, processes of social

responsiveness, and policies, programs, and observable outcomes as they relate to the firm's societal relationships" (Wood, 1991, p. 693). Orlitzky, Schmidt and Rynes (2003) distinguish four ways to measure CSP, including the analysis of CSP disclosures, use of reputational indices, social audits of firms by a third and independent party, and the evaluation of a firm's values and principles which shape the corporate culture. These four methods show how difficult it is to quantify and measure CSR properly among different dimensions. Yet, reputational or sustainable indices can form the basis for quantifying the effects from CSP.

1.2 Problem Discussion

The development of sustainability indices is fairly recent.[1] The Domini 400 Social Index was founded in May 1990 by Kinder, Lydenberg, Domini and Co. as the first of its kind. In the meantime, the number of sustainability indices has increased significantly, with indices being available from the following services, including the Calvert Group, Dow Jones, E.Capital, Ethibel, Financial Times Stock Exchange (FTSE), Humanix, Jantzi, KLD Analytics, and Vigeo (Fowler & Hope, 2007). Traditional research on sustainability indices has focused on the financial performance of sustainability indices (Schröder, 2007) and the relationship between an ethical investment style and performance (Bauer, Koedijk & Otten, 2005).

Several authors have lately recognized that a membership in a sustainability index provides one way of signaling a firm's commitment to CSR, and can increase a firm's reputation. Recent research has modeled and explored the relationship between sustainability index membership and firm performance, and firm value, respectively (Curran & Moran, 2007; Consolandi, Jaiswal-Dale, Poggiani & Vercelli, 2008; Cheung, 2011). Robinson, Kleffner and Bertels (2011), for example, explore the relationship between corporate sustainability, reputation, and firm value by asking whether signaling sustainability leadership through membership in a recognized sustainability index is value generating. Assuming that stakeholders are increasingly demanding that firms demonstrate their commitment to sustainability, the authors study both the short-term and the intermediary impact on North American firms of being included or removed from the Dow Jones Sustainability World Index (DJSI). The rationale is that a company's membership in a recognized "best in class"

[1] The definitions of sustainability are ambiguous. Moreover, the terms corporate sustainability and CSR are often used interchangeably. For this study, we understand sustainability as the result of CSR activities, and sustainability indices, therefore, consist of firms with good CSR practices.

sustainability index signals to stakeholders that the given firms is a sustainability leader. Subsequently, the results of the research show that "being added to the DJSI results in a sustained increase in a firm's share price, suggesting that the benefits of being included on the DJSI outweigh the costs associated with applying" (ibid., p. 493).

Other authors use accounting indicators (Lopez, Garcia & Rodriguez, 2007) or cross-sectional micro-econometric studies (Ziegler, 2011) to explore the effects of a membership in a sustainability index. Whereas cross-sectional micro-econometric studies are an advanced method and require specific knowledge, event studies are superior to accounting studies for exploring the relationship between sustainability index membership and firm value (Robinson et al., 2011). Event studies measure excess returns on a firm's security. By definition, the price of a firm's security is equal to the sum of the expected, future dividends discounted with the cost of equity. The security price takes the future into account and is, thus, forward looking as opposed to backward looking accounting numbers. Considering that an investment in CSR carries with it the expectation of positive returns in the future, a firm's security price should incorporate newly available information instantaneously. An increase, or decrease, in the security price for the firm reflects thus a change in shareholder value. An event study allows measuring these changes empirically with a large degree of flexibility concerning the number and length of event windows as opposed to accounting studies, which often depend on large event windows with an increasing amount of noise. Accordingly, the results from an event study are likely to be more precise.

Yet, Fowler and Hope (2007) and Robinson et al. (2011) note that there has been little research on the relationship between sustainability index membership and shareholder value to date, and emphasize the importance of further research. This study, therefore, aims to contribute to the limited body of knowledge of the relationship between sustainability index membership and shareholder value in detail, and to a better understanding of CSR in general.

1.3 Purpose

The aim of this study is to explore whether an investment in corporate social responsibility (CSR) is value creating for a firm's shareholders. Assuming that membership in a recognized sustainability index signals a firm's commitment to CSR to shareholders and potential investors, we perform an event study to explore both the short-term and the intermediary

effect on equity value for European firms that were added to, or deleted from, the FTSE4Good Europe Index between 2006 and 2011.

1.4 Scope and Delimitations

To explore the effects of a membership in a sustainability index on shareholder value, we focus in particular on measuring the effects on shareholder value from the following four events during our study period from January 1, 2006 to December 31, 2011:

- Announcement of addition to the FTSE4Good Europe Index,
- Announcement of deletion from the FTSE4Good Europe Index,
- Effective addition to the FTSE4Good Europe Index, and
- Effective deletion from the FTSE4Good Europe Index.

For each year in our study, these events occur typically twice a year on a semi-annually basis in March and September.

Based on the interest on European firms, this study focuses on the FTSE4Good Europe Index and a six-year study period between 2006 and 2011. Nevertheless, the empirical results could be more generalizable if additional sustainability indices and study periods were analyzed.

1.5 Disposition

The remainder of this study is structured as follows. Chapter 2 provides an overview of relevant prior research in the field of CSR, sustainability, and financial performance. Chapter 3 establishes the relationship between CSR, corporate reputation, and shareholder value and presents the theoretical framework for the purpose of this study. Chapter 4 explains the research method and Chapter 5 describes the data used for this study. Chapter 6 presents the empirical results, which are discussed in Chapter 7. Finally, Chapter 8 includes the conclusions, policy implications, and suggestions for further research.

2 EMPIRICAL BACKGROUND

The following chapter presents an overview of relevant primary research in the field of CSR, sustainability, and financial performance and builds the foundation for the theoretical framework, which is introduced in the next chapter.

2.1 The Relationship between CSR and Financial Performance

A number of various financial performance measures have been used historically to investigate the relationship between CSR and financial performance of a company. We present existing knowledge from meta-analyses and focus then on a detailed review of relevant research on the relationship between sustainability index membership and shareholder value.

2.1.1 Brief Overview of Findings from Meta-Analyses

Some authors have performed meta-level studies on the relationship between CSR and financial performance. For example, Orlitzky et al. (2003) conduct a meta-analysis to determine if financial performance is correlated to CSR. The results provide evidence that CSP is positively related to financial performance with reputation being a significant moderator of this correlation. Most importantly, Orlitzky et al. (2003) show that CSP reputation indices are more strongly correlated to financial performance than other indicators of CSP.

Peloza (2009), in addition, supports a positive correlation between CSP and financial performance. The author examines 159 CSP studies including 128 derived from academic sources and 31 from practitioner literature, respectively. Out of these 159 studies, 63% suggest a positive relationship, 15% find a negative relationship and 22% indicate no or a mixed relationship between CSP and financial performance.

Overall, the majority of meta-analyses find a positive relationship between CSR investments and financial performance. However, other factors such as corporate reputation can be significant moderators of financial performance (Orlitzky et al., 2003).

2.2 Sustainability index membership and shareholder value

Research on sustainability indices has traditionally focused on two aspects. Some authors examine the relationship between risk-adjusted stock returns of socially responsible and traditional mutual funds (Bauer et al., 2005), whereas others focus on the financial performance of various sustainability indices (Schröder, 2007).

Although lately, some authors have recognized that a membership in a sustainability index provides one way of signaling a firm's commitment to CSR. In addition, index membership is likely to increase a firm's reputation and firm value. To date, there is however limited research that empirically explores the relationship between sustainability index membership and firm performance, and firm value, respectively. Besides, most of the studies focus on North American sustainability indices. In general, the few existing studies use various research methods and variables, including accounting numbers and excess stock returns. The following will describe the existing research.

2.2.1 Findings from Accounting Studies

Lopez et al. (2007) analyze accounting indicators to explore a relationship between CSR and performance. The study includes 110 companies, which were studied during 1998 and 2004. Each group consists of 55 firms with first group of firms being selected from the Dow Jones Sustainability Index (DJSI) and the second from constituents on the Dow Jones Global Index (DJGI), which were not listed on the DJSI. The authors find that firms added to the DJSI experience a negative dip in accounting-based performance indicators for the first years of their membership.

Although accounting studies may be interesting, some authors note that relevant research should focus on the relationship between sustainability index membership and firm value. For example, Robinson et al. (2011) note that firms are primarily interested in the valuation effects from a membership. In addition, these valuation effects are examined more easily with event studies, which measure the excess return on a firm's security from a given event.

2.2.2 Findings from Event Studies

Curran and Moran (2007) perform an event study to analyze the relationship between CSR and share price using the FTSE4Good UK 50 Index as CSR measure. Their study finds that

positive and negative announcements have an effect on the daily stock returns. The event windows applied in the study range from –4 days to +8 days of the announcement day. The analyzed sample consists of 60 companies and the study covers a period from the December 31, 1999 to November 27, 2002. The authors use the FTSE All Share Index as benchmark to detect abnormal returns. The findings, however, are not significant and the data suggests that no financial benefit is achieved from being included in the FTSE4Good Index.

Consolandi et al. (2008) conduct an event study to analyze whether the stock market reacts to an inclusion or exclusion of a company's stock in the Dow Jones Sustainability Stoxx Index. The Surrogate Complementary Index (SCI), which includes stocks of the Dow Jones Stoxx 600 Index, that are not part of a CSR index, is used as a benchmark. The study covers a period from 2001 to 2006 and the sample consists of 113 index inclusions and 93 index exclusions. The event window of the study lies between -10 days to +10 days of the announcement day. The results reveal that companies included in the sustainability index experience a significant positive excess return of 0.03% on the announcement day, but no significant effect for the 10-day period following their effective addition to the index. Deleted firms suffer from significant negative excess returns of -0.05% on the announcement day and -0.03% during the 10-day period following their effective deletion from the index.

Doh, Howton, Howton and Siegel (2010) run an event study analyzing the connection between the stock market's reaction to CSR index inclusion and deletion announcements. Data was collected from the Calvert Social Index, which is connected to a mutual fund. Fund managers are legally required to announce regularly changes to the index in a timely manner. The study covers a period of 6-years beginning on January 1, 2000, and ending on December 31, 2005. The sample includes the announcement of 56 additions and 65 deletions during the study period. The event date is determined by the earliest date an index change was publicly announced. A short event window of -1 to +10 days of the announcement is defined. To calculate abnormal returns, Doh et al. (2010) use the adjusted industry average operating performance values for each firm as a benchmark. The study finds no statistical evidence for positive abnormal returns for added firms, whereas removed firms experience a significant negative excess return of -1.2% on the announcement day and the next day.

Cheung (2011) conducts an event study examining the impact of stock inclusion and deletion from the DJSI between 2002 and 2008. The sustainability index performance was

benchmarked against a market portfolio of the NYSE. The five tested event windows range from -15 days of the announcement day until +60 days of the effective day. The study finds no significant evidence that the announcement of inclusion or deletion from a sustainability index has an effect on stock return and risk. Nevertheless, the study finds a significant negative excess return of -0.194% for included firms on the day of effective change.

Robinson et al. (2011) also perform an event study analyzing the inclusion and exclusion of North American companies being added or deleted from the DJSI. The sample of the study included 91 companies that were added or deleted to the sustainability index between 2003 and 2007. The authors use the S&P 500 Index as benchmark for the companies located in the USA and the S&P/TSX Index for firms located in Canada, respectively. The event windows ranged from -60 days of the AD until +60 days of the AD. The overall findings of the study provide statistical evidence that being added to the DJSI results in a sustained increase of 2.1% in a firm's share price. Firms that are removed from the index experience a slightly positive, but statistically insignificant, excess return.

In addition to the event study method, recent studies use advanced research methods such as cross-sectional micro-econometric studies to measure the valuation effects from a sustainability index membership.

2.2.3 Findings from Advanced Research Methods

Ziegler (2011) uses cross-sectional micro-econometric studies to examine the inclusion effect of companies listed in the DJSI and the DJ Stoxx 600 Index, taking the European perspective into consideration, between 1999 and 2003. The study analyzed 266 corporations. The findings suggest a weak correlation between the inclusion in the DJSI World Index and return on assets for the UK and Ireland. However, the study also shows a positive relationship for the remaining European countries.

Overall, the majority of the few existing studies use event studies to measure the effects on firm value from a membership in a sustainability index. Although many studies study multiple event windows, the number of different event windows and their length vary substantially among the studies. In addition, the results also vary from no to weak to substantial correlation between addition to, or deletion from, a sustainability index and share price increase, or decrease. Accordingly, the empirical results from existing studies show an ambiguous

relationship between sustainability index membership and shareholder value, which accentuates the importance of additional research in this field.

Table 1 presents an overview of relevant primary research on the relationship between sustainability index membership and firm performance, and firm value, respectively.

Table 1. Overview of prior research on the financial performance of firms and membership on a sustainability index. This table presents an overview of prior research on the financial performance of firms that were added to, or deleted from, sustainability indices between 2007 and 2011. The following information is summarized for each study: Name of authors, year of publication, study method, sample size and study period, index and benchmark studied, definition of event windows, and results.

Study & Method	Sample Size & Study Period	Index & Benchmark Used	Event Windows	Results
Curran & Moran (2007) Event Study	60 firms that were added or deleted from the sustainability index 2000 to 2002	FTSE4Good UK 50 FTSE All Share	The event windows varied in length in order to accommodate for both the Announcement Day and the Change Day: 1. Days - 4 to day +6 of AD 2. Days -4 to day +5 of AD 3. Day -1 to day +8 of AD	No financial benefit is achieved from being included in a sustainability index.
Consolandi et al. (2008) Event Study	113 index inclusions and 93 index exclusions 2001 to 2006	Dow Jones Sustainability Stoxx Surrogate Complementary	1. Pre-announcement (AD - 10: AD - 1) to determine whether there could be any anticipation or leakage of information contained in the survey results 2. Announcement (AD): the first trading day after the announcement of the new index composition 3. Post-announcement (AD + 1: ED - 1): to verify the existence of a "game effect" 4. Effective (ED): the date of the effective index revision 5. Post-effective (ED + 1: ED + 10): to determine whether there is any lagged impact or slow assimilation of any information contained in the survey data	Being added to a sustainable index results in a increase (decrease) in stock return at index inclusions (exclusion). No reversal effect was detected.
Doh et al. (2010) Event Study	56 additions to and 65 deletions from the index 2000 to 2005	Calvert Social Adjusted industry average operating performance values	Use multiple time windows after the announcement day to analyze if the price change is temporary or not: 1. Pre-announcement period: -1 day of AD 2. Announcement period: AD 3. Effective period: +2 days of AD Effective period: +10 days of AD	Effect for index inclusion announcements is limited, whereas the reaction to deletion announcements has a substantial impact.

Table 1. Overview of prior research on the financial performance of firms and membership on a sustainability index (cont.)

Study & Method	Sample Size & Study Period	Index & Benchmark Used	Event Windows	Results
Cheung (2011) Event Study	139 firms that were added or deleted from the sustainability index 2002 to 2008	Dow Jones Sustainability World Market portfolio of the NYSE	1. Pre-announcement window that lies between AD-15 and AD-1 2. Run-up window that spans from the day after AD through to the day before CD 3. Three release-related windows that run from CD to CD+10, they include release windows during CD and CD+4 and two post release windows (CD+5, CD+5) and (CD+5, CD+10), respectively 4. Temporary price impact windows that cover periods within AD-15 and CD+20 5. Total permanent price impact windows that fall within AD-15 and CD+60	Being added to the DJSI results in a sustained increase (decrease) in stock return at index inclusions (exclusion).
Robinson et al. (2011) Event Study	48 additions to and 43 deletions from the sustainability index 2003 to 2007	Dow Jones Sustainability World S&P 500, S&P/TSX	1. Pre-announcement period: Day -60 to Day -1 of AD 2. Announcement period: From AD until -1 day before ED 3. Effective period: ED until +60 days of ED	Being added to the DJSI results in a sustained increase in a firm's share price.
Ziegler (2011) Cross-sectional micro-econometrics study	266 firms 1999 to 2003	Dow Jones Sustainability World DJStoxx 600		Weak correlation between the inclusion in DJSI and asset return for UK, Ireland, but a positive relationship for Continental Europe.

3 THEORETICAL FRAMEWORK

The following chapter establishes the relationship between CSR, corporate reputation, and shareholder value and introduces the theoretical framework for the purpose of this study.

The theoretical framework of this study is based on an expected positive relationship between CSR and financial performance, CSR and corporate reputation, and corporate reputation and shareholder value and the measurability of CSR investment performance through a sustainability index. Furthermore, it will discuss the cost associated with CSR, and the legitimacy of sustainability indices.

3.1 Relationship between CSR and Corporate Reputation

Some scholars have explored how CSR influences a company's reputation. Fombrun and Shanley (1990) find that a firm's engagement in CSR generates a positive corporate reputation. Similarly, Vilanova, Lozano and Arenas (2009) suggest that an improved reputation is one of the main motives why companies implement CSR into their corporate strategy. CSR is a tool that allows firms to build their corporate image and identity, which in turn affects their operational processes within and outside the firm.

In addition, Brammer and Pavelin (2004) establish an outline that describes the reasoning behind reputation building for CSR investments and other defining company features. Their study provides evidence for a company's need to alter its CSR investments according to its size and field of business. Overall, the authors stress that a firm needs to identify an appropriate amount and scale of CSR activity correctly to achieve the desired reputation.

A company's reputation is influenced by its corporate behavior, which is observable through various information channels such as newspapers, the Internet or stock markets (Brammer & Pavelin, 2004). Further, diverse groups of stakeholders have different preferences of a firm's reputation and CSR activities. Therefore, the reputation of a company relies on the convergence between the company's actual behavior and the company's expected behavior from various stakeholder points of view (Fombrun & Shanley, 1990).

In conclusion, it is reasonable to assume that CSR has a positive effect on a company's reputation in theory as illustrated in Fig. 1. Based on the implementation of CSR activities, a

company is able to signal its commitment to good corporate conduct to a wide public via multiple information channels. This enables the company to converge the expected behavior of the company by all its stakeholders with the actual behavior of the firm. Through the convergence of expected and actual behavior the company builds a desirable corporate reputation.

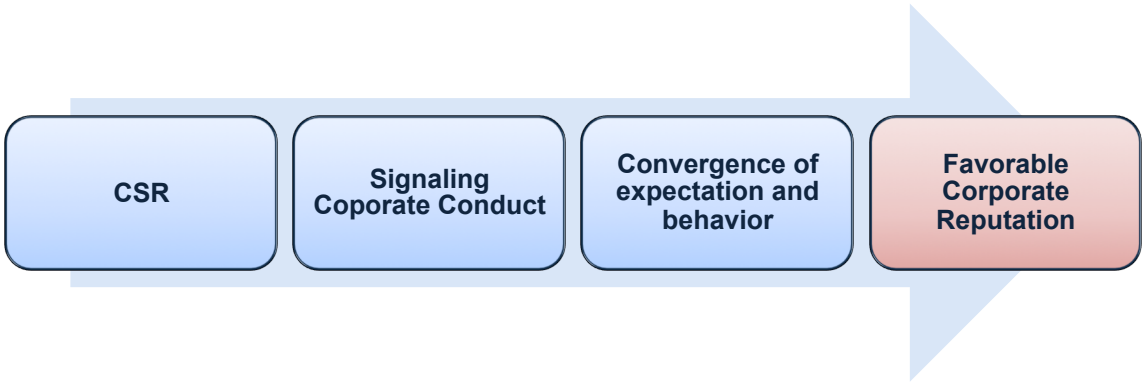

Figure 1. The relationship between CSR and corporate reputation. This figure illustrates how a company investing in CSR can build a desirable corporate reputation through signaling good corporate conduct, which results in a convergence of actual corporate behavior and stakeholder expectations.

Source: Authors' illustration.

3.2 Relationship between Corporate Reputation and Shareholder Value

Another stream of research has explored the subsequent relationship between reputation and shareholder value. Cravens, Goad and Ramamoorti (2003, p. 201), for example, state "corporate reputation is undoubtedly a significant and relevant corporate asset". Prior research has developed a link between reputation and its value creation potential. Considering the resource based view (Barney, 1991; Roberts & Dowling, 2002), companies holding valuable assets that are difficult to be replicated by competitors have a competitive advantage within the industry. This enables firms to earn higher returns than their competitors. Consistent with this thought, a favorable reputation can have a significant impact on a company's value. The intangible nature of a reputation makes it even more difficult for competitors to imitate it. Several studies find that a good reputation has a substantial effect on a company's value (Fombrun & Shanley, 1990; McGuire et al. 1988).

According to Fombrun and Shanley (1990, p. 255), "positive reputations are often said to attract investors, lower the cost of capital, and enhance the competitive ability of firms". This is achieved because a favorable reputation attracts a broad set of stakeholders, including employees, customers, suppliers, creditors, investors etc. because it creates trust and a sense of investment security. Overall, a good reputation strengthens a company's operations along the value chain (Dowling, 2004). This corresponds to a study conducted by Kotha, Rajgopal and Rindova (2001), who find that active reputation development and fostering has a significant effect on the performance of Internet companies.

Taken together, a favorable corporate reputation increases shareholder value as illustrated in Fig. 2. Reputation is an active tool for companies to build their corporate image within and outside the firm. An enhanced image then attracts better-qualified employees and provides better access to capital. This in total increases shareholder value.

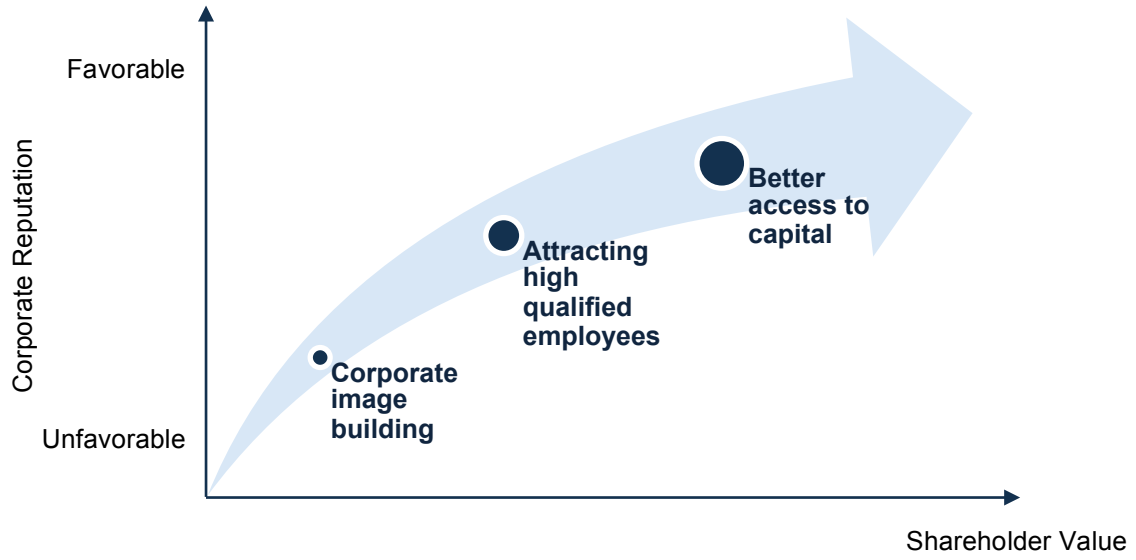

Figure 2. The relationship between corporate reputation and shareholder value. This figure illustrates how an actively managed process of corporate image building gradually increases a firm's reputation, which attracts a high-qualified workforce and facilitates the raise of capital. A favorable reputation has eventually a positive impact on shareholder value.

Source: Authors' illustration.

3.3 Relationship between Corporate Reputation, Shareholder Value, and CSR

Based on the outlined relationships between CSR and financial performance, CSR and corporate reputation, and corporate reputation and shareholder value, we can now link the three relationships together.

Siltaoja (2006) conducts a survey examining the relationship between CSR and corporate reputation along the value theory framework. The study discovers that creating value through favorable reputation plays a significant role in CSR activity. CSR, hence, is a form of reputation investment, which indicates the socially responsible conduct of a company (McGuire et al., 1988). A firm, therefore, can actively signal its commitment to social practices through an investment in CSR.

Based on the *Stakeholder Theory* (Freeman, 1984; also Cornell and Shapiro, 1987), an enhanced corporate reputation allows a firm to reduce its more expensive explicit claims in exchange for more affordable implicit claims. Vice versa, once a company reduces its socially responsible conduct it will undermine its reputation. Consequently, stakeholders will demand more expensive explicit claims in exchange for the more affordable implicit claims (McGuire et al., 1988).

Based on the *Signaling Theory* (Spence, 1973), CSR investments reveal a firm's socially responsible attitude to its stakeholders. Greening and Turban (2000) find, accordingly, that more employees seek employment with companies that are engaged in CSR activities. Furthermore applicants are more inclined to accept the employment offers and will actively seek interview opportunities with firms that engage in CSR. This shows how important CSR is for building a desirable corporate reputation when attracting a high-qualified workforce. This is in line with the findings by Fombrun and Shanley (1990) and Dowling (2004) who find that a positive reputation attracts all shareholders and fosters the company's operations.

Overall, CSR has a positive effect on financial performance and corporate reputation. In return, corporate reputation and financial performance affect shareholder value positively. This relationship is illustrated in Fig. 3.

Figure 3. The relationship between CSR, corporate reputation and shareholder value. This figure illustrates how an investment in CSR has a positive effect on corporate reputation and financial performance, a combination that positively affects shareholder value.

Source: Authors' illustration.

3.4 Cost of CSR

The cost of CSR, however, can be quite significant. Therefore, it is important that an investment in CSR activities is offset by the benefits it achieves. Some scholars analyze the trade-off between CSR and financial performance. According to these authors, companies investing in CSR incur a voluntary cost, which burdens them with a monetary disadvantage over its competitors (Aupperle, Carroll & Hatfield, 1985; Friedman, 1970). However, other authors argue that the incurred costs of CSR are rather low compared to the other costs of the firm. More so, the gains of an investment in CSR are likely to outweigh its costs, such as for example a large increase in employee morale (Moskowitz, 1972).

Based on the *Stakeholder Theory* (Cornell and Shapiro, 1987; Freeman, 1984), companies on the other hand have to meet the needs of all their stakeholders, including customers, employees, suppliers, creditors, shareholders, etc. The theory assumes that "implicit claims" are priced lower than "explicit claims". Explicit claims include wages, interest on bonds, and stock returns. If companies invest less in CSR some stakeholders might believe that the firm will not be able to meet its "implicit claims" which will increase the demand for "explicit claims".

With regard to the cost of capital, El Ghoul, Guedhami, Kwok and Mishra (2011) conduct a study investigating how CSR affects the cost of equity for US companies. They find that

companies with high CSR scores benefit from a lower cost of equity. Consequently, it can be presumed that companies investing in CSR lower their risks and obtain higher valuations. This effect offsets the costs incurred by CSR investments.

Taken together, CSR investments are a voluntary monetary burden, which could reduce a firm's competitiveness. In order for CSR investments to be beneficial for a company it needs to offset the initial investment. The benefits of CSR that could achieve this are the enhanced access to implicit claims and a lower cost of equity.

3.5 Legitimacy of Sustainability Indices

Even though past studies find that sustainable investment vehicles such as socially responsible mutual funds have failed to perform better than similar market indices, research has shifted its attention towards the performance of sustainability indices (Fowler & Hope, 2007) and its legitimization (Doh et al., 2010).

According to Doh et al. (2010), sustainability indices serve a purpose of "institutional intermediation." Institutional intermediaries provide legitimization due to their institutional nature, which bridges information asymmetries. Based on the *Institutional Theory*, companies will implement certain conduct in order to gain better access to resources. Additionally, they do actively manage their relationships with important stakeholders (DiMaggio & Powell, 1983; Oliver, 1991). By being listed on a sustainability index, companies seek legitimization, which allows them to gain credibility about their socially responsible actions. An enhanced relationship between the firm and its main stakeholders provides better access to resources, which in return enhances the company's overall firm value (Doh et al., 2010).

Collison, Cobb, Power and Stevenson (2009) conduct a critical survey analysis of the FTSE4Good UK Index. The FTSE4Good Index uses mixed screening criteria when deciding which companies to include or to exclude from the index. For example, it automatically excludes companies operating in the tobacco, nuclear, weapon, and uranium industries and includes firms meeting environmental sustainability, stakeholder relations, and human rights objectives (FTSE, 2010). The findings by Collison et al. (2009) suggest that stock inclusion in FTSE4Good Index does have a positive and substantial effect on a firm's reputation and influences its relationships with all stakeholders positively.

Overall, sustainability indices provide legitimization for CSR activity. In addition, they monitor corporate conduct and clarify CSR activity. This bridges information asymmetry and provides transparency for all stakeholders. Prior studies find a positive relationship between sustainability index inclusion which in return has a positive effect on corporate reputation and, hence, shareholder value.

3.6 Theoretical Model of Equity Value

In theory, a positive relationship between CSR, corporate reputation, and shareholder value can be expected (Roberts & Dowling, 2002; Sabate & Puente, 2003; Sen & Bhattacharya, 2001; Williams & Barrett, 2000). This section establishes a theoretical framework that allows us to explore the effect of signaling sustainability performance, which increases a company's reputation due to a firm's inclusion on a sustainability index.

We aim to measure the effects on firm equity value from an addition to, or deletion from, a sustainability index. To do so, we establish the following relationship between the equity value and the share price for an individual firm. First, we define the equity value for an individual firm, V_e, according to:

$$V_e = \sum_{t=1}^{\infty} \left(\frac{E(D_t)}{(1+r_e)^t} \right) \tag{1}$$

where $E(D_t)$ is the expected dividend in year t and r_e is the required return on equity. Then, the share price for an individual firm, S, is equal to:

$$S = \frac{V_e}{\text{Number of outstanding shares}} \tag{2}$$

Therefore, we assume that the effects on firm equity value from an addition to, or deletion from, a sustainability index can be measured as the financial performance of the shares of the firm, that is added to, or deleted from, the sustainability index. Based on this relationship, a firm's equity value can be increased in two ways: by either increasing expected dividends, or by lowering its required return on equity.

Within our framework, we assume that a favorable corporate reputation will have a positive effect on the firm's required return on equity and expected dividends, since it provides these firms with the ability to attract more qualified employees, receive better access to capital, negotiate more favorable trade conditions, and to reduce cash flow volatility as outlined before. The inclusion of a firm in a sustainability index is a form of a signal to all its stakeholders that it meets generally accepted sustainability standards. Therefore, we analyze the inclusion of companies in the FTSE4Good Europe Index as a form of strengthening a company's reputation due to an active commitment to CSR.

4 METHOD

The following chapter includes a detailed description of the research method, a motivation thereof, and a short discussion of potential drawbacks of the selected method.

4.1 Event Study

We use the event study method to examine the shareholder value effects following an addition to, or deletion from, the FTSE4Good Europe Index. Based on financial market data, the purpose of an event study is to measure the impact of a particular event on selected variables, such as stock returns and firm value (Kothari & Warner, 2007; MacKinlay, 1997). Ball and Brown (1968), and Fama, Fisher, Jensen and Roll (1969) demonstrate the usefulness of event studies first, and the methodology has been continuously modified (MacKinlay, 1997) and is used widely for accounting, economic, and financial research by now (McWilliams, Siegel & Teoh, 1999). With regard to capital market research, event studies are especially useful for testing market efficiency (Fama, 1991, Kothari & Warner, 2007).

For the purpose of this paper, we draw on Campbell, Lo & MacKinlay (1997), who provide a comprehensive outline for a typical event study, and organize our event study accordingly into five steps: (1) event definition and event windows, (2) selection criteria for study sample, (3) estimation procedure and normal returns, (4) computations of abnormal returns, and (5) testing procedure.

4.1.1 Event Definition and Event Windows

Defining the event of interest is the first step in conducting an event study. An event of interest is preferably well-defined, easily identifiable, and traceable to a specific point in time (Campbell et al., 1997). The announcement of new information typically meets these requirements. For our study, we define the following four events:

- Announcement of addition to the FTSE4Good Europe Index,
- Announcement of deletion from the FTSE4Good Europe Index,
- Effective addition to the FTSE4Good Europe Index, and
- Effective deletion from the FTSE4Good Europe Index.

Each of our defined events can be traced back to a specific date. The time span over which the

effect of the pre-defined events on the sample firms is studied needs to be identified. This time period is typically referred to as the event window. As it is customary to define the respective event window to be larger than the time period of the specific event (MacKinlay, 1997), we draw on Robinson et al. (2011) and Cheung (2011) and define the following three, slightly adjusted, event windows:

- EW_1, or the pre-announcement period, which is defined as the period of the 20 trading days prior to the announcement of any index changes, equal to T_1 to T_2-1 in Fig. 4,
- EW_2, or the announcement period, which is defined as the period from the date of the announcement, t_0, until 1 day before the index changes become effective and varies from 7 to 8 trading days for the study sample, equal to T_2 to T_3-1 in Fig. 4, and
- EW_3, or the effective period, which is defined as the period of the first 60 trading days once the changes become effective, equal to T_3 to T_4-1 in Fig. 4.

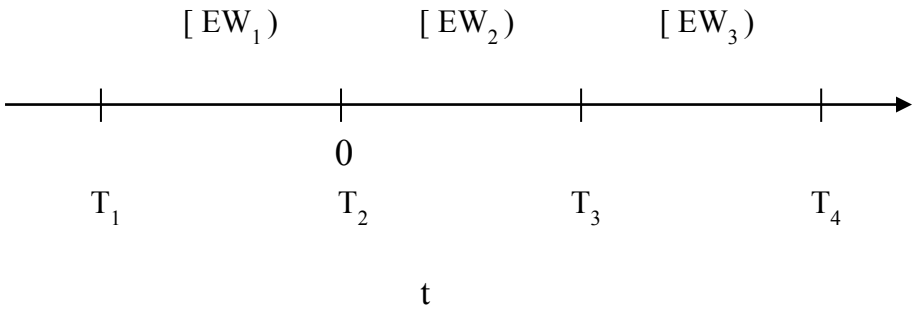

Figure 4. An illustration of the three event windows EW_1, EW_2, and EW_3, where t denotes a given trading day during the study period with $T_1 = t_{-20}$ equal to beginning of pre-announcement period, $T_2 = t_0$ equal to the date of announcement, $T_3 = t_{7 \text{ or } 8}$ equal to the date of effective change, which varies for different years, and T_4 equal to the first trading day following the end of EW_3 where $T_4 - T_3 = 60$ trading days (t).

Expanding the event windows surrounding the date of announcement has at least two advantages for our study. First, where the financial markets may have acquired information about the index changes prior to the official announcement and hence may have anticipated the event, one would expect some abnormal returns related to the event to show up during the pre-event period (Kothari & Warner, 2007). The inclusion of multiple trading days before the announcement, therefore, allows for testing this hypothesis. Second, including multiple trading days following the announcement and the effective change, respectively, allows for

the dissemination and processing of information, captures delayed stock price effects and can be used to test the efficiency of the markets (Thompson, 1985).

4.1.2 Selection Criteria for Study Sample

Following the identification and definition of our events of interest and corresponding event windows, the second step in conducting an event study is to determine the selection criteria for including a given firm in the study (MacKinlay, 1997). Chapter 5 provides a detailed description of the selection process and the study sample.

4.1.3 Estimation Procedure and Expected Normal Returns

Following the selection of our study sample, the third step in conducting an event study is to compute the normal return for the sample firms during the study period. Since our objective is to measure the impact of the events in terms of abnormal returns, we need a model for normal returns. The normal return is defined as the expected return as if the event did not happen (MacKinlay, 1997). To compute the normal return one commonly uses the constant mean return model or the market model. While the constant mean return model assumes a constant average return for a given security over time, the market model assumes a linear relation between the return of a given security and the return of the market portfolio (Brown & Warner, 1985). The latter takes thus both market trends and a firm's risk into account. MacKinlay (1997) notes that the additional benefits from using more sophisticated models such as CAPM and multifactor models are likely to be very limited.

We use the market model to compute normal returns, since we expect an increased ability to detect effects from the announced and effective index changes compared to the constant mean return model. This potential gain results from removing the variation in the return on the market portfolio, which reduces the variance of abnormal returns, and increases with a higher R^2 of the market model regression (MacKinlay, 1997).

For an individual firm *i*, the normal return, R_{it}, in the market model is calculated as follows:

$$R_{it} = \alpha_i + \beta_i R_{mt} + \varepsilon_{it} \tag{3}$$

$$E(\varepsilon_{it} = 0),\ \text{var}(\varepsilon_{it}) = \sigma^2_{\varepsilon_i}$$

where α_i is the average return of firm i compared to the average return on the market, β_i is the beta of firm i, R_{mt} is the return on the market, and ε_{it} is the zero mean disturbance term.

Using the market model to determine expected returns, we need to estimate α_i and β_i for a time period. This time period is called estimation window and is typically defined as a period of multiple days preceding the event window. It is normally important that the estimation and event window do not overlap, since the idea is to calculate expected normal returns as if the event did not take place. For our study, we define the estimation window for all events as a period of 120 trading days preceding the first event window, EW_1, for a given firm i.

To estimate a market model for our sample, we then run a regression with the daily stock return of each individual firm, R_{it}, on the market return, R_{mt}, which is proxied by the return on the MSCI Europe Index. (For more information on the MSCI Europe Index and why it is used as market proxy for the market model, see 5.2).

For an individual firm i, the actual stock return, $R_{it,}$ for a given trading day t is equal to:

$$R_{it} = \ln\left(\frac{P_{i,t}}{P_{i,t-1}}\right) \tag{4}$$

where R_{it} is the log-return, $P_{i,t}$ is the current closing price, and $P_{i,t-1}$ is the closing price of the previous day.

Using continuously compounded returns is preferable to discretely compounded returns because continuously compounded returns are time additive. That is, to get the logarithmic returns for the three event windows, one can add up the daily logarithmic returns over each respective event window. In addition, logarithmic returns approximate discretely compounded returns for short time intervals, such as daily stock returns.

Based on the estimations of α_i and β_i for each individual firm i, the expected normal return for an individual firm, $E(R_{it})$, on a given trading day t is then equal to:

$$E(R_{it}) = \alpha_i + \beta_i R_{mt} \tag{5}$$

4.1.4 Computing Abnormal Returns

Based on the expected normal and actual return, we can calculate the abnormal return for each individual firm *i*, which is defined as the difference between the actual return of a security less the expected normal return of the firm at time *t* (MacKinlay, 1997).

For an individual firm *i,* the abnormal return, AR_{it}, for a given trading day *t* within any of the event windows is equal to:

$$AR_{it} = R_{it} - E(R_{it}) = R_{it} - (\alpha_i + b_i R_{mt}) = \varepsilon_{it} \tag{6}$$

4.1.5 Hypotheses and Testing Procedure

To measure the average effect on equity value for additions to, and deletions from, the FTSE4Good Europe Index across our sample, we then calculated the average abnormal return. For any trading day *t* within any of the event windows, the average abnormal return, $\overline{AR}_t$, for the sub sample of N additions (or deletions) is:

$$\overline{AR}_t = \frac{1}{N}\sum_{i=1}^{N} AR_{it} \tag{7}$$

For a sufficiently long estimation window,[2] the variance of $\overline{AR}_t$, is equal to:

$$\text{var}\left(\overline{AR}_t\right) = \frac{1}{N^2}\sum_{i=1}^{N} \sigma_{\varepsilon_i}^2 \tag{8}$$

where $\sigma_{\varepsilon_i}^2$ is the residual variance from the market model regression for firm *i*, which is:

$$\sigma_{\varepsilon_i}^2 = AR_{it}^2 \tag{9}$$

To test whether an $\overline{AR}_t$ for a given trading day *t* is statistically different from zero, we assume that the abnormal returns are considered residuals from the normal return model and are likely

[2] For daily stock data, an estimation window of 120 trading days is sufficient (Jain, 1986; MacKinlay, 1997).

to follow a standard normal distribution with zero mean and $\text{var}\left(\overline{AR}_t\right)$. Therefore, we can calculate a test statistic, θ_t, for a given trading day t according to:

$$\theta_t = \frac{\overline{AR}_t}{\sqrt{\text{var}\left(\overline{AR}_t\right)}} \tag{10}$$

where $\sqrt{\text{var}\left(\overline{AR}_t\right)}$ is the standard deviation of $\overline{AR}_t$.

The test statistic, θ_t, is then tested for statistical significance at 0.01, 0.005, 0.001 levels using a table of critical Z values.

Given our interest in the total effect on firm equity value for additions to, and deletions from, the FTSE4Good Europe Index for each event window, we sum up the daily average abnormal returns, $\overline{AR}_t$, which results in an average cumulative abnormal return, $\overline{CAR}_t$, across the samples of added and deleted firms. Formally, the average cumulative abnormal return, $\overline{CAR}_t$ for a period beginning on trading day *t-j* and ending on trading day *t*, is computed as follows:

$$\overline{CAR}_t = \sum_{t=t-j}^{t} \overline{AR}_t \tag{11}$$

Considering the definition of our event windows, we focus on analyzing the average cumulative abnormal return, $\overline{CAR}$, at the end of EW_1, EW_2, and EW_3. For example, the average cumulative abnormal return for the first event window, $\overline{CAR}(EW_1)$, is equal to:

$$\overline{CAR}(EW_1) = \sum_{t=T_0}^{T_1-1} \overline{AR}_t \tag{12}$$

Building on Cheung (2011) and Robinson et al. (2011), we test the following four hypotheses:

H1: Stocks that were added to the FTSE4Good Europe Index experienced a positive price change following the announcement of their addition to the FTSE4Good Europe Index. This can be expressed as:

$$H_0 : \overline{CAR}(EW_2) \leq 0 \text{ and } H_A : \overline{CAR}(EW_2) > 0$$

H2: Stocks that were removed from the FTSE4Good Europe Index experienced a negative price change following the announcement of their removal from the FTSE4Good Europe Index. This can be expressed as:

$$H_0 : \overline{CAR}(EW_2) \geq 0 \text{ and } H_A : \overline{CAR}(EW_2) < 0$$

H3: Stocks that were added to the FTSE4Good Europe Index experienced a positive price change following the effective date of their addition to the FTSE4Good Europe Index. This can be expressed as:

$$H_0 : \overline{CAR}(EW_3) \leq 0 \text{ and } H_A : \overline{CAR}(EW_3) > 0$$

H4: Stocks that were removed from the FTSE4Good Europe Index experienced a negative price change following the effective date of their removal from the FTSE4Good Europe Index. This can be expressed as:

$$H_0 : \overline{CAR}(EW_3) \geq 0 \text{ and } H_A : \overline{CAR}(EW_3) < 0$$

To test whether any of the average cumulative abnormal returns, $\overline{CAR}(EW_i)$ with i = 1, 2, 3, is significantly different from zero, we first need to compute the variance of $\overline{CAR}(EW_i)$ with i = 1, 2, 3. Formally, the variance of $\overline{CAR}_t$ for a period beginning on day *t-j* and ending on day *t*, is computed as follows:

$$\text{var}\left(\overline{CAR}_t\right) = \sum_{t=t-j}^{t} \text{var}\left(\overline{AR}_t\right) \tag{13}$$

The variance of $\overline{CAR}(EW_1)$, for example, is equal to:

$$\text{var}\left(\overline{CAR}(EW_1)\right) = \sum_{t=T_0}^{T_1-1} \text{var}\left(\overline{AR}_t\right) \tag{14}$$

Finally, we can compute the test statistic, θ, for $\overline{CAR}(EW_i)$ according to:

$$\theta_i = \frac{\overline{CAR}(EW_i)}{\sqrt{\text{var}\left(\overline{CAR}(EW_i)\right)}} \sim N(0,1) \tag{15}$$

where $\text{var}\left(\overline{CAR}(EW_i)\right)$ is the standard deviation of $\text{var}\left(\overline{CAR}(EW_i)\right)$.

The test statistic, θ_i, is then tested for statistical significance at 0.01, 0.005, 0.001 levels using a table of critical Z values.

4.2 Discussion of Potential Biases of an Event Study

The application of event studies is, similar to alternative research methods, subject to a number of potential biases. Although a thorough discussion thereof is beyond the scope of this study, some aspects are worth describing.

First, potential biases may have been introduced because the selection criteria for the study sample may have been chosen laxly or falsely (MacKinlay, 1997). While a growing number of selection criteria may increase the sample accuracy, although the generalizability of the results may decrease, the risk of selecting wrong criteria will remain. For this study, we chose only a few selection criteria on purpose since the aim is to measure representative effects on firms equity value from an addition to, or deletion from, the FTSE4Good Europe Index irrespective specific firm characteristics, such as firm market capitalization, industry representation, etc. (MacKinlay, 1997).

Second, the selection of a model to estimate expected normal returns could have an impact on the results of the event study. Since alternative models may vary in their precision, the selection of a single model will affect the measured abnormal returns and empirical results (Kothari & Warner, 2007). Additionally, the selection of the proxy for the market portfolio may be inaccurate, which may result in imprecise expected normal returns and, consistently, abnormal returns. With the use of the market model and the MSCI Europe Index for this study, we chose a broadly accepted and commonly used model to estimate expected normal returns and a broad based, well-diversified market proxy. We expect that these measures

somewhat mitigate the risk of the above potential biases.

Third, Kothari and Warner (2007) note that abnormal returns cannot be measured without error. First, expected normal returns are imprecise for some reasons, such as the selection of a model to calculate expected normal returns. Second, the actual return for an individual firm at the time of an event is not solely affected by the event. Other reasons, which are not related to the event, do also have an impact on the actual return and it cannot be assumed that this component of the abnormal return averages "to literally zero in the cross-section" (Kothari & Warner, 2007, p. 11) For example, it is likely to assume that abnormal returns depend on the degree to which the event is anticipated. If the degree of anticipation is measured by analyst coverage, with high coverage resulting in improved predictability, the abnormal returns are expected to differ cross-sectionally.

Fourth, the duration of the event window has a substantial impact on the results of an event study, where longer event windows are subject to increasing noise and the abnormal returns, therefore, may be less easily observed as opposed to a short event window.

Fifth, clustering within our study sample causes an additional bias. This clustering effect results from the fact that the event windows in our sample overlap because the index changes are announced semi-annually with the events coinciding with the announcement date in March and September for each year (for exact dates, see Table 2 in 5.1). Theoretically, this violates the assumption that the events are randomly distributed and that abnormal returns are uncorrelated across the studied securities (MacKinlay, 1997). For our sample, the clustering within our sample biases the estimated variance of the average CAR downward and the test statistic in Equation (13) upward (c.f. Kothari & Warner, 2007).

Finally, an event study is subject to potential biases from statistical analysis, including Type I error (false rejection of the null hypothesis), Type II error (false acceptation of the null hypothesis), and general and additional assumptions of the properties of the test statistics, such as the distribution and correlation of abnormal returns across the sample.

For a detailed discussion of the presented and further potential biases of event studies, an interested reader may refer to MacKinlay (1997) and Kothari and Warner (2007).

5 DATA

The following chapter presents the study sample, which is used for the analysis and test of the hypotheses.

5.1 Description of the Data Sample

The FTSE4Good Europe Index is part of the FTSE4Good Index Series for responsible investors, which was launched in 2001, and consists of some 180 European companies chosen from a universe of more than 520 eligible constituents.[3] The objective of the FTSE4Good Europe Index is to measure the financial performance of European companies that meet globally recognized and accepted CSR standards (FTSE, 2008). For the FTSE4Good Europe Index, the inclusion criteria are regularly revised and updated to reflect an evolving body of best practices in CSR.[4] Companies are required to demonstrate actions towards (FTSE, 2010):

- Environmental Management,
- Climate Change Mitigation and Adaptation,
- Countering Bribery,
- Upholding Human and Labor Rights, and
- Supply Chain Labor Standards.

These inclusion criteria are designed to be challenging yet achievable. The latter is an important aspect to encourage firms to make efforts to meet them.

To study the effects on firm equity value from a listing on the FTSE4Good Europe Index, we follow previous studies (Cheung, 2011; Robinson et al., 2011) and measure the stock market reaction during three event windows surrounding the announcement that companies were added, or deleted from, the FTSE4Good Europe Index between 2006 and 2011. As shown in Table 2, index changes are announced semi-annually in March and September for each year and became effective within 6 to 7 trading days following their announcement, resulting in an initial sample size of 100 additions to and 75 deletions from 2006 to 2011.

[3] The universe of eligible constituents consists of all firms in the FTSE All-World Developed Europe Index.

[4] The approval of criteria revisions or the addition of new criteria is included in the governance role of the FTSE4Good Policy Committee, which is an independent body of experts from the fields of CSR, fund management, academia and the business community (FTSE, 2011).

While access to the constituent list of the FTSE4Good Europe Index is restricted and requires a license with FTSE, the data on index changes can be found in official semi-annual index reviews, which are publicly available from the FTSE homepage (FTSE, 2012).

Table 2. Changes in the FTSE4Good Europe Index from 2006 to 2011. This table presents summary data on the number of semi-annual additions to, and deletions from, the FTSE4Good Europe Index from 2006 to 2011. The announcement date corresponds to the date the index changes were publicly announced in the semi-annual FTSE4Good Index Review, and the effective date to the date the index changes became effective, respectively.

Year	Additions	Deletions	Announcement date	Effective date
2006	13	1	March 8	March 20
	5	3	September 7	September 18
2007	6	3	March 7	March 19
	6	4	September 12	September 24
2008	4	22	March 13	March 26
	15	6	September 11	September 22
2009	5	10	March 11	March 23
	3	3	September 9	September 21
2010	9	10	March 10	March 22
	11	1	September 9	September 20
2011	5	12	March 10	March 21
	18	0	September 8	September 19
Total	100	75		

5.1.1 Companies added to the FTSE4Good Europe Index from 2006 to 2011

Table 3 provides data about the 98 firms that were added to the FTSE4Good Europe Index between 2006 and 2011, including their country of origin, industry and sector information, and dates of announcement and effective change, respectively. The difference between the number of firms (98) and additions (100) results from two reasons. First, the index rules allow that a single firm can be listed multiple times with different classes of shares. Second, a single firm can be added and deleted repeatedly. The first reason applies to Swatch Group, a Swiss watch manufacturer, and the second one to Scania A, a Swedish truck manufacturer, which was added a second time after its deletion during the study period.

Table 3. Companies added to the FTSE4Good Europe Index from 2006 to 2011. This table presents the initial study sample of companies that were added to the FTSE4Good Europe Index between 2006 and 2011, including information about their country of origin (add the time of the index change), sector and industry classification, the date of announcement of their addition to the FTSE4Good Europe Index, and the date of their effective addition to the index.

Company	Country	Sector / Industry	Announcement date	Effective date
3i Group	UK	Financial / Private Equity	2011-09-08	2011-09-19
Admiral Group	UK	Financial / Insurance	2010-03-10	2010-03-22
Aggreko	UK	Consumer, Non-cyclical / Commercial Services	2010-09-09	2010-09-20
Akzo Nobel	Netherlands	Basic Material / Chemicals	2006-03-08	2006-03-20
Alcatel-Lucent	France	Communications / Telecommunications Hardware & Equipment	2009-09-09	2009-09-21
Alfa Laval	Sweden	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
Allied Irish Banks	Ireland	Financial / Banks	2010-03-10	2010-03-22
Anglo American	UK	Basic Materials / Mining	2011-03-10	2011-03-21
ARM Holdings	UK	Technology / Semiconductors	2010-09-09	2010-09-20
Assicurazioni Generali	Italy	Financial / Insurance	2011-03-10	2011-03-21
AtoS	France	Technology / Computers	2011-09-08	2011-09-19
Autonomy Corporation	UK	Technology / Information Technology	2010-03-10	2010-03-22
Banco De Sabadell	Spain	Financial / Banks	2008-03-13	2008-03-26
Banco Espirito Santo	Portugal	Financial / Banks	2007-09-12	2007-09-24
Banco Popular Espania	Spain	Financial / Banks	2010-09-09	2010-09-20
Banesto	Spain	Financial / Banks	2008-09-11	2008-09-22
Barratt Developments	UK	Consumer, Cyclical / Home Builders	2008-03-13	2008-03-26
Biomerieux	France	Consumer, Non-cyclical / Healthcare-Services	2010-03-10	2010-03-22
Boliden	Sweden	Basic Materials / Mining	2011-09-08	2011-09-19
CDON Group	Sweden	Communications / E-Commerce	2011-03-10	2011-03-21
Celesio	Germany	Consumer, Non-cyclical / Pharmaceuticals	2010-09-09	2010-09-20
Corio	Netherlands	Financial / Real Estate Investment Trust	2008-03-13	2008-03-26
Corp Mapfre	Spain	Financial / Insurance	2006-03-08	2006-03-20
CRH	Ireland	Industrial / Building Materials	2006-03-08	2006-03-20
Criteria CaixaCorp	Spain	Financial / Banks	2009-09-09	2009-09-21
Danske Bank	Denmark	Financial / Banks	2009-03-11	2009-03-23
Deutsche Boerse	Germany	Financial / Diversified Financial Services	2009-09-09	2009-09-21
Drax Group	UK	Diversified / Holdings Companies	2007-03-07	2007-03-19
Energias de Portugal	Portugal	Utilities / Electricity	2011-03-10	2011-03-21
EDP Renovaveis	Portugal	Utilities / Electricity	2011-09-08	2011-09-19
Emporiki Bank of Greece	Greece	Financial / Banks	2007-03-07	2007-03-19
Enagas	Spain	Utilities / Gas	2006-09-07	2006-09-18
ENEL	Italy	Utilities / Electricity	2011-03-10	2011-03-21
ENI	Italy	Energy / Oil & Gas	2007-09-12	2007-09-24

Table 3. Companies added to the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date
Enterprise Inns	UK	Consumer, Cyclical / Retail	2008-03-13	2008-03-26
Euler Hermes	France	Financial / Insurance	2007-03-07	2007-03-19
Eutelsat Communications	France	Communications / Telecommunications	2011-03-10	2011-03-21
Fomento de Construcciones y Contratas	Spain	Industrial / Engineering & Construction	2009-09-09	2009-09-21
Fonciere Des Regions	France	Financial / Real Estate Investment Trust	2011-03-10	2011-03-21
Fondiaria-Sai RNC[a]	Italy	Financial / Insurance	2008-03-13	2008-03-26
Fraport AG Frankfurt	Germany	Industrial / Engineering & Construction	2006-03-08	2006-03-20
Geberit	Switzerland	Industrial / Building Materials	2007-03-07	2007-03-19
Gestevision Telecinco	Spain	Communications / Media	2008-03-13	2008-03-26
Getinge	Sweden	Consumer, Non-cyclical / Healthcare-Products	2011-03-10	2011-03-21
GPO Acciona	Spain	Industrial / Engineering & Construction	2011-03-10	2011-03-21
Greek Organization of Football Prognostics	Greece	Consumer, Cyclical / Entertainment	2006-03-08	2006-03-20
Hellenic Telecom	Greece	Communications / Telecommunications	2008-09-11	2008-09-22
Hermes Intl	France	Consumer, Cyclical / Apparel	2006-03-08	2006-03-20
Iberdrola	Spain	Utilities / Electricity	2010-09-09	2010-09-20
Imerys	France	Industrial / Building Materials	2006-09-07	2006-09-18
Intesa-Sanpaolo	Italy	Financial / Banks	2007-09-12	2007-09-24
Invensys	UK	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
Ipsen	France	Consumer, Non-cyclical / Pharmaceuticals	2011-09-08	2011-09-19
Kesko	Finland	Consumer, Non-cyclical / Food	2009-03-11	2009-03-23
Klepierre	France	Financial / Real Estate Investment Trust	2010-03-10	2010-03-22
Lagardere Groupe	France	Communications / Media	2006-09-07	2006-09-18
Lanxess	Germany	Basic Materials / Chemicals	2011-03-10	2011-03-21
Legrand	France	Industrial / Electrical Components & Equipment	2007-09-12	2007-09-24
Lottomatica	Italy	Consumer, Cyclical / Entertainment	2010-03-10	2010-03-22
LVMH	France	Diversified / Holding Companies	2009-03-11	2009-03-23
Merck KGaA	Germany	Consumer, Non-cyclical / Pharmaceuticals	2008-09-11	2008-09-22
Modern Times Group	Sweden	Communications / Media	2011-03-10	2011-03-21
Mondi	UK	Basic Materials / Forestry & Paper	2008-03-13	2008-03-26
Natixis	France	Financial / Banks	2011-03-10	2011-03-21
Nestle	Switzerland	Consumer, Non-cyclical / Food	2011-03-10	2011-03-21
Novartis	Switzerland	Consumer, Non-cyclical / Pharmaceuticals	2006-09-07	2006-09-18
Partygaming	UK	Consumer, Cyclical / Entertainment	2008-09-11	2008-09-22
Peugeot	France	Consumer, Cyclical / Auto manufacturers	2006-03-08	2006-03-20

Table 3. Companies added to the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date
Prisa	Spain	Communications / Media	2008-03-13	2008-03-26
Randstad Holdings	Netherlands	Consumer, Non-cyclical / Commercial Services	2007-09-12	2007-09-24
Red Electrica	Spain	Utilities / Electricity	2008-03-13	2008-03-26
Resolution	UK	Financial / Investment Companies	2008-03-13	2008-03-26
Rexel	France	Industrial / Electronics	2011-03-10	2011-03-21
Richemont	Switzerland	Consumer, Cyclical / Retail	2010-03-10	2010-03-22
Rio Tinto	UK	Basic Materials / Mining	2007-09-12	2007-09-24
Rockwool International	Denmark	Industrial / Building Materials	2011-03-10	2011-03-21
Saipem	Italy	Energy / Oil & Gas Services	2010-03-10	2010-03-22
Scania A[b, c]	Sweden	Consumer, Cyclical / Auto manufacturers	2011-03-10	2011-03-21
			2006-03-08	2006-03-20
Smiths Group	UK	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
SNS Reaal	Netherlands	Financial / Banks	2007-03-07	2007-03-19
SolarWorld	Germany	Technology / Semiconductors	2010-03-10	2010-03-22
Compagnie de Saint-Gobain	France	Industrial / Building Materials	2006-03-08	2006-03-20
Standard Life	UK	Financial / Insurance	2008-03-13	2008-03-26
Suez Environnement	France	Utilities / Water	2011-03-10	2011-03-21
Swatch Group AG BR	Switzerland	Consumer, Cyclical / Personal Goods	2010-09-09	2010-09-20
Swatch Group AG Reg.	Switzerland	Consumer, Cyclical / Personal Goods	2010-09-09	2010-09-20
TalkTalk Telecom Group	UK	Communications / Telecommunications (Telecom Services)	2010-09-09	2010-09-20
Telefonica Movil	Spain	Communications / Telecommunications (Telecom Services)	2006-03-08	2006-03-20
TeliaSonera	Sweden	Communications / Telecommunications (Telecom Services)	2009-09-09	2009-09-21
Tenaris	Italy	Industrial / Metal Fabricate / Hardware	2010-09-09	2010-09-20
Trygvesta	Denmark	Financial / Insurance	2010-03-10	2010-03-22
TUI Travel	UK	Consumer, Cyclical / Leisure Time	2010-03-10	2010-03-22
Vivendi	France	Communications / Telecommunications	2006-09-07	2006-09-18
Volkswagen Pfd[d]	Germany	Consumer, Cyclical / Auto manufacturers	2006-03-08	2006-03-20
Wartsila	Finland	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
Wendel	France	Diversified / Holding Companies	2011-03-10	2011-03-21
Wiener Städtische Versicherung	Austria	Financial / Insurance	2007-03-07	2007-03-19
Wolseley	UK	Consumer, Cyclical / Distribution / Wholesale	2006-03-08	2006-03-20
Yell Group	UK	Communications / Media	2006-03-08	2006-03-20

[a] Secondary line of Fondiaria-Sai, an existing constituent of the index.
[b] Secondary line of Scania (B shares), an existing constituent of the index.
[c] Added for a second time after its deletion from the FTSE4Good Europe Index on 2008-09-22.
[d] Secondary line of Volkswagen AG, an existing constituent of the index.

5.1.2 Companies deleted from the FTSE4Good Europe Index from 2006 to 2011

Table 4 provides data about the 75 firms that were deleted from the FTSE4Good Europe Index between 2006 and 2011, including their country of origin, industry and sector information, dates of announcement and effective change, respectively, and the reasons for deletion.

Table 4. Companies deleted from the FTSE4Good Europe Index from 2006 to 2011 This table presents the final study sample of companies that were deleted from the FTSE4Good Europe Index between 2006 and 2011, including information about their country of origin (add the time of the index change), sector and industry classification, the date of announcement of their addition to the FTSE4Good Europe Index, the date of their effective addition to the index, and the reason for their deletion from the index.

Company	Country	Sector / Industry	Announcement date	Effective date	Reason for deletion
A2A	Italy	Utilities / Electricity	2011-09-08	2011-09-19	Human & Labor Rights criteria
AGFA-Gevaert	Belgium	Industrial / Miscellaneous Manufacturers	2008-09-11	2008-09-22	Universe deletion
Alcatel-Lucent	France	Communications / Telecommunications Hardware & Equipment	2007-03-07	2007-03-19	Nuclear Weapon criteria
Allied Irish Banks	Ireland	Financial / Banks	2010-09-09	2010-09-20	Universe deletion
Arcandor AG	Germany	Consumer, Cyclical / Retail	2009-09-09	2009-09-21	Universe deletion
Arkema	France	Basic Materials / Chemicals	2009-03-11	2009-03-23	Human & Labor Rights criteria, Climate Change criteria
Bank of Ireland	Ireland	Financial / Banks	2011-09-08	2011-09-19	Universe deletion
Bank of Piraeus (Cr)	Greece	Financial / Banks	2010-09-09	2010-09-20	Universe deletion
Barratt Developments	UK	Consumer, Cyclical / Home Builders	2008-09-11	2008-09-22	Universe deletion
BBA Aviation	UK	Industrial / Aerospace	2008-09-11	2008-09-22	Universe deletion
Beiersdorf	Germany	Consumer, Non-cyclical / Cosmetics & Pers. Care	2009-03-11	2009-03-23	Human & Labor Rights criteria
Biffa	UK	n/a	2007-09-12	2007-09-24	Universe deletion
BP	UK	Energy / Oil & Gas	2010-09-09	2010-09-20	Suspended from FTSE4Good
Bradford & Bingley	UK	Financial / Bank	2008-09-11	2008-09-22	Universe deletion
Cable & Wireless Communications	UK	Communications / Telecommunications	2011-09-08	2011-09-19	Universe deletion
Cable & Wireless Worldwide	UK	Communications / Telecommunications	2011-09-08	2011-09-19	Universe deletion
Cairn Energy	UK	Energy / Oil & Gas	2008-03-13	2008-03-26	Climate change criteria
Capital & Counties Properties	UK	Financial / Real Estate	2010-09-09	2010-09-20	Universe deletion
CDON Group	Sweden	Communications / E-Commerce	2011-09-08	2011-09-19	Universe deletion
Celesio	Germany	Consumer, Non-cyclical / Pharmaceuticals	2008-03-13	2008-03-26	Countering Bribery criteria
Ciba Holding AG	Switzerland	Consumer Non-cyclical / Pharmaceuticals	2008-09-11	2008-09-22	Universe deletion
DSG International	UK	Consumer, Cyclical / Retail	2008-09-11	2008-09-22	Universe deletion
Electrocomponents	UK	Industrial Electronics	2008-09-11	2008-09-22	Universe deletion
Emporiki Bank of Greece	Greece	Financial / Banks	2009-09-09	2009-09-21	Universe deletion

Table 4. Companies deleted from the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date	Reason for deletion
ENEL	Italy	Utilities / Electricity	2006-09-07	2006-09-18	Nuclear Power criteria
Enterprise Inns	UK	Consumer Cyclical / Retail (-Pubs)	2009-09-09	2009-09-21	Universe deletion
EVN Energ-Versorg	Austria	Utilities / Electricity	2010-09-09	2010-09-20	Universe deletion
Fiberweb	UK	Consumer, Cyclical / Apparel	2007-09-12	2007-09-24	Universe deletion
Fondiaria-SAI	Italy	Financial / Insurance	2010-09-09	2010-09-20	Universe deletion
Fondiaria-Sai RNC	Italy	Financial / Insurance	2010-09-09	2010-09-20	Universe deletion
Gamesa	Spain	Industrial / Electrical Components & Equipment	2011-09-08	2011-09-19	Universe deletion
Heidelberg Druck	Germany	Industrial / Machinery-Diversified	2008-09-11	2008-09-22	Universe deletion
HeidelbergCement AG	Germany	Industrial / Building Materials	2008-03-13	2008-03-26	Climate Change criteria
Home Retail Group	UK	Consumer, Cyclical / Retail	2011-09-08	2011-09-19	Universe deletion
Hypo Real Estate Holdings	Germany	Financial / Banks	2009-09-09	2009-09-21	Universe deletion
International Personal Finance	UK	Financial / Diversified Financial Services	2008-09-11	2008-09-22	Universe deletion
Irish Life & Permanent	Ireland	Financial / Diversified Financial Services	2009-09-09	2009-09-21	Universe deletion
JCDecaux	France	Communications / Advertising	2011-09-08	2011-09-19	Human & Labor Rights criteria
Johnston Press	UK	Media	2008-09-11	2008-09-22	Universe deletion
Kesa Electricals	UK	Consumer, Cyclical / Retail	2006-03-08	2006-03-20	Environmental criteria
Klepierre	France	Financial / Real Estate Investment Trust	2009-03-11	2009-03-23	Countering Bribery criteria
Lagardere Groupe	France	Communications / Media	2008-09-11	2008-09-22	Human & Labor Rights criteria
Lanxess	Germany	Basic Materials / Chemicals	2008-03-13	2008-03-26	Climate Change criteria
LVMH	France	Diversified / Holding Companies (Personal Goods)	2007-03-07	2007-03-19	Supply chain Labor standards
Misys	UK	Technology / Software	2008-09-11	2008-09-22	Universe deletion
Mitchells & Butlers	UK	Consumer Cyclical / Retail (-Pubs)	2006-09-07	2006-09-18	Environmental criteria
Mondi	UK	Basic Materials / Forestry & Paper	2009-09-09	2009-09-21	Universe deletion
Norske Skogindustrier	Norway	Basic Materials / Forestry & Paper	2008-09-11	2008-09-22	Universe deletion
Partygaming	UK	Consumer, Cyclical / Entertainment	2010-09-09	2010-09-20	Universe deletion
Prisa	Spain	Communications / Media	2009-09-09	2009-09-21	Universe deletion
Provident Financial	UK	Financial / Diversified Financial Services	2011-09-08	2011-09-19	Universe deletion

Table 4. Companies deleted from the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date	Reason for deletion
Roche Holdings (BR)[a]	Switzerland	Consumer Non-cyclical / Pharmaceuticals	2008-09-11	2008-09-22	Universe deletion
RTL Group	Belgium	Communications / Media	2011-09-08	2011-09-19	Universe deletion
Sampo Oyj	Finland	Financial / Insurance	2009-09-09	2009-09-21	Environmental criteria
Scania A	Sweden	Consumer Cyclical / Auto manufacturers	2008-09-11	2008-09-22	Universe deletion
Seat Pagine Gialle	Italy	Communications / Media	2006-09-07	2006-09-18	Environmental criteria
SNS Reaal	Netherlands	Financial / Banks	2009-09-09	2009-09-21	Universe deletion
Sodexo	France	Consumer Non-cyclical / Commercial Services	2010-03-10	2010-03-22	Human & Labor Rights criteria
SolarWorld AG	Germany	Technology / Semiconductors	2010-09-09	2010-09-20	Universe deletion
SSAB A[b]	Sweden	Basic Materials / Iron/Steel	2007-09-12	2007-09-24	Countering Bribery criteria
SSAB B[b]	Sweden	Basic Materials / Iron/Steel	2007-09-12	2007-09-24	Countering Bribery criteria
Swatch Group AG BR	Switzerland	Consumer Cyclical / Personal Goods	2008-03-13	2008-03-26	Environmental criteria
Swatch Group AG Reg.	Switzerland	Consumer Cyclical / Personal Goods	2008-03-13	2008-03-26	Environmental criteria
TalkTalk Telecom Group	UK	Communications / Telecommunications	2011-09-08	2011-09-19	Universe deletion
Tate & Lyle	UK	Consumer Non-cyclical / Food	2007-03-07	2007-03-19	Supply Chain Labor criteria
Tele2 AB	Sweden	Communications / Telecommunications	2008-09-11	2008-09-22	Countering Bribery criteria
TeliaSonera	Sweden	Communications / Telecommunications	2008-09-11	2008-09-22	Countering Bribery criteria
Thomson SA	France	Technology & Media Services	2008-09-11	2008-09-22	Universe deletion
Tietoenator Oyj	Finland	Technology / Computers	2008-09-11	2008-09-22	Universe deletion
Travis Perkins	UK	Consumer, Cyclical / Retail	2008-09-11	2008-09-22	Universe deletion
Trinity Mirror	UK	Communications / Media	2008-09-11	2008-09-22	Universe deletion
United Business Media	UK	Communications / Media	2011-09-08	2011-09-19	Universe deletion
Valeo	France	Consumer Cyclical / Auto Parts & Equipment	2009-09-09	2009-09-21	Universe deletion
Yell Group	UK	Communications / Media	2008-09-11	2008-09-22	Universe deletion
ZON Multimedia - Serviços de Telecomunicações e Multimédia	Portugal	Communications / Media	2010-09-09	2010-09-20	Universe deletion

[a] Roche Holdings (BR) is a secondary line to Roche Holdings, an existing constituent of the index.

[b] In general, SSAB A and SSAB B lines are treated as a single company. For this study, SSAB A and SSAB B are treated as separate companies.

5.1.3 Companies excluded from the Study Sample

Based on the initial study sample, firms that actually were to be included in the study were selected according to two criteria. First, only firms with daily traded stock for the estimation and the three windows, adjusted for days with a closed exchange due to local holidays, provided by Thomson Reuters Datastream were included (Criterion 1). Second, firms with multiple classes of shares were only included if index changes affected all classes of shares at the same time (Criterion 2). That is, if a second class of shares of an existing constituent was added or deleted, although the existing constituent was confirmed, these additions or deletions were excluded from the initial study sample. This seems reasonable for two reasons. First, when a firm is already listed on the index, the addition of a second class of shares will most likely create marginal or no value, since most value was created from the first addition. Second, when a firm is listed with several classes of shares, the deletion of a second class of shares will most likely destroy marginal or no value, since such a firm will still be a constituent, although with only one class of shares. Based on these criteria, a total of 7 firms representing 8 additions and 8 firms representing 8 deletions were excluded from the initial study sample. Table 5 provides detailed information on the excluded firms and the violated criteria.

Table 5. Companies excluded from study sample from 2006 to 2011 This table presents the companies that were excluded from the final study sample, including information about their country of origin (add the time of the index change), sector and industry, and the reason for their deletion from the final sample. A company was deleted if it failed to meet at least one of the two selection criteria. First, only firms with daily traded stock for the estimation and the three windows, adjusted for days with a closed exchange due to local holidays, provided by Thomson Reuters Datastream were included (C1). Second, firms with multiple classes of shares were only included if index changes affected all classes of shares at the same time (C2). A total of 7 firms representing 8 additions and 8 firms representing 8 deletions were excluded from the initial study sample.

Company	Country	Sector / Industry	Reason
Additions:			
CDON Group	Sweden	Communications / E-Commerce	Incomplete data for estimation window (C1)
Fondiaria-Sai RNC	Italy	Financial / Insurance	Secondary line of Fondiaria-Sai, an existing constituent of the index (C2)
Partygaming	UK	Consumer, Cyclical / Entertainment	Data not available for entire study period (C1)
Resolution	UK	Financial / Investment Companies	Incomplete data for EW_3 (C1)
Scania A	Sweden	Consumer Cyclical / Auto manufacturers	Secondary line of Scania, an existing constituent of the index (C2)
TalkTalk Telecom Group	UK	Communications / Telecommunications (Telecom Services)	Incomplete data for estimation window (C1)
Volkswagen Pfd	Germany	Consumer Cyclical / Auto manufacturers	Secondary line of Volkswagen AG, an existing constituent of the index (Criterion 2)
Deletions:			
Bradford & Bingley	UK	Financial / Bank	Data for EW_3 incomplete (C1)
Capital & Counties Properties	UK	Financial / Real Estate	Incomplete data for estimation window (C1)
DSG International	UK	Consumer, Cyclical / Retail	Data not available for entire study period (C1)
Hypo Real Estate Holdings	Germany	Financial / Banks	Incomplete data for EW_3 (C1)
Partygaming	UK	Consumer, Cyclical / Entertainment	Data not available for entire study period (C1)
Roche Holdings (BR)	Switzerland	Consumer Non-cyclical / Pharmaceuticals	Secondary line of Roche Holdings, an existing constituent of the index (C2)
Scania A	Sweden	Consumer Cyclical / Auto manufacturers	Secondary line of Scania, an existing constituent of the index (C2)
Thomson SA	France	Technology & Media Services	Data not available for entire study period (C1)

5.1.4 Description of the Final Study Sample

The final sample consisted of 92 additions to and 67 deletions from the FTSE4Good Index between 2006 and 2011, which are listed in Table 8 and Table 9 in the Appendix.

5.2 Description of Data for Market Model Regressions

In theory, we would preferably use the market portfolio, which includes all traded and untraded assets and thus represents the world market, to calculate the return on the market and estimate the expected normal return in the market model. However, the market portfolio cannot be observed in practice, and thus needs to be approximated. A market proxy, then, is typically a value-weighted, well-diversified portfolio, such as broad based stock indices such as the S&P 500 Index (MacKinlay, 1997) or the MSCI World Index (Koller, Goedhart & Wessels, 2010). Considering the purpose of this study, which is to examine the effects on firm equity value from additions to, or deletions from, the FSE4Good Europe Index for European firms, we add a third dimension, European investor perspective, to the selection criteria for the market proxy.

Therefore, we use the daily returns on the MSCI Europe Index as a market proxy to calculate market returns and estimate expected normal returns in the market model.[5] To match the market return with each sample firm, we obtained the data on daily price levels for the MSCI Europe Index for both estimations and event windows from Thomson Reuters Datastream.

[5] The MSCI Europe Index is a free float-adjusted market capitalization weighted index, which measures the equity market performance of the following 16 developed market country indices in Europe: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom. With a total of 449 constituents (as of March 31, 2012), the MSCI Europe Index covers approximately 84% of the free float-adjusted market capitalization in the European Developed Markets (MSCI, 2012).

6 RESULTS

The following chapter presents the empirical results from the event studies for the study sample between 2006 and 2011.

6.1 Overview

Based on the final study sample of 92 additions to and 67 deletions from the FTSE4Good Europe Index between 2006 and 2011, we calculated the average cumulative abnormal returns (CARs) around the announcement date to test the four hypotheses H1, H2, H3, and H4. Table 6 presents the average cumulative abnormal returns (CARs) at the last trading day of the three event windows (EW_1, EW_2, and EW_3) for additions to, and deletions from, the FTSE4Good Europe Index between 2006 and 2011.

Table 6. Average cumulative abnormal returns for additions to and deletions from the FTSE4Good Europe Index during three event windows. This table shows the mean CAR from Equation (11) for the sample firms that were added to, or deleted from, the FTSE4Good Europe Index the index between 2006 and 2011, at the end of three distinct time periods: during the pre-announcement period (EW_1), the announcement period (EW_2), and the effective period (EW_3). A Z-test is used to test the statistical significance of the CAR values.

	Additions	Deletions
Initial sample size	100	75
Sample size used in this study	92	67
Average cumulative abnormal returns (CARs)		
EW_1: 20 trading days prior to the announcement (T_1 to T_2-1)	0.0101	0.0303
EW_2: Announcement date due to effective date -1 (T_2 to T_3-1)	0.0062	-0.0530***
EW_3: First 60 trading days after index change (T_3 to T_4-1)	-0.0252	0.0103

***Denoting statistical significance at a 1% level for a one-sided Z-test.

The detailed results for the additions to the FTSE4Good Europe Index for the sample firms between 2006 and 2011 are presented in Table 8 in the Appendix. For the deletions from the FTSE4Good Europe Index for the sample firms between 2006 and 2011, the detailed results are presented in Table 9 in the Appendix.

To support the above results and test for potential weaknesses in the selection of the MSCI Europe Index as market proxy, we run a sensitivity analysis for the market model regressions

with input data from additional equity indices. These additional equity indices were the S&P Euro Index, the STOXX Europe 600 Index, the FTSE All World Index, and the MSCI World Index. The sensitivity analysis yields quantitatively same results as the initial model. These results are presented Table 12 in the Appendix.

6.2 Results for the Pre-Announcement Period (EW_1)

For the first event window, EW_1, which was defined as the pre-announcement period, including the period of 20 trading days prior to the announcement of the index changes, the results show a positive, but insignificant, value of 1.01% for the mean CAR of added firms. Plotting the daily average CAR values further shows an insignificant positive drift for additions to the index as shown in Fig. 5.

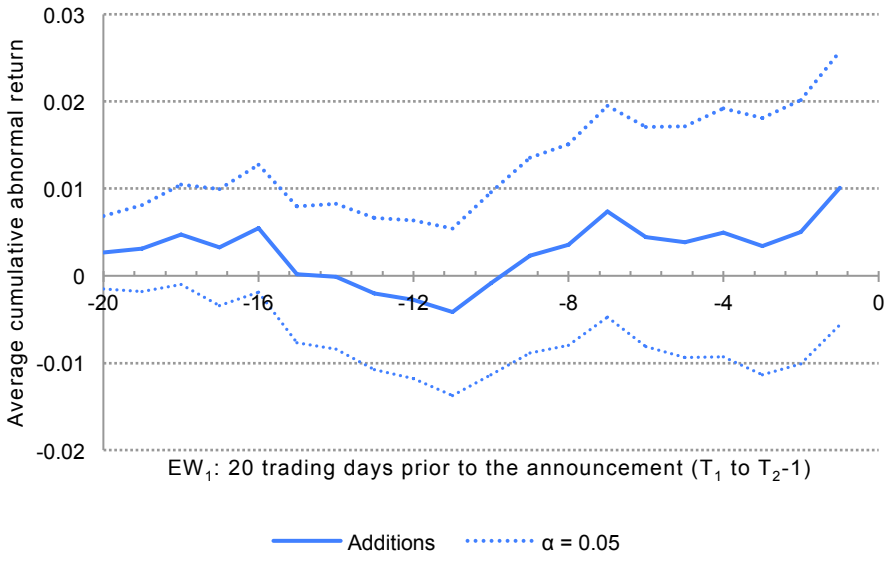

Figure 5. Average cumulative abnormal return (CAR) from Equation (11) during the first event window, EW_1, including the 20 trading days prior to the announcement of additions to the FTSE4Good Europe Index, for the sample firms that were added to the index between 2006 and 2011. The dotted lines correspond to a 95% confidence interval.

For deleted firms, the respective value is 3.03% for the mean CAR, which is not significant. Plotting the daily average CAR values further shows an insignificant positive drift for deletions from the index as shown in Fig. 6.

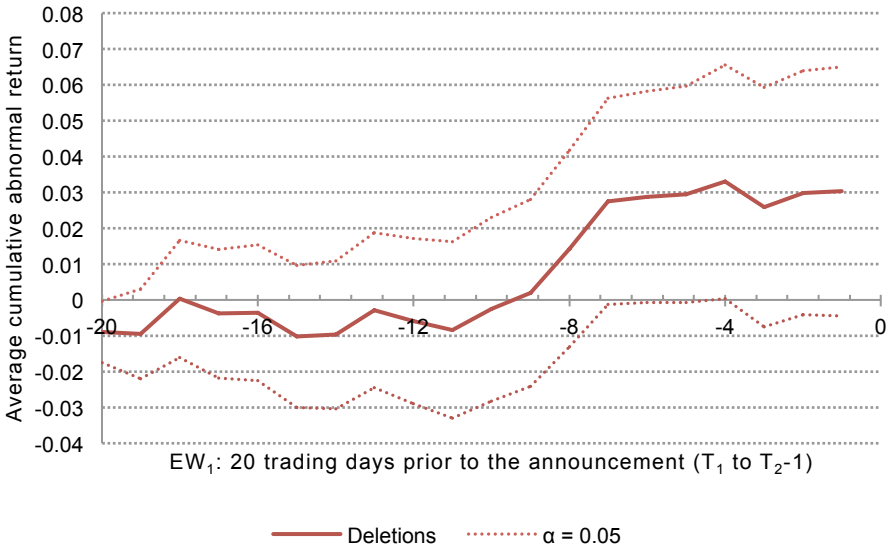

Figure 6. Average cumulative abnormal return (CAR) from Equation (11) during the first event window, EW_1, including the 20 trading days prior to the announcement of deletions from the FTSE4Good Europe Index, for the sample firms that were deleted from the index between 2006 and 2011. The dotted lines correspond to a 95% confidence interval.

6.3 Results for the Announcement Period (EW_2)

For the second event window, EW_2, defined as the announcement period, including the trading days from the announcement date until one day before index changes become effective, the results show a slightly positive, but insignificant, mean CAR of 0.62% for added firms. Plotting the daily average CAR values further shows an insignificant positive drift for additions to the index as shown in Fig. 7.

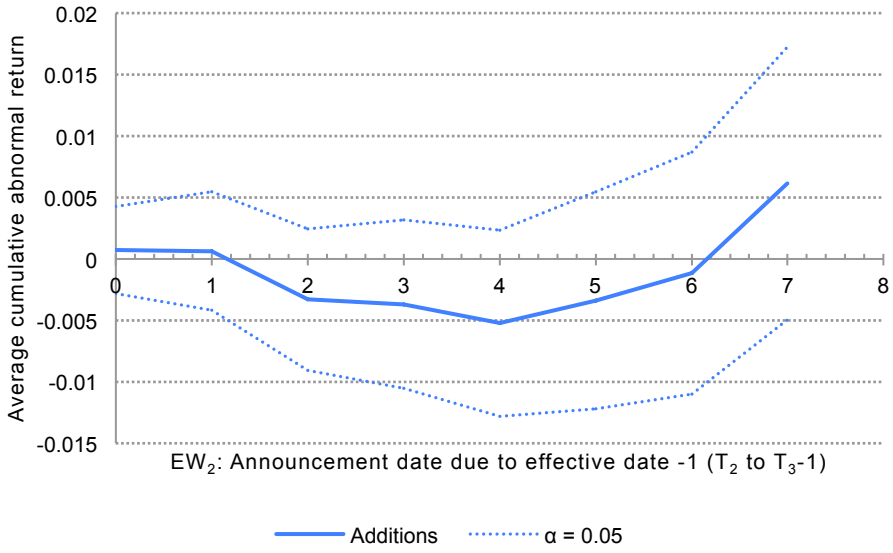

Figure 7. Average cumulative abnormal return (CAR) from Equation (11) during the second event window, EW_2, including the announcement day and the following 6 to 7 trading days prior to the day additions to the FTSE4Good Europe Index become effective, for the sample firms that were added to the index between 2006 and 2011. The dotted lines correspond to a 95% confidence interval.

For deleted companies, the results reveal a significantly negative value of -5.30% for the mean CAR at the end of the announcement period. Plotting the daily average CAR values further shows a significant negative drift for deletions from the index as shown in Fig. 8.

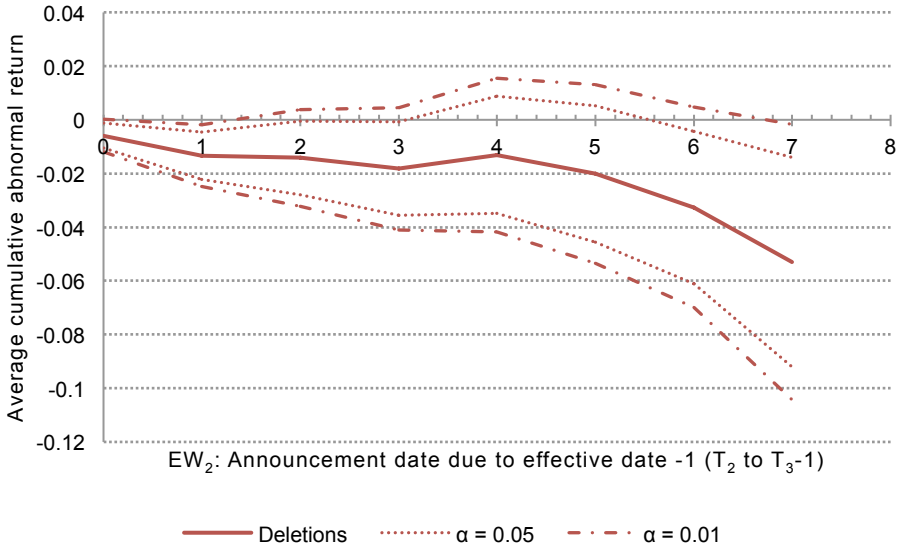

Figure 8. Average cumulative abnormal return (CAR) from Equation (11) during the second event window, EW_2, including the announcement day and the following 6 to 7 trading days prior to the day deletions from the FTSE4Good Europe Index become effective, for the sample firms that were deleted from the index between 2006 and 2011. The dotted and dashed lines correspond to a 95% and 99% confidence interval, respectively.

6.4 Results for the Effective Period (EW_3)

For the third event window, EW_3, which was defined as the effective period, including the first 60 trading days once the changes become effective, the results show an insignificant negative mean CAR of -2.52% for additions to the FTSE4Good Europe Index at the end of the effective period. Plotting the daily average CAR values further shows an insignificant, neutral movement for the first 4o trading days, after which the drift becomes insignificantly negative as shown in Fig. 9.

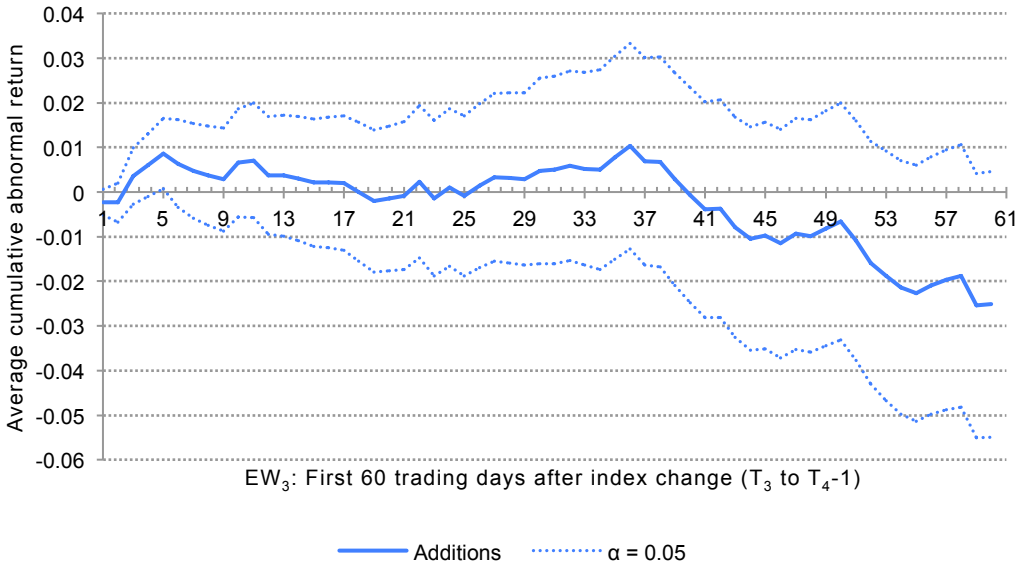

Figure 9. Average cumulative abnormal return (CAR) from Equation (11) during the third event window, EW_3, including the first 60 trading days from the day additions to the FTSE4Good Europe Index become effective, for the sample firms that were added to the index between 2006 and 2011. The dotted lines correspond to a 95% confidence interval.

For deleted firms, the results reveal a slightly positive, but insignificant, value of 1.03% for the mean CAR at the end of the effective period. Plotting the daily average CAR values shows further an insignificant, directionless up and down movement for deletions from the index as shown in Fig. 10.

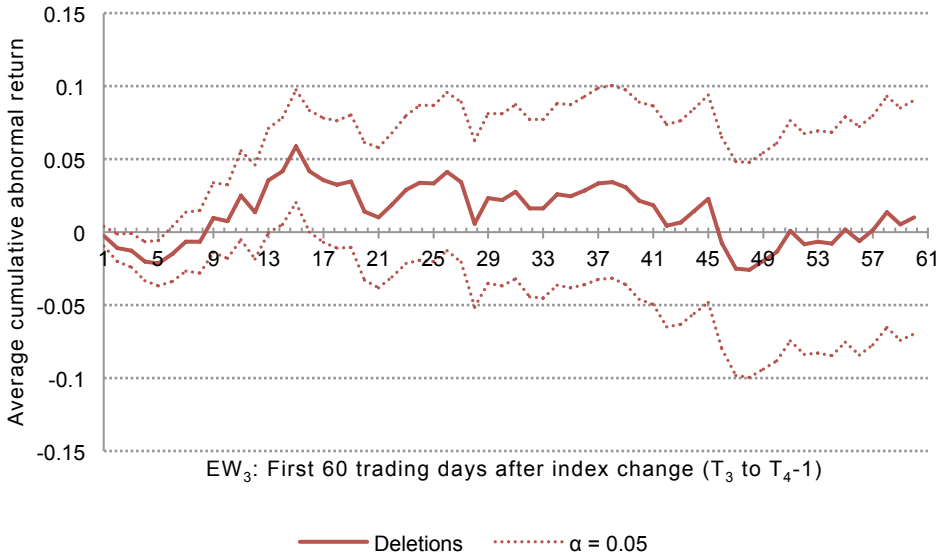

Figure 10. Average cumulative abnormal return (CAR) from Equation (11) during the third event window, EW_3, including the first 60 trading days from the day deletions to the FTSE4Good Europe Index become effective, for the sample firms that were deleted from the index between 2006 and 2011. The dotted lines correspond to a 95% confidence interval.

6.5 Results for the Entire Study Period

Following Robinson et al. (2011), a graph of the average cumulative abnormal returns over the entire study period (from T_1 to T_4-1) was created for a better understanding of the results. Figure 11 shows the consecutive average cumulative abnormal returns for both additions to, and deletions from, the FTSE4Good Europe Index during a period of 88 trading days from Day -20 to Day 67 (including a pre-announcement period of 20 trading days, an announcement period of 8 trading days, and an effective period of 60 trading days). As previously discussed, there is no statistical evidence for positive returns for firms added to the FTSE4Good Europe Index, although added firms experienced on average a positive cumulative abnormal return during the period from Day -9 to Day 59 (equal to Day 52 in the third event window, EW_3). Similarly, the average cumulative abnormal return of firms that were deleted from the index followed no clear trend, fluctuated substantially during the study period and was slightly negative at the end of the study period.

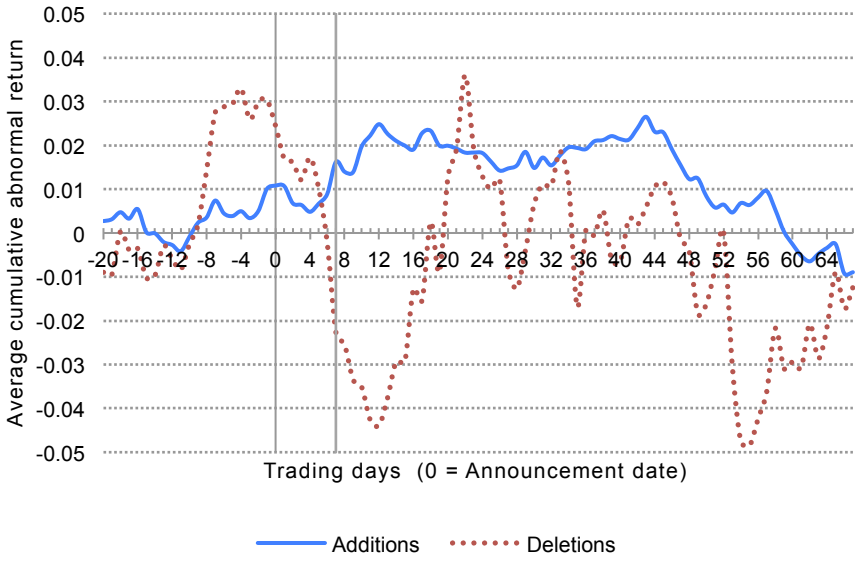

Figure 11. Average cumulative abnormal returns (CARs) from Equation (11) during the entire study period, T_1 to T_4-1, including the pre-announcement period, the announcement period, and the effective period, for the sample firms that were added to, or deleted from, the FTSE4Good Europe Index between 2006 and 2011. The trading days from -20 to -1 correspond to first event window, EW_1, the trading days from 0 to 7 to the second event window, EW_2, and the trading days from 8 to 67 to the third event window, EW_3.

6.6 Further Remarks

As shown in Table 5 firms were deleted from the FTSE4Good Europe Index for two reasons. First, one group of firms ceased to meet at least one criterion for a continued membership in the index. Second, the remaining firms were deleted from the universe of eligible constituents, which also entailed the deletion from the FTSE4Good Europe Index. To investigate whether there are different value effects between the causes for deletion from the index, we run three OLS regressions of the 67 sample firms that were deleted from the FTSE4Good Europe Index.

Table 7 presents the results of these OLS regressions for the three event windows, where the dependent variable is the cumulative abnormal return for each firm *i*, which was deleted from the index, and the independent variable is a dummy variable set equal to one if the firm was deleted for no longer meeting the index membership criteria, and set to zero otherwise. The results vary somewhat for the three event windows.

For the first event window, EW_1, the results show a positive value of 4.56% for the intercept, which is significant at a 10% level, and a large, but statistically insignificant, difference for

firms that ceased to meet the index membership criteria. For the second event window, EW_2, the results show a significantly negative value of -5.50% for the intercept at the 1% level, and that there is a large, but statistically insignificant, difference for firms that ceased to meet the index membership criteria. Finally, for the third event window, EW_3, the results show a slightly negative, though insignificant, intercept value of -1.37%, and a large, yet statistically insignificant, difference for firms that were deleted for not meeting the index criteria anymore.

Although these results yield some interesting insights, the R^2 values were close to zero for all regressions, suggesting that the independent variable adds no explanatory power to the sample variation.

Table 7. Determinants of the CAR during the three event windows for the FTSE4Good Europe deletions. This table presents the regression coefficients, corresponding t-statistics and R^2 values for three OLS regressions of the mean CARs for the sample of 67 stocks, which were deleted from the FTSE4Good Europe Index between 2006 and 2011. The dependent variable is the CAR for a given deleted firm *i* at the end of each event window (EW_1, EW_2, and EW_3), and the independent variable is a dummy variable set equal to one if the firm was deleted for no longer meeting the index membership criteria, and set to zero otherwise.

						Deletions
Sample size used in this study						67
Violation of criteria						26
Universe deletion						41
	EW_1		EW_2		EW_3	
	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic	Coefficient	*t*-Statistic
Intercept	0.0456*	1.8411	-0.0550***	-3.0743	-0.0137	-0.2930
Criteria	-0.0394	-0.9909	0.0411	1.4325	0.0619	0.8229
R^2	0.0149		0.0306		0.0103	

*/*** Denoting statistical significance at a 10% / 1% level.

7 DISCUSSION

The following chapter presents an interpretation of the empirical results in light of the existing body of knowledge, and provides an explanation of how the findings of this particular study add to a better understanding of the studied question.

7.1 Empirical Results and Contribution to Existing Knowledge

The aim of this study has been to measure the short-term and the intermediary effect on shareholder value for European firms that were added to, or deleted from, the FTSE4Good Europe Index between 2006 and 2011. In sum, our results in Table 6 provide no evidence for a sustained increase in equity value for added firms, or decrease for deleted firms, respectively. With regard to existing knowledge about the relationship between sustainability index membership and shareholder value, our findings do contribute to the existing controversy. Despite the small number of existing studies, a great variation in both the number of event windows and the event window length makes an interpretation increasingly difficult. Therefore, it is reasonable to discuss the results along three periods, including the pre-announcement period, the announcement period, and the effective period, and to compare them with studies with similar event windows.

7.1.1 Pre-announcement period

The results in Table 6, Fig. 5 and Fig. 6 provide no statistical support for the hypothesis that the financial markets had acquired information about the index changes prior to the official announcement. We can, therefore, assume the absence of potential information leaks.

These results do support Cheung (2011) and Robinson et al. (2011), but are opposed to Consolandi et al. (2008), who find a significantly positive mean CAR of 0.04% for added firms during a 10-day pre-announcement period.

7.1.2 Announcement period

The results in Table 6 and Fig. 7 provide no statistical support for our first hypothesis, H1, that the announcement of being listed on the FTSE4Good Europe Index results in an increase of a firm's share price. We can, therefore, not reject the null hypothesis, that the announcement of an addition to the index has a negative, or no impact on shareholder value during the announcement period.

However, the results in Table 6 and Fig. 8 provide statistical support for our second hypothesis, H2, indicating that the announcement of a deletion from the FTSE4Good Europe Index has a negative effect on a firm's share price. Accordingly, we can reject the null hypothesis, that the announcement of a deletion form the index has a positive, or no impact on shareholder value during the announcement period.

With regard to additions to the index, these results support Cheung (2011) and Robinson et al. (2011), who find quantitative same results for the announcement period. However, our results differ from Consolandi et al. (2008). The authors find a positive mean CAR of 0.03% significant at a 5% level for added firms during the announcement period (excluding the announcement day).

Considering the deletions from the index, our results support Cheung (2011), who finds a slightly negative, but significant at a 10% level, negative mean CAR of -0.939% during the announcement period (excluding the announcement day). Further, our results do not support Consolandi et al. (2008) and Robinson et al. (2011), who find no significant effect for removed firms during the announcement period.

7.1.3 Effective period

The results in Table 6 and Fig. 9 provide no statistical support for our third hypothesis, H3, assuming that being effectively listed on the FTSE4Good Europe Index has a positive effect on a firm's share price. Similar to H1, we cannot reject the null hypothesis, that the effective addition to the index has a negative, or no impact on shareholder value during the effective period.

Finally, the results in Table 6 and Fig. 10 provide no statistical evidence for our fourth hypothesis, H4, that the effective deletion from the FTSE4Good Europe Index has a negative effect on a firm's share price. As a consequence, we cannot reject the null hypothesis, that the effective deletion form the index has a positive, or no impact on shareholder value during the effective period.

To compare our results for the effective period is slightly challenging, since the length of this event window varies substantially among different authors. Therefore, the graphs for the mean CARs in Fig. 9 and Fig. 10 need to be studied in detail, and further calculations can be

done using the detailed results in Table 10 and 11 in the Appendix.

Regarding the additions to the index, our results support Consolandi et al. (2008), who find a slightly positive, but insignificant, mean CAR of 0.001% for a 10-day effective period (excluding the effective day). Cheung (2011) finds a positive, but insignificant, mean CAR of 0.332% for a 5-day effective period. This result is supported by our findings. Finally, Robinson et al. (2011) use a 60-day effective period and find positive mean CAR of 2.096%, which significant at the 5% level. Our results do not support this finding.

Concerning the deletions, Consolandi et al. (2008) find a slightly negative, but insignificant, mean CAR of -0.030% for a 10-day effective period (excluding the effective day). Our results support this result. Cheung (2011) finds also a negative, but insignificant, mean CAR of -0.406% for a 5-day effective period. This result differs from ours, since we find a negative mean CAR of -2.006%, which is significant at the 1% level. Robinson et al. (2011) find a slightly positive, but insignificant, mean CAR of 0.035%, which is supported by our results.

Furthermore, our results support Cheung (2011), who finds positive, but insignificant, mean CARs of 0.497% and 1.133% for additions and deletions, respectively, during a period from 15 days prior to the announcement date until 60 days after the effective index changes.

Finally, our results in Table 7 provide no statistical evidence that the reason for the deletion from the FTSE4Good Europe Index has a differentiating effect on the share price of deleted firms. That is, investors do not differentiate between the two causes that lead to a deletion from the FTSE4Good Europe Index. This is somewhat surprising, since we would have expected a more negative effect on firm equity value for firms, which had breached CSR standards and thus forfeited their index membership, as opposed to a deletion from the universe of eligible constituents. If anything, the results for the sample, though statistically insignificant, indicate a better performance for the former firms during the second, EW_2, and third event window, EW_3.

7.2 Explanations of Discrepancies and Weaknesses of Study Design

With the exception of H2, our results provide no statistical support for our anticipated effects on shareholder value from a membership in a sustainability index. This could be due to a number of reasons, which are thoroughly discussed in the following.

7.2.1 Potential Issues from the Selection of Sustainability Index

It might be that the results have been influenced by the nature of the FTSE4Good Europe Index itself. Possible issues can include a time lag created by the semi-annual reviews to include or delete stocks form the index, ambiguous reasoning for addition to or deletion from the index, and potential absence of legitimacy of the FTSE4Good Europe Index.

Based on the semi-annual reviews of the FTSE4Good Index, a certain time lag exists between a firm's investment in CSR and its inclusion on the index. For example, a firm might implement good CSR practices months before the firm is actually included in the sustainability index. Therefore, the benefit of implementing CSR cannot be fully grasped through a sustainability index inclusion. Vice versa, the same would hold for deletions from the index since companies would have discontinued their corporate socially responsible behavior but will be punished for it much later. This presents a mismatch between the announcement of index inclusion or removal, and actual behavior, which could alter the results substantially.

The basis of inclusion and deletions of company stock in the FTSE4Good Europe Index, and the FTSE4Good Index Series in general, remains partially ambiguous and inconsistent. From the start, the index has been using a screening method, which denies companies from the tobacco, nuclear power, uranium, and weapon industries to be part of the sustainable index. This pre-judges the nature of a particular business without taking their CSR activities, which indeed are vitally important considering the higher risks for and impacts on society and the environment, into consideration.

In addition, the index is rather inconsistent regarding the reasoning for index inclusion and deletion. For example, the index includes companies with questionable CSR practices. An example is GlaxoSmithKline, which continues to be member in the index despite being charged with serious allegations of rejecting third world countries access to cheap anti-AIDS

medication (Hayward, 2011). On the other hand, the Royal Bank of Scotland, for instance, has been deleted from the index for its investment in companies operating in Indonesia, a country known for corruption and child labor practices (Hayward, 2001).

These examples show the inconsistency in the application of the FTSE4Good Index selection criteria, which could have affected our results. Further, this has also an impact on the legitimacy of the index, which could be an additional reason for the discrepancy between our hypotheses and actual results.

It might be that the findings of this study have been influenced by a lack of legitimacy of the FTSE4Good Europe Index. A lack of legitimacy, in turn, diminishes the institutional purpose of the index. As outlined in the Theoretical Framework in Ch. 3, sustainability indices function according to the *Institutional Theory* as institutional intermediaries that provide companies with credibility. Especially, they verify and legitimize a firm's engagement in CSR and help to bridge and reduce information asymmetries. For the purpose of this study, we assumed that the FTSE4Good Europe Index represented a recognized sustainability index. However, it might be that this particular index is not as recognized as other indices, such as the DJSI used by Robinson et al. (2011) and Cheung (2011) or the Dow Jones Sustainability Stoxx used by Consolandi et al. (2008) and Ziegler (2011), due to its limited ability to require and evaluate the best practices in CSR. If the FTSE4Good Index lacked legitimacy indeed, it would be an inappropriate instrument to measure a firm's engagement in CSR. In addition, with a decreasing degree of legitimacy, the value of the signal from a membership in the FTSE4Good Europe Index is gradually reduced until it becomes worthless. Consequently, these factors might have a substantial impact on the results. Our findings should thus be interpreted with reservations.

7.2.2 Potential Issues from the Sample and the Selected Research Method

Besides the potential biases of an event study, which have been discussed in Ch. 4, additional aspects are worth mentioning.

The sample used for this study is subject to a self-selection bias. Since firms actively seek inclusion on the FTSE4Good Europe Index, it is reasonable to assume that the applying firms are those that expect to benefit the most from an index membership. This self-selection bias adds to the existing difficulty of detecting a causal relationship for the sample.

Theoretically, event studies are designed to measure the isolated effects from a particular event. In reality, it is extremely difficult to exclude and control for other factors, which are likely to have an effect on the share at the same time as the event.

Furthermore, event studies yield the most reliable results if the analyzed events occur totally unexpected. For this particular study, it is reasonable to assume that the events are partially expected, a factor that should be controlled for. For example, if companies communicated their efforts and ambitions for a particular index membership, investors would anticipate a future inclusion on that index. Measured excess returns would consist of the unexpected, probability-adjusted fraction only, and would be smaller. Accordingly, if companies actually do communicate their ambitions, an event study such as the one performed in this study, is likely to underestimate the actual effects.

In sum, there are numerous aspects having an impact on the observed results. While some of them can be identified and controlled for, others are beyond the researcher's control. Although we are convinced that our results contribute to the existing body of knowledge about the relationship between the membership in a sustainability index and shareholder value, any interpretation of our results must take the discussed reservations into account.

8 CONCLUSIONS

The following chapter presents the conclusions from this study, policy implications and suggests further research.

The aim of this study has been to explore whether an investment in corporate social responsibility (CSR) is value creating for a firm's shareholders. Assuming that membership in a recognized sustainability index signals a firm's commitment to CSR to shareholders and potential investors, we performed an event study to explore both the short-term and the intermediary effect on equity value for European firms that were added to, or deleted from, the FTSE4Good Europe Index between 2006 and 2011.

Our empirical results contribute to the limited body of existing knowledge to the extent that they do not support a positive relationship between sustainability index membership and shareholder value. In addition, companies that are deleted from the sustainability index experience a short-term decrease in shareholder value. However, this effect is reversed in the intermediate term.

If we think of practical implications for managers and corporations, our findings suggest that an investment in CSR to seek inclusion on a sustainability index, which requires corporate actions to comply with ambitious CSR standards, is barely creating nor destroying shareholder value. Accordingly, shareholders would be better off if managers and corporations used the required resources for obtaining membership in a sustainability index for other, shareholder value generating projects.

However, our findings are constrained to the particular study design and must be interpreted with reservation. Accordingly, refining the study design could be a possible starting point for further research.

For example, further research could focus on other sustainability indices, which add or delete companies as soon as they meet or violate the CSR criteria for that particular index. This kind of studies would be noteworthy, since they would add additional knowledge to our studied problem, which could be used to explain our results more detailed.

Other studies could also try to analyze the legitimacy of sustainability indices and attempt to compare and contrast the institutional purpose of various sustainability indices. Besides, it would be interesting to see if the legitimacy aspect of sustainability indices differs among different geographical regions.

In addition, a separation of the sample firms along their industry classification could explore the possibility of different effects for different industries. Intuitively, we would expect stronger effects for companies in the consumer industries, where the interplay of media exposure, public awareness, and reputation can have a substantial impact on the business-to-consumer relationship and a firm's performance.

Finally, as mentioned in Ch. 7, further studies could also focus on corporate communications in connection with seeking inclusion on a sustainability index. An advanced study, although more difficult to perform, would measure the effects more accurately, thus yield better results and allow for making more valid conclusions about the relationship between sustainability index membership and shareholder value.

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APPENDIX

Table 8. Final sample of companies added to the FTSE4Good Europe Index from 2006 to 2011. This table presents the final study sample of companies that were added to the FTSE4Good Europe Index between 2006 and 2011, including information about their country of origin (at the time of the index change), sector and industry classification, the date of announcement of their addition to the FTSE4Good Europe Index, and the date of their effective addition to the index.

Company	Country	Sector / Industry	Announcement date	Effective date
3i Group	UK	Financial / Private Equity	2011-09-08	2011-09-19
Admiral Group	UK	Financial / Insurance	2010-03-10	2010-03-22
Aggreko	UK	Consumer, Non-cyclical / Commercial Services	2010-09-09	2010-09-20
Akzo Nobel	Netherlands	Basic Material / Chemicals	2006-03-08	2006-03-20
Alcatel-Lucent	France	Communications / Telecommunications Hardware & Equipment	2009-09-09	2009-09-21
Alfa Laval	Sweden	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
Allied Irish Banks	Ireland	Financial / Banks	2010-03-10	2010-03-22
Anglo American	UK	Basic Materials / Mining	2011-03-10	2011-03-21
ARM Holdings	UK	Technology / Semiconductors	2010-09-09	2010-09-20
Assicurazioni Generali	Italy	Financial / Insurance	2011-03-10	2011-03-21
AtoS	France	Technology / Computers	2011-09-08	2011-09-19
Autonomy Corporation	UK	Technology / Information Technology	2010-03-10	2010-03-22
Banco De Sabadell	Spain	Financial / Banks	2008-03-13	2008-03-26
Banco Espirito Santo	Portugal	Financial / Banks	2007-09-12	2007-09-24
Banco Popular Espania	Spain	Financial / Banks	2010-09-09	2010-09-20
Banesto	Spain	Financial / Banks	2008-09-11	2008-09-22
Barratt Developments	UK	Consumer, Cyclical / Home Builders	2008-03-13	2008-03-26
Biomerieux	France	Consumer, Non-cyclical / Healthcare-Services	2010-03-10	2010-03-22
Boliden	Sweden	Basic Materials / Mining	2011-09-08	2011-09-19
Celesio	Germany	Consumer, Non-cyclical / Pharmaceuticals	2010-09-09	2010-09-20
Corio	Netherlands	Financial / Real Estate Investment Trust	2008-03-13	2008-03-26
Corp Mapfre	Spain	Financial / Insurance	2006-03-08	2006-03-20
CRH	Ireland	Industrial / Building Materials	2006-03-08	2006-03-20
Criteria CaixaCorp	Spain	Financial / Banks	2009-09-09	2009-09-21
Danske Bank	Denmark	Financial / Banks	2009-03-11	2009-03-23
Deutsche Boerse	Germany	Financial / Diversified Financial Services	2009-09-09	2009-09-21
Drax Group	UK	Diversified / Holdings Companies	2007-03-07	2007-03-19
Energias de Portugal	Portugal	Utilities / Electricity	2011-03-10	2011-03-21
EDP Renovaveis	Portugal	Utilities / Electricity	2011-09-08	2011-09-19
Emporiki Bank of Greece	Greece	Financial / Banks	2007-03-07	2007-03-19
Enagas	Spain	Utilities / Gas	2006-09-07	2006-09-18
ENEL	Italy	Utilities / Electricity	2011-03-10	2011-03-21

Table 8. Final sample of companies added to the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date
ENI	Italy	Energy / Oil & Gas	2007-09-12	2007-09-24
Enterprise Inns	UK	Consumer, Cyclical / Retail	2008-03-13	2008-03-26
Euler Hermes	France	Financial / Insurance	2007-03-07	2007-03-19
Eutelsat Communications	France	Communications / Telecommunications	2011-03-10	2011-03-21
Fomento de Construcciones y Contratas	Spain	Industrial / Engineering & Construction	2009-09-09	2009-09-21
Fonciere Des Regions	France	Financial / Real Estate Investment Trust	2011-03-10	2011-03-21
Fraport AG Frankfurt	Germany	Industrial / Engineering & Construction	2006-03-08	2006-03-20
Geberit N	Switzerland	Industrial / Building Materials	2007-03-07	2007-03-19
Gestevision Telecinco	Spain	Communications / Media	2008-03-13	2008-03-26
Getinge B	Sweden	Consumer, Non-cyclical / Healthcare-Products	2011-03-10	2011-03-21
GPO Acciona	Spain	Industrial / Engineering & Construction	2011-03-10	2011-03-21
Greek Organization of Football Prognostics	Greece	Consumer, Cyclical / Entertainment	2006-03-08	2006-03-20
Hellenic Telecom	Greece	Communications / Telecommunications	2008-09-11	2008-09-22
Hermes Intl	France	Consumer, Cyclical / Apparel	2006-03-08	2006-03-20
Iberdrola	Spain	Utilities / Electricity	2010-09-09	2010-09-20
Imerys	France	Industrial / Building Materials	2006-09-07	2006-09-18
Intesa-Sanpaolo	Italy	Financial / Banks	2007-09-12	2007-09-24
Invensys	UK	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
Ipsen	France	Consumer, Non-cyclical / Pharmaceuticals	2011-09-08	2011-09-19
Kesko	Finland	Consumer, Non-cyclical / Food	2009-03-11	2009-03-23
Klepierre	France	Financial / Real Estate Investment Trust	2010-03-10	2010-03-22
Lagardere Groupe	France	Communications / Media	2006-09-07	2006-09-18
Lanxess	Germany	Basic Materials / Chemicals	2011-03-10	2011-03-21
Legrand	France	Industrial / Electrical Components & Equipment	2007-09-12	2007-09-24
Lottomatica	Italy	Consumer, Cyclical / Entertainment	2010-03-10	2010-03-22
LVMH	France	Diversified / Holding Companies	2009-03-11	2009-03-23
Merck KGaA	Germany	Consumer, Non-cyclical / Pharmaceuticals	2008-09-11	2008-09-22
Modern Times Group	Sweden	Communications / Media	2011-03-10	2011-03-21
Mondi	UK	Basic Materials / Forestry & Paper	2008-03-13	2008-03-26
Natixis	France	Financial / Banks	2011-03-10	2011-03-21
Nestle	Switzerland	Consumer, Non-cyclical / Food	2011-03-10	2011-03-21
Novartis	Switzerland	Consumer, Non-cyclical / Pharmaceuticals	2006-09-07	2006-09-18
Peugeot	France	Consumer, Cyclical / Auto manufacturers	2006-03-08	2006-03-20
Prisa	Spain	Communications / Media	2008-03-13	2008-03-26
Randstad Holdings	Netherlands	Consumer, Non-cyclical / Commercial Services	2007-09-12	2007-09-24

Table 8. Final sample of companies added to the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date
Red Electrica	Spain	Utilities / Electricity	2008-03-13	2008-03-26
Rexel	France	Industrial / Electronics	2011-03-10	2011-03-21
Richemont	Switzerland	Consumer, Cyclical / Retail	2010-03-10	2010-03-22
Rio Tinto	UK	Basic Materials / Mining	2007-09-12	2007-09-24
Rockwool International	Denmark	Industrial / Building Materials	2011-03-10	2011-03-21
Saipem	Italy	Energy / Oil & Gas Services	2010-03-10	2010-03-22
Smiths Group	UK	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
SNS Reaal	Netherlands	Financial / Banks	2007-03-07	2007-03-19
SolarWorld	Germany	Technology / Semiconductors	2010-03-10	2010-03-22
Compagnie de Saint-Gobain	France	Industrial / Building Materials	2006-03-08	2006-03-20
Standard Life	UK	Financial / Insurance	2008-03-13	2008-03-26
Suez Environnement	France	Utilities / Water	2011-03-10	2011-03-21
Swatch Group AG BR	Switzerland	Consumer, Cyclical / Personal Goods	2010-09-09	2010-09-20
Swatch Group AG Reg.	Switzerland	Consumer, Cyclical / Personal Goods	2010-09-09	2010-09-20
Telefonica Movil	Spain	Communications / Telecommunications (Telecom Services)	2006-03-08	2006-03-20
TeliaSonera	Sweden	Communications / Telecommunications (Telecom Services)	2009-09-09	2009-09-21
Tenaris	Italy	Industrial / Metal Fabricate / Hardware	2010-09-09	2010-09-20
Trygvesta	Denmark	Financial / Insurance	2010-03-10	2010-03-22
TUI Travel	UK	Consumer, Cyclical / Leisure Time	2010-03-10	2010-03-22
Vivendi	France	Communications / Telecommunications	2006-09-07	2006-09-18
Wartsila	Finland	Industrial / Miscellaneous Manufacturers	2008-03-13	2008-03-26
Wendel	France	Diversified / Holding Companies	2011-03-10	2011-03-21
Wiener Städtische Versicherung	Austria	Financial / Insurance	2007-03-07	2007-03-19
Wolseley	UK	Consumer, Cyclical / Distribution / Wholesale	2006-03-08	2006-03-20
Yell Group	UK	Communications / Media	2006-03-08	2006-03-20

Table 9. Final sample of companies deleted from the FTSE4Good Europe Index from 2006 to 2011. This table presents the final study sample of companies that were deleted from the FTSE4Good Europe Index between 2006 and 2011, including information about their country of origin (add the time of the index change), sector and industry classification, the date of announcement of their addition to the FTSE4Good Europe Index, the date of their effective addition to the index, and the reason for their deletion from the index.

Company	Country	Sector / Industry	Announcement date	Effective date	Reason for deletion
A2A	Italy	Utilities / Electricity	2011-09-08	2011-09-19	Human & Labor Rights criteria
AGFA-Gevaert	Belgium	Industrial / Miscellaneous Manufacturers	2008-09-11	2008-09-22	Universe deletion
Alcatel-Lucent	France	Communications / Telecommunications Hardware & Equipment	2007-03-07	2007-03-19	Nuclear Weapon criteria
Allied Irish Banks	Ireland	Financial / Banks	2010-09-09	2010-09-20	Universe deletion
Arcandor AG	Germany	Consumer, Cyclical / Retail	2009-09-09	2009-09-21	Universe deletion
Arkema	France	Basic Materials / Chemicals	2009-03-11	2009-03-23	Human & Labor Rights iteria, Climate Change criteria
Bank of Ireland	Ireland	Financial / Banks	2011-09-08	2011-09-19	Universe deletion
Bank of Piraeus (Cr)	Greece	Financial / Banks	2010-09-09	2010-09-20	Universe deletion
Barratt Developments	UK	Consumer, Cyclical / Home Builders	2008-09-11	2008-09-22	Universe deletion
BBA Aviation	UK	Industrial / Aerospace	2008-09-11	2008-09-22	Universe deletion
Beiersdorf	Germany	Consumer, Non-cyclical / Cosmetics & Pers. Care	2009-03-11	2009-03-23	Human & Labor Rights criteria
Biffa	UK	n/a	2007-09-12	2007-09-24	Universe deletion
BP	UK	Energy / Oil & Gas	2010-09-09	2010-09-20	Suspended from FTSE4Good
Cable & Wireless Communications	UK	Communications / Telecommunications	2011-09-08	2011-09-19	Universe deletion
Cable & Wireless Worldwide	UK	Communications / Telecommunications	2011-09-08	2011-09-19	Universe deletion
Cairn Energy	UK	Energy / Oil & Gas	2008-03-13	2008-03-26	Climate change criteria
CDON Group	Sweden	Communications / E-Commerce	2011-09-08	2011-09-19	Universe deletion
Celesio	Germany	Consumer, Non-cyclical / Pharmaceuticals	2008-03-13	2008-03-26	Countering Bribery criteria
Ciba Holding AG	Switzerland	Consumer Non-cyclical / Pharmaceuticals	2008-09-11	2008-09-22	Universe deletion
Electrocomponents	UK	Industrial Electronics	2008-09-11	2008-09-22	Universe deletion
Emporiki Bank of Greece	Greece	Financial / Banks	2009-09-09	2009-09-21	Universe deletion

Table 9. Final sample of companies deleted from the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date	Reason for deletion
ENEL	Italy	Utilities / Electricity	2006-09-07	2006-09-18	Nuclear Power criteria
Enterprise Inns	UK	Consumer Cyclical / Retail (-Pubs)	2009-09-09	2009-09-21	Universe deletion
EVN Energ-Versorg	Austria	Utilities / Electricity	2010-09-09	2010-09-20	Universe deletion
Fiberweb	UK	Consumer, Cyclical / Apparel	2007-09-12	2007-09-24	Universe deletion
Fondiaria-SAI	Italy	Financial / Insurance	2010-09-09	2010-09-20	Universe deletion
Fondiaria-Sai RNC	Italy	Financial / Insurance	2010-09-09	2010-09-20	Universe deletion
Gamesa	Spain	Industrial / Electrical Components & Equipment	2011-09-08	2011-09-19	Universe deletion
Heidelberg Druck	Germany	Industrial / Machinery-Diversified	2008-09-11	2008-09-22	Universe deletion
HeidelbergCement AG	Germany	Industrial / Building Materials	2008-03-13	2008-03-26	Climate Change criteria
Home Retail Group	UK	Consumer, Cyclical / Retail	2011-09-08	2011-09-19	Universe deletion
International Personal Finance	UK	Financial / Diversified Financial Services	2008-09-11	2008-09-22	Universe deletion
Irish Life & Permanent	Ireland	Financial / Diversified Financial Services	2009-09-09	2009-09-21	Universe deletion
JCDecaux	France	Communications / Advertising	2011-09-08	2011-09-19	Human & Labor Rights criteria
Johnston Press	UK	Media	2008-09-11	2008-09-22	Universe deletion
Kesa Electricals	UK	Consumer, Cyclical / Retail	2006-03-08	2006-03-20	Environmental criteria
Klepierre	France	Financial / Real Estate Investment Trust	2009-03-11	2009-03-23	Countering Bribery criteria
Lagardere Groupe	France	Communications / Media	2008-09-11	2008-09-22	Human & Labor Rights criteria
Lanxess	Germany	Basic Materials / Chemicals	2008-03-13	2008-03-26	Climate Change criteria
LVMH	France	Diversified / Holding Companies (Personal Goods)	2007-03-07	2007-03-19	Supply chain Labor standards
Misys	UK	Technology / Software	2008-09-11	2008-09-22	Universe deletion
Mitchells & Butlers	UK	Consumer Cyclical / Retail (-Pubs)	2006-09-07	2006-09-18	Environmental criteria
Mondi	UK	Basic Materials / Forestry & Paper	2009-09-09	2009-09-21	Universe deletion
Norske Skogindustrier	Norway	Basic Materials / Forestry & Paper	2008-09-11	2008-09-22	Universe deletion
Prisa	Spain	Communications / Media	2009-09-09	2009-09-21	Universe deletion
Provident Financial	UK	Financial / Diversified Financial Services	2011-09-08	2011-09-19	Universe deletion
RTL Group	Belgium	Communications / Media	2011-09-08	2011-09-19	Universe deletion
Sampo Oyj	Finland	Financial / Insurance	2009-09-09	2009-09-21	Environmental criteria

Table 9. Final sample of companies deleted from the FTSE4Good Europe Index from 2006 to 2011 (cont.)

Company	Country	Sector / Industry	Announcement date	Effective date	Reason for deletion
Seat Pagine Gialle	Italy	Communications / Media	2006-09-07	2006-09-18	Environmental criteria
SNS Reaal	Netherlands	Financial / Banks	2009-09-09	2009-09-21	Universe deletion
Sodexo	France	Consumer Non-cyclical / Commercial Services	2010-03-10	2010-03-22	Human & Labor Rights criteria
SolarWorld AG	Germany	Technology / Semiconductors	2010-09-09	2010-09-20	Universe deletion
SSAB A[a]	Sweden	Basic Materials / Iron/Steel	2007-09-12	2007-09-24	Countering Bribery criteria
SSAB B[a]	Sweden	Basic Materials / Iron/Steel	2007-09-12	2007-09-24	Countering Bribery criteria
Swatch Group AG BR	Switzerland	Consumer Cyclical / Personal Goods	2008-03-13	2008-03-26	Environmental criteria
Swatch Group AG Reg.	Switzerland	Consumer Cyclical / Personal Goods	2008-03-13	2008-03-26	Environmental criteria
TalkTalk Telecom Group	UK	Communications / Telecommunications	2011-09-08	2011-09-19	Universe deletion
Tate & Lyle	UK	Consumer Non-cyclical / Food	2007-03-07	2007-03-19	Supply Chain Labor criteria
Tele2 AB	Sweden	Communications / Telecommunications	2008-09-11	2008-09-22	Countering Bribery criteria
TeliaSonera	Sweden	Communications / Telecommunications	2008-09-11	2008-09-22	Countering Bribery criteria
Tietoenator Oyj	Finland	Technology / Computers	2008-09-11	2008-09-22	Universe deletion
Travis Perkins	UK	Consumer, Cyclical / Retail	2008-09-11	2008-09-22	Universe deletion
Trinity Mirror	UK	Communications / Media	2008-09-11	2008-09-22	Universe deletion
United Business Media	UK	Communications / Media	2011-09-08	2011-09-19	Universe deletion
Valeo	France	Consumer Cyclical / Auto Parts & Equipment	2009-09-09	2009-09-21	Universe deletion
Yell Group	UK	Communications / Media	2008-09-11	2008-09-22	Universe deletion
ZON Multimedia - Serviços de Telecomunicações e Multimédia	Portugal	Communications / Media	2010-09-09	2010-09-20	Universe deletion

[a] In general, SSAB A and SSAB B lines are treated as a single company. For this study, SSAB A and SSAB B are treated as separate companies.

Table 10. Detailed results for the additions to the FTSE4Good Europe Index for the sample firms between 2006 and 2011. This table presents the results on a daily basis for the three event windows (EW_1, EW_2, and EW_3), including the average abnormal return and its variance from Equations (7) and (8), the average cumulative abnormal return and its variance from Equations (11) and (13), and the corresponding test statistic (Z-Score) from Equation (15) and p-Value for the average cumulative abnormal return.

Trading day (t)	$\overline{AR_t}$	var($\overline{AR_t}$)	$\overline{CAR_t}$	var($\overline{CAR_t}$)	**Z-Score**	**p-Value**
EW_1						
-20	0.00266	0.00000458	0.00266	0.00000458	1.24533	0.10651
-19	0.00048	0.00000183	0.00314	0.00000640	1.24079	0.10734
-18	0.00159	0.00000225	0.00473	0.00000866	1.60882	0.05383*
-17	-0.00146	0.00000299	0.00327	0.00001164	0.95958	0.16863
-16	0.00217*	0.00000227	0.00545	0.00001391	1.46031	0.07210*
-15	-0.00529	0.00000204	0.00016	0.00001595	0.04048	0.48385
-14	-0.00024	0.00000210	-0.00008	0.00001805	-0.01901	0.50758
-13	-0.00198	0.00000165	-0.00206	0.00001970	-0.46410	0.67871
-12	-0.00068	0.00000168	-0.00274	0.00002138	-0.59233	0.72319
-11	-0.00142	0.00000254	-0.00416	0.00002392	-0.85080	0.80256
-10	0.00330**	0.00000461	-0.00086	0.00002853	-0.16125	0.56405
-9	0.00320**	0.00000411	0.00234	0.00003264	0.40930	0.34116
-8	0.00122	0.00000197	0.00355	0.00003461	0.60411	0.27288
-7	0.00384**	0.00000376	0.00740	0.00003837	1.19403	0.11623
-6	-0.00293	0.00000301	0.00447	0.00004138	0.69502	0.24352
-5	-0.00061	0.00000448	0.00387	0.00004587	0.57073	0.28409
-4	0.00110	0.00000690	0.00497	0.00005277	0.68362	0.24711
-3	-0.00158	0.00000385	0.00339	0.00005662	0.45004	0.32634
-2	0.00163	0.00000289	0.00501	0.00005951	0.64997	0.25785
-1	0.00505***	0.00000442	0.01006	0.00006394	1.25853	0.10410
EW_2						
0	0.00073	0.00000326	0.00073	0.00000326	0.40730	0.34189
1	-0.00010	0.00000278	0.00063	0.00000604	0.25772	0.39831
2	-0.00393	0.00000261	-0.00330	0.00000864	-1.12212	0.86909
3	-0.00038	0.00000357	-0.00368	0.00001221	-1.05319	0.85387
4	-0.00156	0.00000271	-0.00524	0.00001493	-1.35554	0.91238
5	0.00186	0.00000540	-0.00338	0.00002032	-0.74930	0.77316
6	0.00223	0.00000481	-0.00114	0.00002513	-0.22814	0.59023
7	0.00730***	0.00000698	0.00615	0.00003211	1.08549	0.13885
EW_3						
1	-0.00224	0.00000212	-0.00224	0.00000212	-1.53460	0.93756
2	-0.00010	0.00000285	-0.00234	0.00000498	-1.04784	0.85264
3	0.00588***	0.00000548	0.00355	0.00001046	1.09673	0.13638
4	0.00250**	0.00000222	0.00604	0.00001268	1.69694	0.04485
5	0.00256*	0.00000349	0.00860	0.00001617	2.13979	0.01619**
6	-0.00222	0.00000900	0.00638	0.00002516	1.27238	0.10162
7	-0.00160	0.00000420	0.00478	0.00002936	0.88271	0.18870
8	-0.00106	0.00000278	0.00372	0.00003214	0.65662	0.25571
9	-0.00089	0.00000242	0.00284	0.00003456	0.48231	0.31479
10	0.00372**	0.00000349	0.00655	0.00003804	1.06256	0.14399
11	0.00054	0.00000478	0.00710	0.00004283	1.08470	0.13903
12	-0.00337	0.00000232	0.00372	0.00004515	0.55427	0.28970
13	-0.00004	0.00000275	0.00368	0.00004790	0.53234	0.29725
14	-0.00065	0.00000241	0.00303	0.00005031	0.42708	0.33466
15	-0.00092	0.00000291	0.00211	0.00005322	0.28911	0.38625

Table 10. Detailed results for the additions to the FTSE4Good Europe Index for the sample firms between 2006 and 2011 (cont.)

Trading day (T)	$\overline{AR_t}$	var($\overline{AR_t}$)	$\overline{CAR_t}$	var($\overline{CAR_t}$)	Z-Score	p-Value
16	0.00002	0.00000288	0.00213	0.00005610	0.28443	0.38804
17	-0.00011	0.00000285	0.00202	0.00005895	0.26277	0.39637
18	-0.00196	0.00000383	0.00005	0.00006279	0.00689	0.49725
19	-0.00203	0.00000325	-0.00198	0.00006603	-0.24360	0.59623
20	0.00050	0.00000245	-0.00148	0.00006849	-0.17924	0.57113
21	0.00068	0.00000250	-0.00080	0.00007099	-0.09553	0.53805
22	0.00310*	0.00000466	0.00229	0.00007565	0.26354	0.39607
23	-0.00368	0.00000344	-0.00139	0.00007908	-0.15581	0.56191
24	0.00238**	0.00000207	0.00099	0.00008115	0.11043	0.45604
25	-0.00180	0.00000244	-0.00080	0.00008359	-0.08775	0.53496
26	0.00227	0.00000411	0.00147	0.00008770	0.15696	0.43764
27	0.00184	0.00000414	0.00331	0.00009184	0.34495	0.36507
28	-0.00012	0.00000285	0.00319	0.00009469	0.32744	0.37167
29	-0.00028	0.00000240	0.00291	0.00009709	0.29497	0.38401
30	0.00180	0.00001588	0.00471	0.00011297	0.44281	0.32895
31	0.00026	0.00000256	0.00497	0.00011553	0.46241	0.32189
32	0.00091	0.00000246	0.00588	0.00011799	0.54142	0.29411
33	-0.00068	0.00000306	0.00520	0.00012105	0.47296	0.31812
34	-0.00013	0.00000958	0.00507	0.00013062	0.44366	0.32864
35	0.00261*	0.00000393	0.00768	0.00013455	0.66243	0.25385
36	0.00260*	0.00000327	0.01029	0.00013782	0.87624	0.19045
37	-0.00340	0.00000346	0.00689	0.00014128	0.57966	0.28107
38	-0.00017	0.00000272	0.00672	0.00014400	0.55984	0.28779
39	-0.00386	0.00000311	0.00286	0.00014711	0.23543	0.40694
40	-0.00357	0.00000319	-0.00072	0.00015029	-0.05839	0.52328
41	-0.00320	0.00000186	-0.00391	0.00015216	-0.31722	0.62446
42	0.00015	0.00000225	-0.00376	0.00015441	-0.30281	0.61898
43	-0.00409	0.00000424	-0.00785	0.00015865	-0.62358	0.73355
44	-0.00255	0.00000421	-0.01041	0.00016286	-0.81567	0.79266
45	0.00067	0.00000438	-0.00974	0.00016724	-0.75328	0.77436
46	-0.00180	0.00000411	-0.01154	0.00017135	-0.88193	0.81109
47	0.00216	0.00000298	-0.00939	0.00017433	-0.71106	0.76148
48	-0.00045	0.00000266	-0.00983	0.00017699	-0.73916	0.77010
49	0.00170	0.00000299	-0.00814	0.00017998	-0.60656	0.72793
50	0.00151	0.00000295	-0.00662	0.00018294	-0.48964	0.68781
51	-0.00431	0.00000420	-0.01093	0.00018713	-0.79884	0.78781
52	-0.00496	0.00000537	-0.01589	0.00019250	-1.14493	0.87388
53	-0.00290	0.00001042	-0.01879	0.00020293	-1.31898	0.90641
54	-0.00260	0.00000693	-0.02139	0.00020985	-1.47656	0.93010
55	-0.00129	0.00000385	-0.02268	0.00021370	-1.55141	0.93960
56	0.00173	0.00000350	-0.02095	0.00021719	-1.42156	0.92242
57	0.00134	0.00000389	-0.01961	0.00022108	-1.31899	0.90641
58	0.00085	0.00000401	-0.01877	0.00022509	-1.25076	0.89449
59	-0.00668	0.00000311	-0.02545	0.00022820	-1.68458	0.95397
60	0.00029	0.00000172	-0.02516	0.00022992	-1.65908	0.95145

*/**/*** Denoting statistical significance at a 10% / 5 % / 1% level for a one-sided Z-test.

Table 11. Detailed results for the deletions from the FTSE4Good Europe Index for the sample firms between 2006 and 2011. This table presents the results on a daily basis for the three event windows (EW_1, EW_2, and EW_3), including the average abnormal return and its variance from Equations (7) and (8), the average cumulative abnormal return and its variance from Equations (11) and (13), and the corresponding test statistic (Z-Score) from Equation (15) and p-Value for the average cumulative abnormal return.

Trading day (t)	$\overline{AR_t}$	var($\overline{AR_t}$)	$\overline{CAR_t}$	var($\overline{CAR_t}$)	**Z-Score**	**p-Value**
EW_1						
-20	-0.00894**	0.00001928	-0.00894	0.00001928	-2.03687	0.02083**
-19	-0.00054	0.00002114	-0.00949	0.00004042	-1.49215	0.06783*
-18	0.00980	0.00002933	0.00031	0.00006975	0.03767	0.51502
-17	-0.00415	0.00001455	-0.00383	0.00008430	-0.41749	0.33816
-16	0.00027	0.00000861	-0.00356	0.00009291	-0.36944	0.35590
-15	-0.00663**	0.00000917	-0.01019	0.00010208	-1.00858	0.15659
-14	0.00050	0.00000838	-0.00969	0.00011046	-0.92208	0.17824
-13	0.00678	0.00001073	-0.00291	0.00012119	-0.26467	0.39563
-12	-0.00299	0.00001635	-0.00591	0.00013754	-0.50372	0.30723
-11	-0.00244	0.00002049	-0.00835	0.00015804	-0.66396	0.25336
-10	0.00578	0.00001329	-0.00257	0.00017133	-0.19646	0.42213
-9	0.00453	0.00000614	0.00196	0.00017747	0.14722	0.55852
-8	0.01239	0.00001739	0.01435	0.00019487	1.02803	0.84803
-7	0.01315	0.00002062	0.02750	0.00021549	1.87321	0.96948
-6	0.00128	0.00001023	0.02877	0.00022572	1.91521	0.97227
-5	0.00070	0.00001030	0.02947	0.00023602	1.91851	0.97248
-4	0.00349	0.00004049	0.03296	0.00027651	1.98216	0.97627
-3	-0.00707**	0.00001385	0.02589	0.00029036	1.51922	0.93565
-2	0.00402	0.00001026	0.02991	0.00030061	1.72490	0.95773
-1	0.00043	0.00001383	0.03034	0.00031444	1.71076	0.95644
EW_2						
0	-0.00591***	0.00000557	-0.00591	0.00000557	-2.50284	0.00616***
1	-0.00746**	0.00001441	-0.01336	0.00001998	-2.98986	0.00140***
2	-0.00083	0.00002929	-0.01420	0.00004927	-2.02230	0.02157**
3	-0.00402	0.00002911	-0.01821	0.00007838	-2.05727	0.01983**
4	0.00509	0.00004560	-0.01313	0.00012398	-1.17898	0.11920
5	-0.00702	0.00004289	-0.02015	0.00016687	-1.56002	0.05938*
6	-0.01250**	0.00004281	-0.03265	0.00020968	-2.25462	0.01208**
7	-0.02036*	0.00018647	-0.05301	0.00039615	-2.66315	0.00387***
EW_3						
1	-0.00274	0.00001209	-0.00274	0.00001209	-0.78729	0.21556
2	-0.00808***	0.00001152	-0.01082	0.00002360	-2.22736	0.01296**
3	-0.00169	0.00001214	-0.01251	0.00003574	-2.09258	0.01819**
4	-0.00755**	0.00001062	-0.02006	0.00004636	-2.94678	0.00161***
5	-0.00119	0.00001624	-0.02126	0.00006260	-2.68687	0.00361***
6	0.00635	0.00003028	-0.01491	0.00009288	-1.54715	0.06091*
7	0.00834	0.00001521	-0.00657	0.00010808	-0.63154	0.26384
8	-0.00017	0.00001244	-0.00674	0.00012053	-0.61360	0.26974
9	0.01663	0.00002962	0.00989	0.00015014	0.80710	0.79020
10	-0.00260	0.00001511	0.00729	0.00016525	0.56742	0.71479
11	0.01789	0.00007554	0.02518	0.00024079	1.62300	0.94771
12	-0.01147**	0.00002920	0.01371	0.00026999	0.83448	0.79799
13	0.02165	0.00006526	0.03536	0.00033524	1.93116	0.97327
14	0.00652	0.00001638	0.04188	0.00035162	2.23329	0.98724
15	0.01682	0.00003831	0.05870	0.00038993	2.97269	0.99852

Table 11. Detailed results for the deletions from the FTSE4Good Europe Index for the sample firms between 2006 and 2011 (cont.)

Trading day (t)	$\overline{AR_t}$	var($\overline{AR_t}$)	$\overline{CAR_t}$	var($\overline{CAR_t}$)	Z-Score	p-Value
16	-0.01691**	0.00006006	0.04179	0.00044999	1.97002	0.97558
17	-0.00617*	0.00002096	0.03562	0.00047095	1.64157	0.94966
18	-0.00292	0.00002764	0.03271	0.00049859	1.46483	0.92852
19	0.00210	0.00003768	0.03481	0.00053627	1.50331	0.93362
20	-0.02059***	0.00004042	0.01423	0.00057669	0.59237	0.72320
21	-0.00432	0.00002256	0.00990	0.00059925	0.40444	0.65705
22	0.00886	0.00003289	0.01876	0.00063214	0.74612	0.77220
23	0.01043	0.00004109	0.02919	0.00067324	1.12504	0.86971
24	0.00460	0.00005584	0.03379	0.00072907	1.25146	0.89462
25	-0.00040	0.00001692	0.03339	0.00074599	1.22265	0.88927
26	0.00797	0.00001719	0.04137	0.00076319	1.49737	0.93285
27	-0.00714**	0.00001550	0.03422	0.00077869	1.22640	0.88998
28	-0.02838***	0.00006741	0.00584	0.00084610	0.20070	0.57953
29	0.01737	0.00003409	0.02321	0.00088020	0.78235	0.78300
30	-0.00116	0.00002520	0.02205	0.00090540	0.73276	0.76815
31	0.00579	0.00002067	0.02784	0.00092607	0.91484	0.81986
32	-0.01143**	0.00003445	0.01641	0.00096052	0.52964	0.70182
33	-0.00031	0.00001555	0.01610	0.00097607	0.51543	0.69687
34	0.00988	0.00003761	0.02598	0.00101368	0.81607	0.79277
35	-0.00138	0.00001257	0.02460	0.00102625	0.76797	0.77875
36	0.00399	0.00005181	0.02859	0.00107806	0.87072	0.80805
37	0.00456	0.00004384	0.03315	0.00112190	0.98964	0.83883
38	0.00113	0.00001223	0.03428	0.00113412	1.01781	0.84562
39	-0.00362	0.00002155	0.03066	0.00115568	0.90179	0.81642
40	-0.00929**	0.00003071	0.02137	0.00118638	0.62030	0.73247
41	-0.00284	0.00002151	0.01853	0.00120789	0.53308	0.70301
42	-0.01424**	0.00004541	0.00429	0.00125330	0.12116	0.54822
43	0.00220	0.00001544	0.00649	0.00126874	0.18220	0.57229
44	0.00793	0.00001850	0.01442	0.00128724	0.40197	0.65615
45	0.00839	0.00002391	0.02281	0.00131115	0.63001	0.73566
46	-0.03032***	0.00005808	-0.00751	0.00136924	-0.20296	0.41958
47	-0.01744***	0.00003450	-0.02495	0.00140373	-0.66582	0.25276
48	-0.00096	0.00001200	-0.02590	0.00141573	-0.68846	0.24558
49	0.00623	0.00001390	-0.01967	0.00142963	-0.52032	0.30142
50	0.00615	0.00001251	-0.01353	0.00144214	-0.35622	0.36084
51	0.01445	0.00003332	0.00092	0.00147547	0.02407	0.50960
52	-0.00912**	0.00001759	-0.00820	0.00149306	-0.21211	0.41601
53	0.00146	0.00001577	-0.00674	0.00150883	-0.17352	0.43112
54	-0.00134	0.00001854	-0.00808	0.00152737	-0.20666	0.41814
55	0.01002	0.00002280	0.00195	0.00155017	0.04941	0.51971
56	-0.00791	0.00004186	-0.00596	0.00159202	-0.14939	0.44062
57	0.00723	0.00001919	0.00126	0.00161122	0.03150	0.51257
58	0.01248	0.00002364	0.01374	0.00163486	0.33993	0.63305
59	-0.00833**	0.00001914	0.00542	0.00165400	0.13319	0.55298
60	0.00487	0.00001586	0.01029	0.00166986	0.25175	0.59938

*/**/*** Denoting statistical significance at a 10% / 5 % / 1% level for a one-sided Z-test.

Table 12. Comparison of average cumulative abnormal returns for additions to and deletions from the FTSE4Good Europe Index during three event windows with different input data for the market model regressions. This table shows a comparison of the mean CAR from Equation (11) for the sample firms that were added to, or deleted from, the FTSE4Good Europe Index the index between 2006 and 2011, at the end of three distinct time periods: during the pre-announcement period (EW_1), the announcement period (EW_2), and the effective period (EW_3), based on the use of five different equity indices for the market model regressions and estimation of expected normal returns. A z-test according to Equation (15) is used to test the statistical significance of the CAR values.

	Additions	Deletions
Initial sample size	100	75
Sample size used in this study	92	67
MSCI Europe Index		
Average cumulative abnormal returns (CARs)		
EW_1: 20 trading days prior to the announcement (T_1 to T_2-1)	0.0101	0.0303
EW_2: Announcement date due to effective date -1 (T_2 to T_3-1)	0.0062	-0.0530***
EW_3: First 60 trading days after index change (T_3 to T_4-1)	-0.0252	0.0103
S&P Euro Index		
Average cumulative abnormal returns (CARs)		
EW_1: 20 trading days prior to the announcement (T_1 to T_2-1)	0.0201***	0.0198
EW_2: Announcement date due to effective date -1 (T_2 to T_3-1)	0.0111**	-0.0451**
EW_3: First 60 trading days after index change (T_3 to T_4-1)	-0.0236	-0.0161
STOXX Europe 600 Index		
Average cumulative abnormal returns (CARs)		
EW_1: 20 trading days prior to the announcement (T_1 to T_2-1)	0.0168**	0.0132
EW_2: Announcement date due to effective date -1 (T_2 to T_3-1)	0.0158***	-0.0424*
EW_3: First 60 trading days after index change (T_3 to T_4-1)	-0.0300	-0.0239
FTSE All World Index		
Average cumulative abnormal returns (CARs)		
EW_1: 20 trading days prior to the announcement (T_1 to T_2-1)	0.0121*	0.0279
EW_2: Announcement date due to effective date -1 (T_2 to T_3-1)	0.0078*	-0.0528***
EW_3: First 60 trading days after index change (T_3 to T_4-1)	-0.0245	0.0181
MSCI World Index		
Average cumulative abnormal returns (CARs)		
EW_1: 20 trading days prior to the announcement (T_1 to T_2-1)	0.0126*	0.0250
EW_2: Announcement date due to effective date -1 (T_2 to T_3-1)	0.0072	-0.0545***
EW_3: First 60 trading days after index change (T_3 to T_4-1)	-0.0256	0.0116

*/**/***Denoting statistical significance at a 10% / 5% / 1% level for a one-sided Z-test.