Corporate Ethical Behaviours and Firm Equity Value and Ownership: evidence from the GPFG*'s ethical exclusions†

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Abstract

This paper examines how unethical firms fall out of favour with investors and become undervalued. Specifically, it investigates the implications for firm equity value and ownership structure when a large institutional investor publicly divests a firm due to unethical behaviour. To achieve this, it makes use of the GPFG's ethical exclusions. On average, firms lose 1.48% of equity value around exclusion announcements, which is not reversed in the short term. The effect is stronger for more liquid firms. For firms excluded under the product criteria, especially coal, the effect seems to be driven by the divesting behaviour of ethics sensitive investors.

JEL classification: G11, G14, G23, G31, M14

Keywords: ethical investing, equity value, clientele change, ethical behaviour, institutional investors, sovereign wealth funds, sin stocks

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1 Introduction

Ethical investing practices have gained attention in recent years, with an increasing number of investors employing ESG[1] and/or SRI[2] factors in the construction and monitoring of their portfolios[3]. In the UK, the Department for Work and Pensions (2018) has proposed that from 1st October 2019, occupational pension schemes which produce a statement of investment purpose (SIP) would need to make sure that it includes information on "how they take account of financially material considerations, including (but not limited to) those arising from Environmental, Social and Governance considerations, including climate change"[4]. For example, in the United States, the US Social Investment Forum (2016) calculates that total US-domiciled assets under management employing SRI strategies make up one out of five dollars of professionally managed assets. In consequence, while firms have traditionally been assessed primarily on performance metrics, nowadays they are increasingly facing pressure to disclose and improve their ethical behaviours[5]. Furthermore, if they fail to live up to investor standards they may face exclusion from portfolios and/or active investor pressure to change practices deemed unethical[6]. According to the Global Sustainable Investment Alliance (2017), negative/exclusionary screening is the largest global sustainable investment strategy, comprising $15.02 trillion out of $22.9 trillion. More recently, as of September 2018, Arabella Advisors (2018) calculates that 985 institutions have collectively announced fossil fuel divestments of $6.24 trillion assets.[7]

This paper aims to investigate if ethical exclusions can affect firm equity value and

[1] Environmental, Social and Governance

[2] Socially Responsible Investing

[3] Ram (2016), Oakley (2016), Global Sustainable Investment Alliance (2017)

[4] In addition, there is also an engagement clause, whereby the SIP should describe "their policies in relation to the stewardship of investments, including engagement with investee firms and the exercise of the voting rights associated with the investment"

[5] Thompson (2017)

[6] Ralph (2017), Grene (2016)

[7] also see https://gofossilfree.org/divestment/commitments/

whether this is due to firms falling out of favour with other ethical investors. The GPFG's ethical exclusions are used as an experimental tool to conduct the analysis. The exclusions provide a unique and interesting setting as they are not based on the firms' financial performance but introduce detailed information to the market about their (perceived) unethical behaviour. Furthermore, usually the Fund has divested firm shares at the time of announcement so information about the fund selling firm shares is separated from information about the firm's ethical behaviour. Crucially, exclusions are based not just on past perceived unethical behaviour, but also on reasonable beliefs that such behaviour would continue into the future.

There are several plausible ways in which equity value would be affected by a large institutional investor excluding a firm from their portfolio for ethical reasons. First, there could be demand-driven price changes whereby prices decline as fewer investors are willing to hold firm shares which increases the non-diversifiable firm risk for investors still owning shares in the firms. On one hand, such reduced investor base could be purely a result of investor ethical considerations. On the other hand, investors may also believe that ethical exclusions reveal bad firm fundamentals such as lower expected growth or higher firm risk. In both cases price changes should not be transitory in the short run but firms are likely to have higher expected returns in the future to compensate investors for the higher risks they are exposing themselves to. If investors are correct in revaluing firm fundamentals and risk based on the exclusions, we would also expect to observe changes to firm performance or risk metrics in the future.

A second potential consequence of the exclusion announcements could be investor overreaction. Then, there would be a short-term price decline and a subsequent price reversal. Third, a switch in the clientele base could also be at play. In such a framework, once unethical behaviour is revealed, ethically minded investors sell their firm shares. However, when prices decline, investors who do not use ethical concerns in their investment decisions

would buy the reduced-price shares and push prices back up. The key difference between the mechanisms is (1) whether a price reversal is observed or not, (2) whether there is a change in the investor base of the firms. The paper evaluates the price reaction to the exclusion announcement as well as the observed ownership changes in order to determine which mechanism seems to best describe the setting. Preliminary analysis on firm performance is also described.

The analysis makes use of hand-collected information on exclusion recommendation announcements. The paper employs an event study methodology to analyse abnormal returns around the exclusion announcement dates. Ownership levels for institutional investor categories likely to be ethics sensitive are examined before and after the announcement dates to determine if selling behaviour by ethics sensitive investors[8] is present.

The events data consists of exclusions made by the GPFG for ethical reasons. The Fund is a large institutional investor and is currently ranked as the largest sovereign wealth fund in the world by the Sovereign Wealth Fund Institute[9]. It has assets of over 1TN USD, 66.8% of which is currently allocated to equities. It invests in around 9,000 companies worldwide, owns 1.4% of the equity of all listed companies worldwide, and 2.4% of the equity of listed companies in Europe[10]. The Fund provides considerable information to the public with regards to its decisions to exclude, monitor or re-include companies due to ethical reasons. Following exclusion (and any reinclusion) decisions it makes a public announcement and in most cases also publishes a detailed report on the reasons behind the exclusion. Exclusions can be for product-based reasons (involvement with nuclear power, tobacco, coal, etc.) or conduct-based reasons (environmental damage, corruption, human rights violations, and so on) which adds further depth to the dataset.

[8] I define ethics sensitive investors as investors who incorporate firm ethics into their portfolio decisions and react to news of firm ethical behaviours. Investors who do not consider ethics in their portfolio selection and management are referred to as ethics insensitive investors.

[9] https://www.swfinstitute.org/sovereign-wealth-fund-rankings/

[10] https://www.nbim.no, Accessed in August 2018

The data on exclusion recommendations is collected from the website of the Norwegian Council on Ethics. This contains annual reports as well as individual recommendations for companies and specific sectors (e.g related to nuclear weapons). Notably, recommendations are based on thorough research into the companies and as well as looking at past behaviour also rely on a reasonable expectation that such behaviour will persist in the future. This is in contrast to standard Corporate Social Responsibility (CSR) metrics such as the KLD (Kinder, Lydenberg, Domini Research & Analytics), which measure past exposures[11]. It is important to note that CSR is related to but not identical to the firm ethical behaviours which I analyse. The United Nations Industrial Development Organisation (UNIDO) defines CSR as "a management concept whereby companies integrate social and environmental concerns in their business operations and interactions with their stakeholders."[12]. In particular, CSR scores reflect company behaviour across a number of metrics so in practice subpar behaviour in one aspect could conceivably be compensated by stellar behaviour in another. The GPFG and the Council on Ethics, on the other hand, judge company unethical behaviour in comparison to the moral standards that they believe companies should uphold. Therefore, if a company is found to breach one of their conduct or product criteria, they are excluded regardless of their behaviour across other dimensions.

Information on when a particular recommendation was submitted by the Council on Ethics becomes public once the recommendation decision is published[13]. NBIM physically divests any firms in which they own shares prior to the exclusion announcements. However,

[11] and have been criticised for not taking full advantage of publicly available data by Chatterji et al. (2009)

[12] https://www.unido.org/our-focus/advancing-economic-competitiveness/competitive-trade-capacities-and-corporate-responsibility/corporate-social-responsibility-market-int what-csr, accessed in August 2018.

[13] Until 2015, the Council on Ethics would submit recommendations to the Ministry of Finance, which made the final decisions to accept or reject recommendations to divest a company and to revoke exclusions in a company. Norges Bank was then responsible for acting on the decision taken. From 2015 onwards, the Council on Ethics reports directly to Norges Bank, which then decides on accepting or rejecting the recommendation. The changes were implemented in the hope of increased coordination of divestment and engagement initiatives. (Council on Ethics for the Government Pension Fund Global (2014)).

the exact divestment date remains unclear.

The main results are the following. For ethical exclusion announcements, I document a negative return impact. On average firms lose c$28 million around the announcement day (-0.91%, CARs[14] -1 to 0 days) and $113 million of Market Capitalization by day five (-1.48%, CARs-1 to 5 days). This suggests that ethical investing can affect stock prices in the short run. Furthermore, the negative return impact is not reversed in the short term (in 6 to 12 days relative to the event). This is consistent with a demand driven effect or a revelation of bad fundamentals. Regression analysis shows that the return impact is stronger for more liquid firms. I then document divestment behaviour by ethics sensitive investors for product exclusions, and coal-excluded firms in particular, which further strengthens the demand driven hypothesis. Preliminary analysis shows no effect on firm performance.

The returns analysis results could be a consequence of investors reacting to the announcement that the GPFG fund will not invest in a given firm rather than a reaction to the revelation of information about firm unethical behaviour. However, I find that firms for which an exclusion recommendation was published but where the final decision was not to exclude them have similar CARs to excluded firms. This suggests that the reactions are more likely to be driven by the ethics component of the announcement rather than the news that the Fund will no longer own shares in the firms.

Looking at mimicking behaviour by ethics sensitive investors, I select two types of investors which are likely to be ethics sensitive. The first is global pension funds, which are long term investors with a large base of beneficiaries, similarly to the GPFG, and are considered to be constrained by social norms by Hong & Kacperczyk (2009). Overall, there is a reduction in the number of funds owning shares in product-excluded firms, which is more prolonged for coal-based exclusions. There is no reduction in ownership for conduct-based exclusions. Furthermore, I note significant regional variation in the reactions of pension

[14]Cumulative Abnormal Returns

funds. Both European and US funds react to the product-based exclusion recommendations, with fewer funds owning shares in the firms following the exclusions. However, since European pension funds have already sold out of some excluded firms, their reaction is more subdued than that of US pension funds. Reactions to the exclusions can be nuanced. In the case of Coal, fewer US pension funds hold shares in firms following their exclusion. In contrast, for tobacco, US funds show no reduction in the number of funds owning shares in the firms, but the exclusion announcements halt the previous trend of increasing number of US pension funds owning shares in tobacco firms. Therefore, in some cases the exclusion announcements lead to funds selling out of firms, while in others they act to dissuade funds which are not firm shareholders from becoming such. In contrast, pension funds in the Asia-Pacific region ignore the exclusion recommendations and even buy into some excluded firms in the longer term.

The second type of potential ethics sensitive investors analysed is US responsible mutual funds, classified as mutual funds with a social or ethics criterion[15]. The sample needs to be limited to US-registered mutual funds and US-listed firms due to availability of holdings data in the CRSP[16] database. The reactions of these mutual funds are similar to those of the pension funds, although the firms sample cannot be broken into too many categories due to the lower sample size. Fewer US Responsible mutual funds own shares in product-excluded firms following the exclusions. Conversely, they tend to not to react to announcements of conduct violations.

Taken together, the results suggest that ethical investing has a negative impact on equity value which is not reversed in the short term. Observed divestment by ethics sensitive investors of product exclusions supports a demand driven explanation.

The paper is linked to several strands of literature. One contribution is to expand on the literature of "sin" stock returns. Hong & Kacperczyk (2009) famously report higher

[15] using information from Thomson Reuters Eikon fund research platform

[16] Wharton Research Data Services Center for Research in Security Prices

returns for ”sin stocks” relative to comparable stocks. However, for such ”sin” stocks to achieve higher returns, they need to have become undervalued at a prior point. In this paper I examine one of the mechanisms via which this can occur, which is ethical exclusions. Therefore, the paper investigates whether ethical exclusions announcements have an impact on stock returns and, if so, in what manner. This is similar to papers which analyse firm returns around investor base expansions such as cross-listings in other territories (Foerster & Karolyi (1999)), except it analyses the opposite situation where the investor base is likely to contract rather than expand. Finding a demand-driven impact extends on prior evidence that firms have non-flat demand curves (Wurgler & Zhuravskaya (2002)). The paper is also unique in investigating clientele changes and investor overreaction in an ethical investing setting, while other papers have focused on clientele changes around corporate events such as stock splits (Dhar et al. (2004)) and dividend policy (Pettit (1977)), as well as investor overreaction to recent stock returns (e.g. De Bondt & Thaler (1985). Notably, Friedman & Heinle (2016) develop a model where CSR activities impact firm investor composition and vice versa. In general, CSR behaviours have been more widely researched than corporate unethical behaviours. Investor reactions to negative CSR events have broadly been found to be negative (for example, see Krüger (2015) and Becchetti et al. (2012)).

The main contribution of the paper is to document a way in which firms perceived to be unethical can fall out of favour with some investors and become undervalued. It analyses the effect of corporate unethical behaviour on equity value by making use of a unique quasi-natural experimental setting provided by the GPFG's ethical exclusion announcements. It shows that there is an effect, and it is at least partially driven by the divestment of ethics sensitive investors. The analysis is notable for identifying the mechanism through which unethical behaviour affects equity value.

The rest of the paper is organized as follows. Section 2 details the hypotheses I analyse, and Section 3 reviews the relevant literature. Section 4 describes the data. The returns

analysis is presented in Section 5. Changes to firm ownership are reported in Section 6. Section 7 provides a brief analysis on possible customer reactions to the exclusions. The results of the paper are summarised in Section 8 and Section 9 is used to describe the next steps in the analysis.

2 Hypotheses

I have three main hypotheses which could explain the impact of the GPFG's ethical exclusions on the firms it excludes. The first one is that the exclusions reduce the investor base of firms and cause a demand driven downward shock to returns. This is because remaining investors are forced to hold a higher proportion of firm shares than would be optimal in their portfolios and require a higher return for compensation. The reduced investor base could be as a result of investors selling out of firms due to ethical reasons and/or because the exclusions cause them to negatively revalue the strength of firm fundamentals and firm specific risk in a negative manner. In both cases there should be a a negative return impact which is not reversed in the shirt run. If investors are correct to revalue firm fundamentals we should expect to also see firm performance changes in the future.

The second hypothesis is that investors overreact to the exclusion news, which are a negative piece of information. Overreacting investors then sell out of the excluded firms causing their prices to go down. However, later on they realise the exclusion news does not impact firm fundamentals and buy back the sold shares resulting in prices recovering. Therefore, the net impact is a short term dip in prices and no change in the clientele base.

The third and final hypothesis is that there is a switch in the investor base. Once ethics sensitive investors become aware of the exclusions they sell out of the firms. However, when prices go below those justified by firm fundamentals, ethics insensitive investors step in and purchase firm shares, driving prices back up. As a result there is a short term negative return

impact and longer term clientele change as ethics sensitive investors are replaced by ethics insensitive investors.

The observed changes in price, investor composition and firm performance should distinguish which mechanism is at play. The first hypothesis involves a non-transient drop in firm prices. In contrast, the second and third hypotheses involve transient price changes. The first hypotheses relies on divestment by some investors, while the third hypothesis implies a switch in the investor base.

3 Prior Literature

Seminal work by Hong & Kacperczyk (2009) shows that "sin" stocks outperform comparable non-sin stocks. A similar result is found by Kim & Venkatachalam (2011) and Fabozzi et al. (2008). In contrast, Blitz & Fabozzi (2017) adjust sin stock returns for the Fama French 5 factors and discover that out-performance disappears. However, they do not benchmark firms against a matched samples, as in the case of Hong & Kacperczyk (2009).

For firms to have higher returns in the future, they should have become undervalued at some point in the past. A reduction in firm investor base seems a plausible candidate to have driven such a change in firm value. Indeed, Hong & Kacperczyk (2009) show lower institutional ownership levels for their sample of sin stocks. Theoretically, according to Merton (1987), a larger investor base is expected to reduce the cost of capital (returns) of firms and increase their value. This is consistent with empirical analysis by Foerster & Karolyi (1999), who find reduced long term returns of firms cross-listing their shares in the US. By that logic, a reduced investor base will in contrast lead to lower firm value (short term) and higher cost of capital (long term). Similarly, Wurgler & Zhuravskaya (2002) argue that stocks have non-flat demand curves due to lack of perfect substitutes, which creates limits to arbitrage. Therefore, reduced shares demand following an ethical exclusion can

reduce firm value due to non-flat demand curves and a lower investor base.

Directly related to ethical exlusions, Heinkel et al. (2001) build a model where if a threshold is reached of a number of institutional investors divesting firms for acting unethically to the point that firm increased cost of capital is higher than the cost of reform, then firms would be induced to improve their practices. In such a framework, divestment is a tool to improve corporate ethical behaviour. It presents ethical exclusions as a dynamic process, the effectiveness of which may depend on the reaction of other investors to the announcement of exclusion, and not just the physical divestment of the announcing entity.

For other investors to follow the Fund's exclusion behaviour, the information about firm unethical behaviour which they Fund brings to attention should be both credible and of importance to other investors. The Fund's exclusions under the different product criteria can be argued to bring no new information about general firm behaviour as investor would presumably be aware of which companies produce tobacco or coal outputs. However, they may serve to frame that behaviour as unethical. As a large institutional investor, the GPFG could be playing the role of a monitor of firm ethical behaviour for investors with limited resources which can be dedicated to monitoring. Models show that even in the presence of the free-rider problem, monitoring by large shareholders will occur (Admati et al. (1994)), although the level of monitoring can be sub-optimal (Shleifer & Vishny (1986)).

Other research has documented that in the short term investors seem to react negatively to adverse CSR firm events (Krüger (2015)) and to deteriorations in CSR indicators such as firms exiting the Domini 400 Social Index (Becchetti et al. (2012)). Similarly, firms experience negative returns when they are found to have behaved irresponsibly with regard to the environment, and positive returns in the opposite case (Flammer (2013)). Firms experiencing chemical disasters also face a negative market reaction, especially those with bad prior records (Capelle-Blancard & Laguna (2010)). However, the papers do not examine the change in firm investor base around these events and the events.

In contrast, in this paper, I focus specifically on unethical behaviour and attempt to link the return impact to changes in the investor base around the exclusion announcements. Empirically, clientele changes have been documented in other settings such as around stock splits (Dhar et al. (2004)) and negative returns for financially distressed stocks (Da & Gao (2010)). Additionally, while Modigliani & Miller (1958) state the irrelevance of firm capital structure in perfect markets where there are no transaction costs and taxes, they also recognise the potential existence of clientele effects if market imperfections exist (Miller & Modigliani (1961)). Pettit (1977) documents such dividend clientele effects among individual investors with varying ages and estimated different tax and capital gains rates. Closer to the ethics literature, Friedman & Heinle (2016) develop a model where firm investor composition and CSR activities are determined by investor CSR preferences.

A priori, one can also expect the reaction to the exclusion to be temporary and a result of investor overreaction to the exclusion news. De Bondt & Thaler (1985) document that monthly stock returns in CRSP are consistent with an investor overreaction hypothesis whereby investors "overreact" to stock recent returns history and portfolios of past "losers" outperform portfolios of past "winners". This implies that prices experience reversal in the longer term (up to three years). The impact is asymmetric with the "loser" portfolios experiencing much larger excess returns than "winner" portfolios. In a follow-up paper, De Bondt & Thaler (1987) find the results are robust to various factors such as the size effect and changes in risk as measured via CAPM betas. Using a sample of larger UK firms (from the FT 500 Index), Dissanaike (1997) also provides analysis in support of the investor overreaction hypothesis. Accordingly, the analysis in this paper investigates if the investor reaction is consistent with an overreaction hypothesis, whereby an initial negative reaction to the exclusion announcements is subsequently reversed without significant investor composition changes.

Additionally, the vast literature on CSR and long-term firm value touches on ethical

behaviour issues. Empirically, Ferrell et al. (2016) find a positive relationship between CSR and firm value. Similarly, Dhaliwal et al. (2011) show that firms which rank favourably on CSR metrics compared to their peers benefit from a reduced cost of capital after starting to disclose CSR. Furthermore, such disclosures attract dedicated institutional investors as well as increased coverage by analysts. Similarly, El Ghoul et al. (2011) find that firms with better CSR scores have lower costs of equity while firms in "sin" sectors, such as tobacco and nuclear, have higher cost of equity. Looking at the cost of debt, Goss & Roberts (2011) show that firms with CSR concerns are offered higher-spread bank loans (an economically modest but statistically significant effect).

Several studies have analysed the GPFG's ethical exclusions previously. Dewenter et al. (2010) examine the effect of sovereign wealth fund investments as well as divestments on firm returns. While they separate out the GPFG's exclusions (19 cases), they do not focus on ethical exclusions per se or find significance for those exclusions. Similarly, Beck & Fidora (2008) analyse firm exclusions from the GPFG portfolio at the stock level and also find no statistically significant abnormal returns for divested stocks (20 cases). The overall results are that there is no return significance. However, both studies make use of a much smaller sample of exclusions than this paper (144 cases) as the Fund has significantly increased the number of exclusions in the last few years. Furthermore, they do not focus on uncovering the mechanism via which equity value would be impacted.

Other papers have also investigated the effects of actions of a single institutional investor. For example, Smith (1996) examines shareholder activism by CalPERs and shows shareholder value increases for compliant firms. Similarly, Carleton et al. (1998) document the relatively successful engagements (more than 95%) with management by TIAA-CREF on corporate governance issues. Dimson et al. (2015) find positive abnormal returns following successful SRI-related activism by an unnamed large institutional investor. Furthermore, Hebb & Wójcik (2005) document emerging market countries strengthening regulatory stan-

dards in order to converge to global standards following exclusion from the portfolio of CalPERs due to low metrics.

In terms of consequences for the investor portfolio, focusing on GPFG and AP Fund exclusions, Hoepner & Schopohl (2016) show that the exclusions lead to the portfolio of the Fund having higher risk, while the same is not the case for exclusions by Sweden's AP Funds. Performance, on the other hand, is not affected.

4 Data and Summary Statistics

Table 1 Panel A shows the sample construction for the daily returns exclusion analysis. Although there were 150 firms which have been excluded in the analysis period, which goes up to end of May 2017, a number of cases were removed from the analysis, such as cases where there was no returns data available on Datastream. After cleaning the data, we are left with 144 events, 36 for conduct-based exclusions and 108 for product-based exclusions.

Firms returns data was collected from Datastream. Regional Global Fama French factors are used to benchmark firm returns. The results are presented relative to the Fama French 5 factors. All statistics are also calculated relative to the Fama French 3 factors as a robustness check and are almost identical. These are updated factors of those initially described in Fama & French (2012), and are calculated using data from 23 countries[17]. Stocks are sorted into four regions (North America, Europe, Japan, and Asia-Pacific exc. Japan).

Two datasets are used to analyse changes to the ownership structure of firms. First, Capital IQ provides data on institutional share holdings of firms. I use their dataset to identify pension fund ownership in the excluded firms. Second, CRSP has data of US-registered mutual fund holdings of US-listed firms. I use Thomson Reuter's Eikon to identify responsible

[17] Australia, Austria, Belgium, Canada, Switzerland, Germany, Denmark, Spain, Finland, France, Great Britain, Greece, Hong Kong, Ireland, Italy, Japan, Netherlands, Norway, New Zealand, Portugal, Sweden, Singapore, United States

mutual funds, defined as mutual funds with an ethical or social criterion. Then, I analyse their levels of ownership for the sample of the excluded firms which is available in CRSP.

Table 1 shows summary statistics for the sample. The event distribution over time is shown in Panel C. The coal exclusions in April 2016 significantly increase the 2016 numbers, making up 44 of the 64 cases. The exclusion sample is global and comprises of a variety of countries, as displayed in Panel D. Although the United States is the single largest country by events, the most frequent region is the Asia-Pacific, with 50 events. The sample also represents numerous industries, shown in Panel E. Unsurprisingly, the most frequently represented industries tend to be those more likely to be excluded for unethical products, such as tobacco, coal, and defence. Table 2 summarises the main firm characteristics for the firms in the sample, where the data is available. It demonstrates that the firms display variety across the metrics displayed.

[Insert Table 1 here]

[Insert Figure 1 here]

[Insert Table 2 here]

5 Impact of exclusions on firm returns

5.1 Methodology

Cumulative Abnormal Returns (CARs) are used to detect if abnormal performance was present. CARs regressions are also used to supplement the analysis, where CARs are regressed on firm characteristics and relevant dummies.

Expected returns are calculated for an estimation window before the event which includes day -480 to -31 days versus the event[18]. Following that, the model is forecast over the event

[18] A slightly smaller estimation window was employed for two companies where the full window data was

window and abnormal returns are calculated as the difference between the expected and actual returns.

The market model factors used to estimate expected returns are the Daily North America, Asia-Pacific ex Japan, Europe, Global ex US, and Japan Fama French 3 and 5 factors (referred to as FF3 and FF5 factors). The results are presented for the FF5 factors, with the FF3 being used as a robustness check (not displayed). Standard abnormal returns statistics are used, which are described below. The formulas for abnormal returns are taken from Chapter 4 of Campbell et al. (1997), Kolari & Pynnönen (2010) and Dewenter et al. (2010).

The first metric used was Average CARs divided by standard deviation of average CARs (as in Dewenter et al. (2010)):

$$\frac{\overline{CAR}}{\overline{\sigma}_{CAR}} \tag{1}$$

The J_1 Statistic is also used (also described in Campbell et al. (1997)):

$$J_1 = \frac{\overline{CAR}(\tau_1, \tau_2)}{\widehat{\overline{\sigma}}^2(\tau_1, \tau_2)} \sim AN(0,1) \tag{2}$$

where:

$$\widehat{\overline{\sigma}}^2(\tau_1, \tau_2) = \frac{1}{N^2}\widehat{\sigma}^2(\tau_1, \tau_2) = \frac{\widehat{\sigma}_A^2(\tau_1, \tau_2)}{N} \tag{3}$$

where:

$$\widehat{\sigma}_A^2(\tau_1, \tau_2) = \frac{1}{N}\sum_{i=1}^{N} \sigma_i^2(\tau_1, \tau_2) \tag{4}$$

Standardised CARs are also calculated (from Campbell et al. (1997)):

$$\widehat{SCAR}_i(\tau_1, \tau_2) = \frac{\overline{CAR_i}(\tau_1, \tau_2)}{\sigma_i} \tag{5}$$

not available.

These are then averaged:

$$\overline{SCAR}(\tau_1,\tau_2) = \frac{1}{N}\sum_{i=1}^{N}\widehat{SCAR}(\tau_1,\tau_2) \tag{6}$$

which can be used in the J_2 (Campbell et al. (1997)) and J_2^* , from Kolari & Pynnönen (2010)) statistics . The J_2^* is also called the modified Patell statistic.

$$J_2 = \left(\frac{N(L_1-4)}{L_1-2)}\right)^{1/2}\overline{SCAR}(\tau_1,\tau_2) \sim AN(0,1) \tag{7}$$

$$J_2^* = \overline{SCAR}(\tau_1,\tau_2)\Big/\sqrt{\frac{L_1-2}{N(L_1-4)}(1+(N-1)\bar{r})} \tag{8}$$

The $\bar{r}$ being the average cross-sectional correlation coefficient of abnormal returns (model residuals) in the estimation period. N is the number of events, L_1 is the event estimation window. As the J_2 and J_2^* statistics formulas assume a single factor model, the calculations have been adjusted to use the correct subtractions for the three and five Fama French factors.

Z-score, used in Dewenter et al. (2010) is also calculated:

$$Zscore = \frac{\sum_{i=1}^{N}\widehat{SCAR}(\tau_1,\tau_2)}{\sqrt{N}} \tag{9}$$

Notably, while the majority of statistics assume cross-sectionally independent events, while the J_2^* accounts for cross-sectional correlation in order to correct for event clustering, which is present in the data.

The abnormal return statistics are used to investigate whether there is an effect on stock performance after the exclusion announcements, and if so, how the shape of the impact compares to the one anticipated by the different mechanisms described previously. As mentioned above, the announcement return impact not being reversed would be consistent with the demand-driven mechanism, while a reversal would be supportive of the overreaction and

clientele change mechanisms.

The analysis uses the announcement date of the exclusions to measure when information about unethical behaviour is made public. The Fund divests shares prior to announcement. Therefore, at the point of physical divestment, other investors may observe increased number of shares being offered for sale but would not have information about the reasoning behind their disposal. On the other hand, on the exclusion announcement date, investors receive detailed information about unethical behaviour but have no expectation that the Fund will be selling shares in the future.

To investigate if news of the exclusion leaks to the market prior to announcement, raw and FF5-adjusted returns are plotted from the last 10 trading days before the event to 10 days after the event. Figure 2a shows raw returns, where there does not seem to be a strong pattern before or after the event. However, after adjusting raw returns for FF5 (the regional Fama French 5 Factors), Figure 2b shows a dip in abnormal returns from day -1 relative to the event. Therefore, to account for the possibility that news may have leaked prior to the event, abnormal returns are presented from day -1. Similar results are obtained if the day of the announcement is used as a starting point.

[Insert Figure 2 here]

5.2 Returns Analysis

The various exclusions abnormal returns metrics are showed in Table 3. The results are analysed over different horizons. -1 to 0 days relative to the event is used to examine the immediate impact of the exclusion announcements. A wider window, -1 to 5 days (seven days) is used to examine the returns impact up to five working days after the announcement. Following that period, the next seven working days are examined for a reversal in the returns impact. 5 days relative to the exclusions was chosen as the cut-off point as it represents the point at which abnormal negative returns peak (see Figure 3) so choosing the date should

increase the chances of documenting a returns reversal. Crucially, the J_2^* accounts for event clustering, which the data suffers from.

In the total sample, the abnormal returns are statistically significant in both the short (-1 top 0) and longer horizons (-1 to 5 days). The impact of the exclusions is stronger in the longer period. A longer horizon is not analysed to avoid confounding firm events interfering with the event identification.

The main results are the following. After accounting for clustering, the post-exclusion period (6 to 12 days) does not experience a statistically significant reversal. In fact, there is of statistically significant reversal across any of the subsamples, when the clustering of the events is taken into consideration. If clustering is not accounted for there is a reversal, however, this is always of lower magnitude than the initial impact and its statistical significance tends to be at a lower level than is observed for the initial impact (5 and 10% rather than 1%).

In economic terms, looking at CARs, on average firms lose $28 million around the announcement day (-0.91%, CARs -1 to 0 days) and $113[19] million of Market Capitalization by day five (-1.48%, CARs -1 to 5 days).

[Insert Table 3 here]

[Insert Figure 3 here]

If the sample is split into product and conduct exclusions (Panels B and C), product exclusions have statistically significantly negative returns over the longer period (-1 to 5 days), while conduct exclusions are not significant in either the shorter or longer horizons. However, the conduct exclusions sample is relatively small (36 cases) which is likely to be creating a bias against finding significance. Therefore, this result is further investigated in the regressions section.

[19]CAR are converted into dollar amounts for each firm and then averaged for the sample to calculate the number.

In general, one reason why investors may place higher importance on product exclusions compared to conduct ones is that the product for which firms are excluded can be a major revenue source for firms and in consequence, product-based unethical behaviour may seem harder to alter than conduct-based one. At the same time, disposing of an unethical product would not be so onerous for a diversified firm. Therefore, the stronger reactions for product-excluded firms could incorporate investor beliefs that these firms are not diversified enough to have the capacity to change ethical behaviour.

Coal is by far the largest category of product exclusions (68) and also comprises almost half of the total sample (47%). Therefore, it is logical to wonder if coal exclusions may be driving the short term return impact. Panels D and E display the results for abnormal returns when only coal exclusions are analysed and when the rest of the exclusions are analysed. Coal exclusions have a statistical negative return impact in the larger horizon -1 to 5 days), but not in the shorter horizon -1 to 0 days), while the opposite is true for the rest of the sample. Therefore, while investors seem to react to both types of exclusions, there may be a difference in the manner of the reactions. This is investigated further in the ownership section of the paper.

Splitting exclusions by region (Panels F to H), the results are strongest for North American firms, while they are insignificant for exclusions from the Asia-Pacific region. European firms on average experience positive but not statistically significant returns on exclusion, however, their sample is relatively small (20) limiting the scope for interpreting the results.

Taken together, the results suggest that ethical exclusion cause companies to become out of favour with investors.

5.3 Regression Analysis

This section investigates which factors affect the level of CARs in a regression setting. I employ this method of analysis in order to look at the impact of exclusions on firm value

while controlling for firm characteristics and other relevant variables.

Factors similar to those in Hong & Kacperczyk (2009), who analyse the performance of "sin" stocks, are also included. Such firm characteristic data is available for 135 of the 144 companies in the main sample. These include the log size of firms (market capitalisation, $M), log Market-to-Book (MtB) ratio, average past returns, stock turnover (in as a percentage of free float shares), and firm age. Firm size and MtB are taken from the -3 day versus the event. Turnover is the average share turnover over days -14 to -3 relative to the event divided by the number of free float shares of the firm at day -3 (times 100). Average past return is the average return in the 5 previous working days. Firm age is taken as the year when company accounts are first available (from Datastream) versus the event date. The dependent variables are CARs relative to the FF5 factors. Errors are clustered at the exclusion announcement date.

Additionally, dummies are included for the region of the firm and for the exclusion being conduct-based (36 cases)[20]. Table 5 shows summary statistics for the independent variables. The base equation is:

$$CAR_t = C + D_{Conduct} + Log(size)_{t-3} + Log(M/B)_{t-3} + \bar{r}_{t-14,t-3} + \overline{TurnoverPerc}_{t-14,t-3} + Log(age)_{t-3} + D_{Asia-Pacific} + D_{NorthAmerica} + D_{Europe} + \varepsilon_t$$

The market is not included as a factor since the abnormal returns are relative to the Regional Fama French Factors, which already include a market factor. Therefore, market exposure on firm returns is contained in the fitted returns component which is removed from realised returns to calculate abnormal returns. Consequently, the abnormal returns compo-

[20]Industry fixed effects were not included as the distribution has a long tail (see Table 1, Panel E) so including dummies would largely exclude firms in the smallest categories from the calculations by attributing their CARs in the dummy variable. The larger categories, on the other hand, largely overlap with product-based exclusions and would cloud that analysis.

nent should not contain any market exposure.

Table 6 displays the results of the regressions, which are run for the strongest commutative abnormal returns, from day -1 to day 5 relative to the announcement date. After accounting for firm characteristics, firms excluded for unethical conduct have similar CARs to those excluded for product violations. The conduct dummy coefficient indicates a percentage points difference of -0.20pp for conduct exclusions relative to product ones, but this is not statistically significant. Therefore, while when splitting the two samples it seems that investors react less strongly to conduct exclusions, one cannot conclude that there is no reaction to them.

In the next column, a dummy for coal-related exclusions is instead included in the base regressions, to check if coal-exclusions have stronger return impact once firm characteristics are accounted for. The dummy is also not significant and has a value of -0.004pp. Therefore, again I cannot conclude that coal exclusions in particular cause a stronger return reaction than non-coal exclusions as the difference could be due to firm characteristics.

[Insert Table 5 here]

[Insert Table 6 here]

Looking at firm characteristics, European firms have lower)(absolute) abnormal returns. In contrast, older firms and more liquid firms (proxied via higher turnover as a percentage of free float) have stronger abnormal returns. Surprisingly, North American firms do not have statistically significantly different returns from total exclusions, while their subsample results were more pronounced than the totat (Table 3 Panel G). It seems that this could have been driven by liquidity as North American firms have almost twice the turnover of the next most liquid region (see Table 7). In fact, average CARs tend to become less negative (and positive) with lower firm turnover. This trend is true for all regions but the last one, which is a grouping of eight firms headquartered in either Africa, Central or South America. Therefore, liquidity is emerging as an important factor associated with the potential negative impact of

exclusions.

Results in columns 3 and 4 are discussed in the Robustness checks sections. Finally, a dummy was included in the base specifications to test for the change in the final decision-maker for exclusions from the Norwegian Ministry of Finance to Norges Bank (not reported). The dummy was not significant, suggesting that the market does not distinguish between the two.

5.4 Robustness Checks

Abnormal returns were also analysed for the sub-sample of firms which were re-included in the Fund's investment universe, following an improvement in their conduct or a termination of the production of an excluded category (eleven cases, see Table 4). The announcement date of the revocation of the exclusion is used as the event date. The abnormal returns metrics were insignificant across both the short (-1 to 0 days) and longer (-1 to 5 days) horizons. If anything, there seems to be a statistically significant negative return reaction in the subsequent period (-6 to 12 days). However, both the lack of reaction in the main event window and the small sample size cast doubt on the validity of that finding. Nevertheless, overall, there is indicative evidence that investors do not react positively to news that firms have changed their behaviour and are reincluded into the Fund's investment universe.

[Insert Table 4 here]

To investigate the possibility that firms for which the exclusion was later revoked were different from other excluded firms to begin with, a dummy is included in the base CAR regressions (displayed in column 3 of table ,Table 6) to indicate if a firm was later re-included into the universe of the Fund's portfolio. The dummy is insignificant and negative, at -0.68pp, in favour of the hypothesis that the later reincluded firms were not different from the rest of the excluded firms at exclusion.

Another argument against the validity of the results could be that the abnormal returns are a reaction to the information that the firms are being excluded from the investment universe of the Fund rather than a reaction to the news that the exclusion is for ethical reasons. I show evidence against this hypothesis in the fourth column of Table 6. This column displays CARs regressions which include "non-excluded" firms. These are firms where the Fund published an exclusion recommendation but the recommendation was not followed and the firms were not excluded from the Fund's investment universe (ten cases). For the non-excluded firms, the event date is the announcement data of the decision not to exclude, which is usually accompanied with a detailed report of a recommendation to exclude the firms, similarly to exclusion recommendations which are approved. The overall dummy for exclusion not being approved is negative but insignificant (-1.66pp), indicating that abnormal returns of such cases are the same or may be even stronger than those of normal exclusions. Graphically, in Figure 4, CARs for Exclusions and Non-exclusions show that non-exclusions have similar abnormal returns, although as can be expected due to the lower sample size, non-exclusions are more volatile.

[Insert Figure 4 here]

On 16^{th} November 2017, NBIM[21] proposed dropping Oil and Gas stocks from the portfolio benchmark for diversification purposes. The proposal has not been approved or denied as of yet. However, it has received considerable media attention. While the exclusion proposal is made for non-ethical reasons, fossil fuels have faced pressure from ethical investors, and the Fund has a coal ethical exclusion criterion in place. I analyse the reaction using event study methodology. Returns of the stocks in Thomson Reuters' Global Oil and Gas index are tested for an effect around the announcement[22]. Returns are benchmarked relative to the

[21] Norges Bank Investment Management, the managers of the GPFG

[22] where returns are available, for 290 out of 294 cases

Global Fama French 5 factors. Since this is a one-off event and all 290 firms are clustered at the same date, it is imperative to look at the J_2^* statistic for significance inferences. The statistic is not significant in either the main or subsequent period.

Overall, the lack of significance lends support to the hypothesis that announcements of ethical exclusions may have a stronger impact than announcements of exclusions for diversification purposes. However, the Oil & Gas sector has not yet been excluded and I have not yet analysed subsequent announcements with regards to the exclusion proposal. Therefore, cautious interpretation is in order, since this result is based on a single announcement on one date. Ideally, further announcements of this or similar exclusions for non-ethical reasons would be analysed in order to form more robust inferences.

[Insert Table 8 here]

6 Ownership Analysis

Having observed that ethical exclusion reduce firm value, this section investigates if a reduced owner base is responsible for the effect. To achieve this, I examine ownership by investors whom are likely to be ethics sensitive - global pension funds and responsible mutual funds.

Looking at the Capital IQ ownership data, Table 9 shows "# Firms Available" which for each event time quarter shows the maximum number of excluded firms (out of the total sample of 144) which the could have been owned by investors. This goes down when a firm is reincluded in the portfolio or the exclusion quarter is past March 2018 for a particular firm. Therefore, more recently excluded firms start falling out of the sample as we move forwards in event time. Delisted, merged, and otherwise contaminated firms are also excluded[23]. This

[23] relevant spin-offs, etc.

provides information on sample consistency over time and shows that the sample size was fairly stable for Quarters -6 to 4. Inferences outside of this window using Capital IQ data would not be representative of the full sample, so they are not attempted when other investor holdings are analysed.

[Insert Table 9 here]

6.1 Changes to firm ownership by global pension funds

As well as being a sovereign wealth fund, the GPFG is also classified as a pension fund. Its full name is in fact the Government Pension Fund Global. Pension funds, in general, are likely to have a similarly long run outlook when investing and can potentially be an investor group which sympathises with the ethical concerns of the Fund. Notably, Hong & Kacperczyk (2009) include pension funds in their list of "norm-constrained" investors, which they define to include "institutions whose positions in stocks are public information, institutions with diverse constituents, and institutions that can be readily exposed to public scrutiny (e.g., picketing by an unhappy minority)".

Therefore, in this section, I employ the Capital IQ dataset, with ownership data to end March 2018, to investigate global pension fund reactions to the GPFG exclusions announcements. Each table shows the mean number of pension funds owning shares in excluded firms in the quarter before exclusion is announced (Q-1), which is compared to the number of pension funds owning shares in Quarters -4 before exclusion to Quarter 4 following the exclusion announcements. Quarter 0 is the quarter including the exclusion announcement.

The reference quarter is always Quarter -1. For that quarter I calculate the average number of funds owning shares in the excluded firms. For example, if we had only two excluded firms, Firm A and Firm B and Firm A was owned by 10 pension funds in Q-1 while Firm B was owned by 8 pension funds in Q-1, then number for the "Funds Q-1" column would be the average of the two numbers, which is 9. Intuitively, the average for Q-1 should be the

same in each comparison. However, as we move forwards in event time firms get reincluded in the Fund universe and some firms do not have data as the event quarter is past the database end quarter. This is recorded in the "Funds Sample" column. For those quarters the average for Q-1 and the comparison quarter is calculated using only the firms available in both quarters. One firms gets excluded from the sample in Q2 and then three more in Q4. After that point more firms start dropping off from the sample making it less representative so I do not report results past Q4. For the full exclusion sample, this column is is equivalent to the "# Firms Available" column in Table 9 where I analysed the firms the GPFG has excluded relative to the firms it could have excluded in each quarter.

The "Funds Q#" column reports the average fund ownership per firm in the relevant comparison quarter. For each row the quarter is listed in the first column (Quarter # Before or After). So continuing the previous example, if in Quarter 2, Firm A is owned by 6 funds and Firm B by 4 funds, the average fund ownership would be 5, which would be recorded in the "Funds Q#" column in the row corresponding to comparison Quarter 2. The "Difference" quarter presents the difference between the two ownership levels, subtracting average ownership in the reference Quarter -1 from the relevant comparison quarter in each row. The number is negative if the comparison quarter has lower ownership than the reference quarter. FInally, the "Funds Sample" column records how many pension funds owned shares in at least one firm in the reference or comparison quarters. A paired t-test is used to determine if the before and after ownership levels are statistically significantly different[24].

Table 10 shows the main results[25]. In Panel A we see ownership changes for the full sample. Average fund ownership of excluded firms falls following the exclusion announcements. Ownership is also lower compared to Quarter -1 for Quarters 0 to 3, but it is only

[24] equivalent to testing if the difference in ownership is statistically significantly different from zero

[25] In results which are not reported, the firm sample to companies which were owned by at least one pension fund in the quarter before announcement. The results for this restricted sample are slightly stronger, but this is due to not considering the case where a firm may have had no ownership by pension funds prior to the exclusion announcement and had pension funds purchase shares in it during later quarters.

statistically significantly lower for Quarter 0. However, this decrease is not long-lasting, and is reversed by Quarter 3. Furthermore, ownership was not stable in prior quarters. The mixed overall picture is driven by the variation in responses by pension funds in the different geographies, which is explored further later in this section. The total results are similar to those for product exclusions, shown in Panel B. Conduct exclusions, shown in Panel C, are associated with no statistically significant changes in pension fund ownership.

Exclusions under the coal criterion are the largest sub-category. These are analysed in Panel D. Pension fund ownership in Quarters 0 to 4 is lower than that in Quarter -1, and this is statistically significant for Quarters 0 to 3. Therefore, pension funds seem to decrease ownership of coal-excluded firms in a more prolonged manner than other exclusions. Graphically, the story is more complex. Looking at Figure 5a, which is the chart for coal exclusions, it seems that the reduction of coal ownership is part of a continuing trend. This seems to be the case due to selling European pension funds, which I will explore further in the regional analysis part of this section.

In contrast, looking at all exclusions except those under the coal criterion, in Panel E, pension funds seem to generally be increasing ownership of the excluded firms prior to announcements. The exclusion announcements serve to pause this trend for the quarter of the exclusion and the next quarter, but the pattern resumes afterwards.

This is also the case for Tobacco-excluded firms who were also experiencing increasing ownership by pension funds prior to the exclusion announcements, which is partially halted following the announcements. This is shown in Panel F and Figure 5b. Quarters -4 to -2 all have statistically significantly lower pension fund ownership than Quarter 2, indicating a steady increase in ownership. Conversely, following the exclusion announcements, the latter quarters are not statistically significantly different from Quarter -1. The impact for tobacco-excluded firms is driven by US pension fund (in)activity.

[Insert Table 10 here]

[Insert Figure 5 here]

It is plausible that pension funds which are geographically closer to Norway may have more aligned ethical concerns to those of the GPFG. Consequently, I split the pension fund sample into regions and check if European, USA, and Asia-Pacific funds have different reactions to the exclusion announcements. The results for European pension funds (excluding the GPFG) are displayed in Table 11, while those for US Pension funds are in Table 12. Pension funds in Asia Pacific owned on average less than one excluded firm so these were not examined separately.

For the total sample of exclusions, European funds decrease ownership following the announcements. This is statistically significant for Quarters 0 and 2. However, we can see graphically that their ownership of the excluded firms has also been slowly decreasing over time prior to the announcements (Figure 6). on the other hand, US and Asia-Pacific pension funds show no reactions in the quarter of the exclusions. There is a reduction in ownership for US funds in Quarter 1.

The reduction in holdings for product firms is similar to that for the total exclusion sample in the case of European pension funds. US pension funds, on the other hand, reduce ownership of product-excluded firms in the quarters following the announcements, which is statistically significant for the quarter of the exclusion. Furthermore, overall they experience less fluctuation in ownership in the quarters prior to the exclusion, suggesting they were less prone to selling behaviour prior to the announcements, unlike the European pension funds. Neither European nor United States pension funds react to conduct exclusions.

For Coal exclusions, both European and US pension funds reduce ownership in the exclusion announcement quarter. However, European Funds have reduced ownership in quarters prior to the exclusion (Quarters - 4 and - 3, also graphically in Figure 6a), and do not have statistically significantly lower ownership in the quarters following the exclusions. In

contrast, US pension funds do not change ownership in the quarters prior to the exclusion announcements, but do have lower ownership in the exclusion quarter and the four quarters following it, although this is only statistically significant up to quarter 3. Therefore, it seems that European Funds were already significantly reducing ownership in coal firms when the Fund made its exclusion recommendation, and thus their subsequent reaction was more subdued. US pension funds, on the other hand, had not made such changes and had a stronger and longer lasting reaction to the GPFG's announcements. Looking at all exclusions except for coal, European Pension and US pension funds react similarly to the total pension funds sample.

Tobacco exclusions have lower ownership by European Funds following the exclusion announcements, but this is only statistically significant in the event quarter. An increasing number of US pension funds, on the other hand, were owning shares in tobacco firms over time prior to the exclusions, a trend which was no longer statistically significant following the exclusions. Therefore, the fund announcements seems to have dissuaded current non-investing US pension funds from buying tobacco shares, while not changing the minds of existing US pension fund owners.

[Insert Table 11 here]

[Insert Figure 6 here]

[Insert Table 12 here]

[Insert Figure 7 here]

Overall, there is significant regional variation in the reactions of pension funds to the exclusion recommendations. Among European and US pension funds, it seems that the GPFG influences US funds more. Both categories react to product exclusions. However, European funds have already been selling out of coal firms by the time the GPFG officially recommends excluding them. As a result, their reaction to the exclusion recommendation is

part of a pre-existing pattern of declining ownership. Their reaction to tobacco exclusions is also subdued. US pension funds, on the other hand, have not been selling out of coal firms significantly and start doing so in the quarter of the exclusion announcements. They then continue having lower ownership levels in the subsequent quarters. Similarly, for tobacco exclusions, the GPFG's exclusion announcements put a stop to an existing trend of increasing ownership of tobacco firms by US pension funds.

Taken together, the results suggest that investors likely to have very similar ethics beliefs to those of the GPFG may have already incorporated these into their portfolios. Therefore, the Fund may have more scope for affecting the behaviour of investors whose existing ethics beliefs are similar to its own but not too close, such as US pension funds.

6.2 Changes to firm ownership by responsible US mutual funds

Another category of ethics sensitive investors are mutual funds with explicit mandates to consider non-financial metrics. These are identified using Thomson Reuters' Fund Screener (via Eikon). The universe of mutual funds consists of US-registered mutual funds with Ethical or Social screens, which also have a cusip number which matches the WRDs CRSP database. The data goes as far as end November 2017, so the last quarter I can analyse is end September 2017. The number of funds analysed is 177 (see Table 13 Panel A). Since the overlap between fund with Ethical or Social screens is very large (176 out of 177), the analysis is performed for the total number of responsible funds identified. Holdings are analysed at the quarterly event time level. The procedure is as follows. If a fund has reported holdings in the event time quarter for a firm, the holdings will be set to (1) the values reported for the firm, (2) 0 if no holdings for the firm are reported in the particular quarter, or (3) to missing if the firm's exclusion has been revoked. Data for quarters in which the fund has not reported holdings are also set to missing. Responsible index funds were excluded from the analysis

(20).[26] since they do not make active decisions on which firms to own.

[Insert Table 13 here]

The total number of excluded firms which were matched to firms in the CRSP database is 60 (out 144, Table 13 Panel B). Of these, 57 were at some point owned by a responsible fund in the database. A breakdown of the total firm sample and the matched firms in CRSP by various categories is presented in Table 1. Panel B shows that of the 36 conduct exclusions, 13 were identified in CRSP, while of the 108 product exclusions, 47 were matched to the database. Panel C displays the distribution of matched exclusions by year. The low matching rate is caused by the nature of the database which only covers US-listed firms. Therefore, the majority of matched firms are head-quartered in the United States, (see Panel D). Of the 60 matched firms, 45 are from the United States, and only 15 have headquarters elsewhere. The overlap is not complete as some firms are head-quartered outside the United States but are listed on a US Stock Exchange. Finally, Panel E presents the industry breakdown of exclusions.

Similarly to the pension funds analysis, I examine how many responsible funds report owning shares of the excluded companies before and after exclusion. The comparison is done for the quarter before exclusion is announced (Quarter -1) relative to the quarters following the announcements. Quarter 0 is the quarter which includes the exclusion announcement, Quarter 1 is be the first quarter following the exclusion announcement, Quarter -1 is one quarter prior to the exclusion, and so forth. The analysis is limited to Quarter 4 after the event as the sample size drops significantly after that. The results are presented in Table 13[27]. Panel A compares average fund ownership by all firms matched to the CRSP holdings data. Panel B restricts results to product-excluded firms and Panel C to conduct-excluded firms.

[26] Funds having Index, Indx or Idx in their name

[27] In unreported results the sample is restricted to firms owned by responsible funds prior to exclusion. The results are slightly stronger but with the same implications as the ones presented in the main part of the paper here.

The format and interpretations of the tables is the same as for the pension funds analysis, with one exception. Since in CRSP some mutual funds do not consistently report holdings in each quarter, I need to keep track of which mutual funds have reported data in both the reference and comparison quarters and only analyse holdings where I have mutual funds reporting in both. Therefore, even for quarters where the firms sample is the same, the average ownership levels for the reference quarter will vary depending on over how many mutual funds it is calculated.

For example, if for Firm A in Q-1 10 mutual funds report holdings data, in Quarter 2 only 8 of them report data, while in Q3 9 report holdings, then the reference and comparisons ownership levels for Q-1 compared to Q2 will be calculated using holdings data for the 8 mutual funds, while the averages for Q-1 versus Q3 will use ownership data for the 9 mutual funds. This can then result in different average ownership levels for Q-1 if one the fund which did not report holdings in Q2 but reported holdings in Q3 had positive share ownership in Firm A in Q-1.

[Insert Figure 8 here]

[Insert Table 13 here]

Looking at ownership by all responsible funds in Panel A, ownership does not seem to change in the quarters prior to exclusion and declines in the quarters following the exclusion. However, this change is no longer statistically significant after the exclusion quarter. Similarly to the abnormal returns and the pension fund ownership analysis, the results are more pronounced for product exclusions (Panel B), where quarters 2 and 3 after the exclusion also have statistically significantly lower ownership. Unfortunately, as the sample size of excluded firms is already small, it cannot be broken down further into the different product exclusion categories. Conduct exclusions show no statistically significant change in ownership. While the overall level of ownership by responsible funds is low, at just over one fund

on average owning an excluded firm, these funds are different for the various excluded firms and the results are not driven by just one or two responsible funds[28].

In summary, fewer US-domiciled responsible funds own shares in product-excluded firms following the exclusion announcements, but the funds do not react to conduct-based exclusions. Therefore, there is evidence that US responsible mutual funds follow some of the GPFG's exclusion recommendations.

7 Potential customer reactions

Since the exclusion announcements are not based on any financial information about the excluded firms, the expectation would be that firm performance metrics would not be affected by them. On the other hand, firm customers could react adversely to the announcements. This section aims to determine if there are any indications of such negative consequences. Specifically, changes in Receivables to 5 Year Average Assets were used to test for potential negative customer reactions. The metric is likely to increase if customers postpone paying bills to excluded firms. Furthermore, Net Sales to Lag 1 one Assets is used to check is customers decide to purchase fewer goods from the excluded firms.

The performance metrics are disclosed annually and consequently the granularity of the data is not large. The results are displayed in Table 14. The sample size is representative of the total when looking up to one year following the exclusion and drops significantly afterwards. Nevertheless, results confirm the base hypothesis that the metrics does not deteriorate following the announcements. There are no statistically significant changes for receivables, shown in Panel A. Net Sales also do not change in the event year or the year after it. Curiously, they do increase for conduct exclusions two years after the exclusion events, but given the lack of change in the previous years it is unlikely that the exclusion announcements are

[28] see Appendix Table 13

the cause of this. Therefore, it seems that firm customers do not react negatively to the exclusions.

[Insert Table 14 here]

8 Summary and Conclusions

This paper analysed the consequences of corporate unethical behaviour by examining changes to firm equity value and ownership structure as a result of the GPFG's ethical exclusion announcements. It documents a negative returns impact around the announcements, which is not reversed in the short term. Some ethics sensitive investors also mimic the behaviour of the GPFG and divest product excluded firms, in particular those under the coal criterion. Taken together, the results support a demand driven mechanism where firm prices are pushed down by a reduced investor base. Therefore, the paper documents one of the ways in which firms perceived to be unethical can fall out of favour and become undervalued in the short run. In conclusion, it seems that ethical divesting has an impact on equity value and at least part of this is due to ethics sensitive investors selling firm shares in product-based exclusions. Furthermore, the negative impact of exclusions is stronger for more liquid firms.

The paper suffers from some drawbacks. While the sample of excluded firms is global, the returns analysis is based on US Dollar prices, so the results are from the prospective of a US investor. Moreover, firm ownership data is only available at the quarterly level. This means that only longer-term ownership changes can be analysed as investors who have purchased and sold shares (or the opposite) within a given quarter, leaving their quarterly holdings unaffected, are not visible in the data.

9 Next steps

There are several ways to extend the ownership analysis. The first one is to analyse other categories of investors such as endowments, family offices, hedge funds and investment managers. The latter two categories may allow me to identify if ethics insensitive investors are also changing their ownership of the excluded firms. Similarly, examining the pattern of short sale interest in excluded firms will shed light on whether short sellers trade on the exclusion announcements.

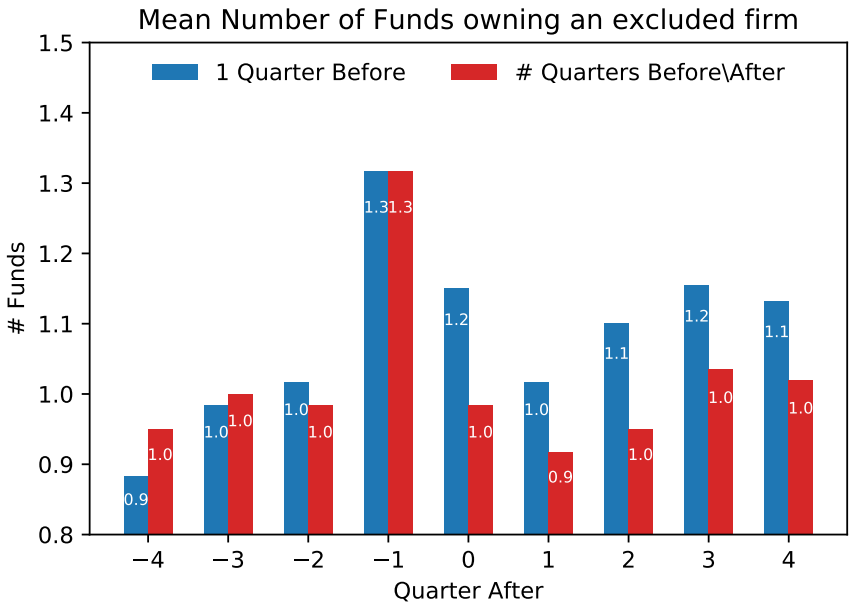
Furthermore, the fact that investors react more strongly to product relative to conduct exclusions suggests that there may be other relevant exclusion characteristics which affect the impact of exclusion announcements. Firm CSR ratings are a characteristics which I intend to employ to determine if firms which have low scores are more likely to give rise to stronger investor reactions. Alternatively, the opposite could be the case and firms with high CSR scores may be more affected by exclusion as it comes as more of a surprise to investors when they are revealed to have (perceived) unethical behaviour.

Appendices

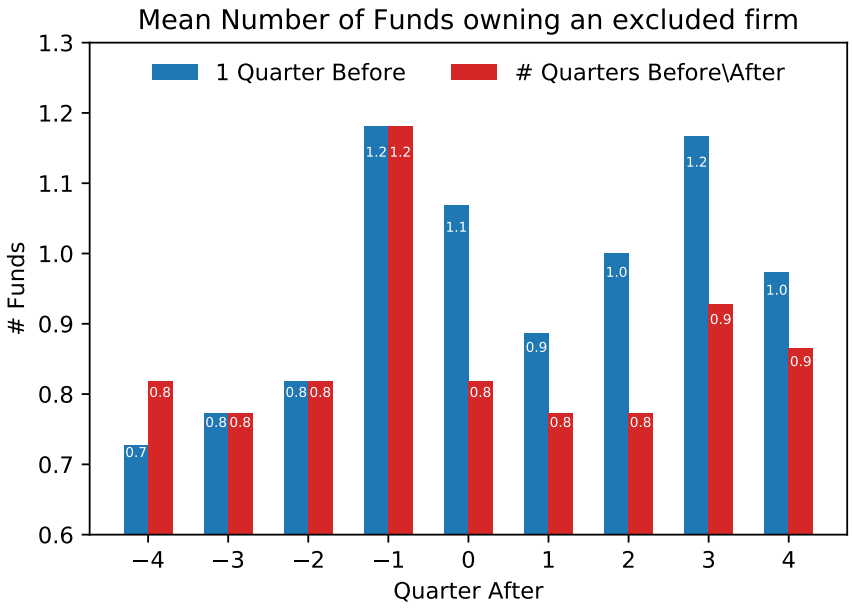
A Figures

Figure A.1: **Responsible Fund Ownership, Non-Index**, starting at Quarter -4

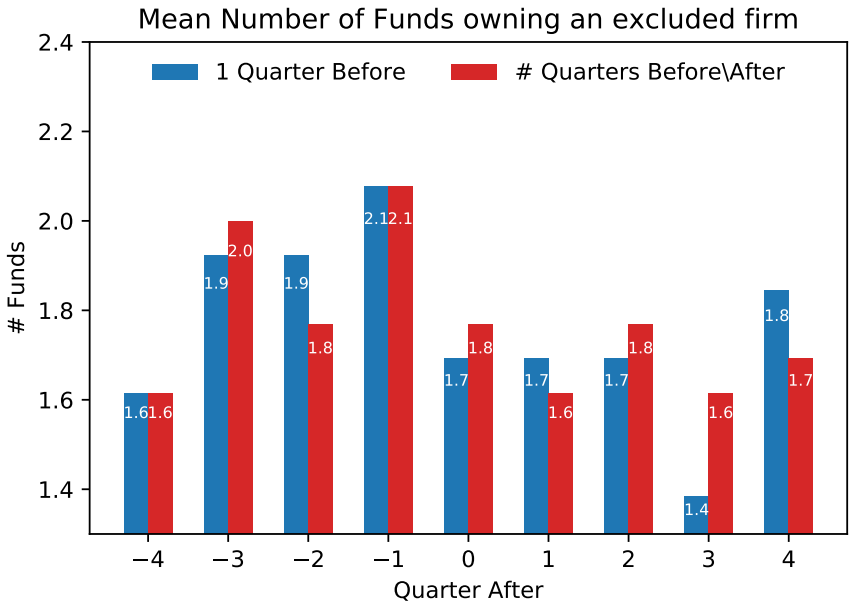
(a) All Firms



(b) Product Firms



(c) Conduct Firms



B Tables

Table B.1: Responsible Funds Ownership, Fund Firm Pairs for firm share ownership in Quarter -1 versus Quarter 0 compared to exclusion

Conduct Firms

Fund	Firm	Q-1	Q0
HC Capital Trust: ESG Growth Portfolio	Xcel Energy	4076	3893
New Covenant Funds: New Covenant Growth Fund	Xcel Energy	4714	4714
TIAA-CREF Funds: Social Choice Equity Fund	Xcel Energy	38029	38029
TIAA-CREF Funds: Social Choice Equity Fund	Wec Energy Group	14686	143732
Timothy Plan: Timothy Plan Large/Mid-Cap Value Fund	Wec Energy Group	77600	77600
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	United Technologies	6200	10000
LKCM Funds: LKCM Aquinas Catholic Equity Fund	United Technologies	4000	4000
New Covenant Funds: New Covenant Growth Fund	United Technologies	50600	39800
GuideStone Funds: Value Equity Fund	Raytheon 'B'	22900	0
GuideStone Funds: Small Cap Equity Fund	Pnm Resources	32900	32900
GuideStone Funds: Value Equity Fund	Orbital Atk	1000	0
Schwartz Investment Trust: Ave Maria Growth Fund	Orbital Atk	22200	24200
GuideStone Funds: Small Cap Equity Fund	Nrg Energy	56614	65867
GuideStone Funds: Value Equity Fund	Nrg Energy	69803	34135
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	Northrop Grumman	7100	7100
TIAA-CREF Funds: Social Choice Equity Fund	Mge Energy	16882	0
GuideStone Funds: Growth Equity Fund	Lockheed Martin	88708	0
Touchstone Strategic Trust: Touchstone Sustainability and Impact Equity Fund	Lockheed Martin	269700	173930
Advisors Series Trust: American Trust Allegiance Fund	L3 Technologies	2400	0
GuideStone Funds: Value Equity Fund	L3 Technologies	3100	0
Advisors' Inner Circle Fund III: Knights of Columbus International Equity Fund	Korea Electric Power	29000	29000
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	Jacobs Engr.	111	111
Sentinel Group Funds, Inc: Sentinel Sustainable Mid Cap Opportunities Fund	Jacobs Engr.	27680	28250
BlackRock Funds: BlackRock Impact US Equity Fund	Idacorp	0	669
Timothy Plan: Timothy Plan International Fund	Huaneng Power Intl.'A'	42400	0

Prodoct Firms 1/2

Fund	Firm	Q-1	Q0
Amana Mutual Funds Trust: Income Fund	Honeywell Intl.	20000	26000
LKCM Funds: LKCM Aquinas Catholic Equity Fund	Honeywell Intl.	21440	21440
Advisors' Inner Circle Fund III: Knights of Columbus Large Cap Value Fund	Great Plains En.	13010	13472
GuideStone Funds: Small Cap Equity Fund	Great Plains En.	46541	0
GuideStone Funds: Value Equity Fund	Great Plains En.	24681	0
GuideStone Funds: Growth Equity Fund	General Dynamics	59517	0
GuideStone Funds: Value Equity Fund	General Dynamics	16000	0
Schwartz Investment Trust: Ave Maria Growth Fund	General Dynamics	16300	16300
GuideStone Funds: Value Equity Fund	Firstenergy	13181	13181
BlackRock Funds: BlackRock Impact US Equity Fund	Dynegy	237	237
American Century Mutual Funds, Inc: Sustainable Equity Fund	Dte Energy	15418	16182
BlackRock Funds: BlackRock Impact US Equity Fund	Dte Energy	1195	278
Advisors Series Trust: American Trust Allegiance Fund	Bwx Technologies	7220	7220
Allied Asset Advisors Funds: Iman Fund	Bwx Technologies	5300	5300
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	Boeing	5900	10700
LKCM Funds: LKCM Aquinas Growth Fund	Boeing	0	15000
Touchstone Strategic Trust: Touchstone Sustainability and Impact Equity Fund	Boeing	342585	416655
BlackRock Funds: BlackRock Impact US Equity Fund	Amer.Elec.Pwr.	731	0
GuideStone Funds: Value Equity Fund	Amer.Elec.Pwr.	146353	137053
HC Capital Trust: ESG Growth Portfolio	Amer.Elec.Pwr.	3940	3758
Integrity Funds: Integrity Growth & Income Fund	Allete	13500	13500
Timothy Plan: Timothy Plan Small Cap Value Fund	Allete	34400	32200
GuideStone Funds: Value Equity Fund	Aes	820466	780145
New Covenant Funds: New Covenant Growth Fund	Aes	18542	0

Prodoct Firms 2/2

Fund	Firm	Q-1	Q0
MMA Praxis Mutual Funds: MMA Praxis Core Stock Fund	Wal Mart Stores	92000	213900
New Covenant Funds: New Covenant Growth Fund	Wal Mart Stores	28900	28900
Pax World Funds Series Trust I: Pax World International Fund	Rio Tinto	123	0
Pax World Funds Series Trust I: Pax World Value Fund	Rio Tinto	0	100
Allied Asset Advisors Funds: Iman Fund	Potash Corporation Of Saskatchewan	3700	0
Calvert World Values Fund, Inc: Calvert International Equity Fund	Potash Corporation Of Saskatchewan	41701	116844
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	Potash Corporation Of Saskatchewan	9800	8400
GuideStone Funds: Growth Equity Fund	Potash Corporation Of Saskatchewan	140090	135950
GuideStone Funds: International Equity Fund	Potash Corporation Of Saskatchewan	46010	46010
Integrity Funds: Integrity Growth & Income Fund	Potash Corporation Of Saskatchewan	18000	18000
Pax World Funds Series Trust I: Pax World International Fund	Potash Corporation Of Saskatchewan	0	6300
Wells Fargo Funds Trust: Wells Fargo Advantage Social Sustainability Fund	Potash Corporation Of Saskatchewan	2989	2807
Timothy Plan: Timothy Plan Defensive Strategies Fund	Posco	979	979
New Covenant Funds: New Covenant Growth Fund	Kerr-Mcgee Dead - Delist.28/08/06	25400	23300
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	Freeport-Mcmoran	4600	4900
LKCM Funds: LKCM Aquinas Growth Fund	Freeport-Mcmoran	25000	20000
New Covenant Funds: New Covenant Growth Fund	Freeport-Mcmoran	0	51000
LKCM Funds: LKCM Aquinas Catholic Equity Fund	Fmc	12000	12000
LKCM Funds: LKCM Aquinas Growth Fund	Fmc	10000	10000
Schwartz Investment Trust: Ave Maria Value Fund	Fmc	60000	60000
Alger Funds II: Alger Responsible Investing Fund	Duke Energy	8590	8590
GuideStone Funds: Value Equity Fund	Duke Energy	22549	20285
City National Rochdale Funds: City National Rochdale Diversified Equity Fund	Barrick Gold (Tsx)	15800	9000
MMA Praxis Mutual Funds: MMA Praxis International Fund	Barrick Gold (Tsx)	23402	33932
New Covenant Funds: New Covenant Growth Fund	Barrick Gold (Tsx)	18000	15700

C Other

D Returns Analysis Methodology: Additional information

D.1 Fama French Factors

The factors used are as follows:

R_m is the market return

SMB is a factor measuring the return of a portfolio long small size stocks and short large size stocks

HML is a factor measuring the return of a portfolio long high BtM stocks and short low BtM stocks

RMW is a factor measuring the return of a portfolio long robust profitability stocks and short weak profitability stocks.

CMA is a factor measuring the return of a portfolio long low investment stocks and short high investment stocks (conservative versus aggressive)

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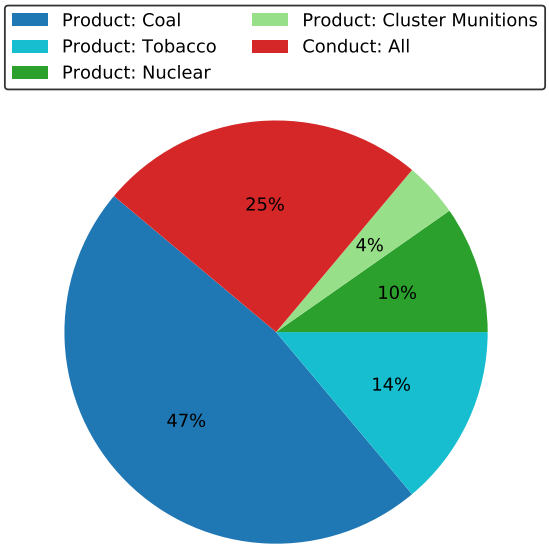
10 Figures

Figure 1: **Overview of Data**

(a) **Exclusions by type**



(b) **Regional composition of exclusions**

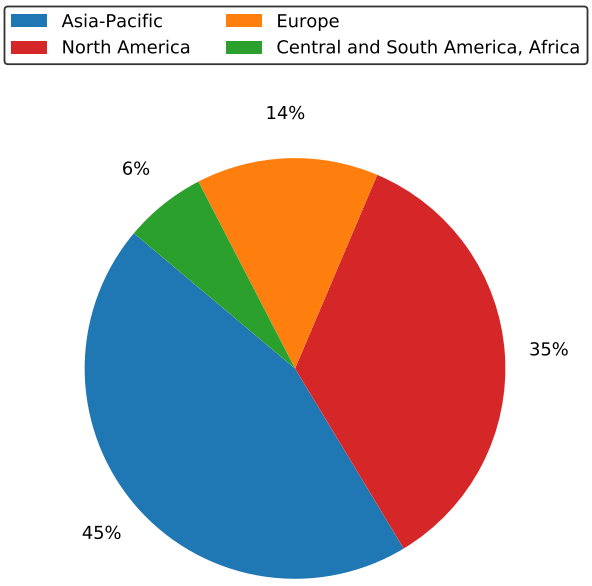
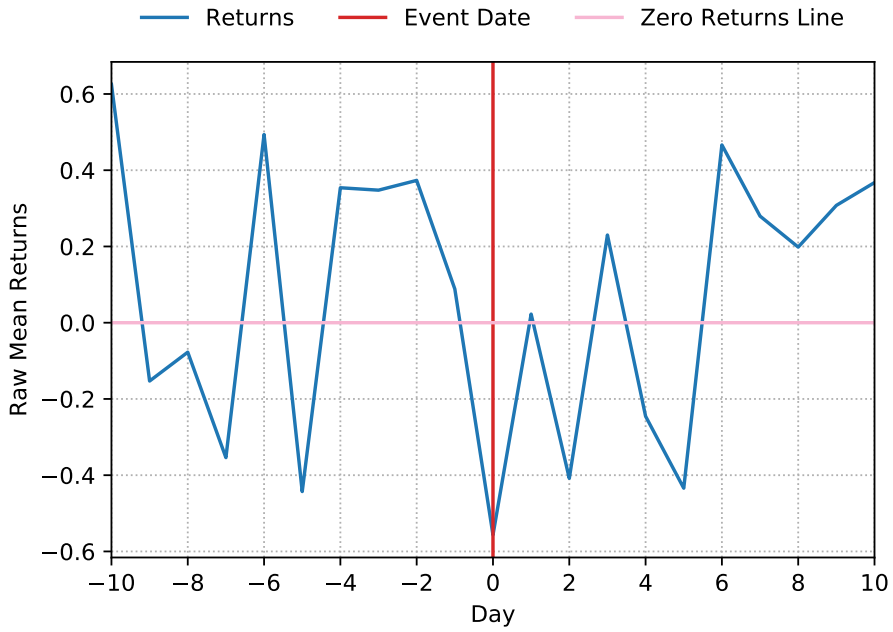


Figure 2: **Information Leakage Charts**

(a) **All Exclusions, mean raw returns**, around exclusion announcement time



(b) **All Exclusions, mean FF5-adjusted returns**, around exclusion announcement time

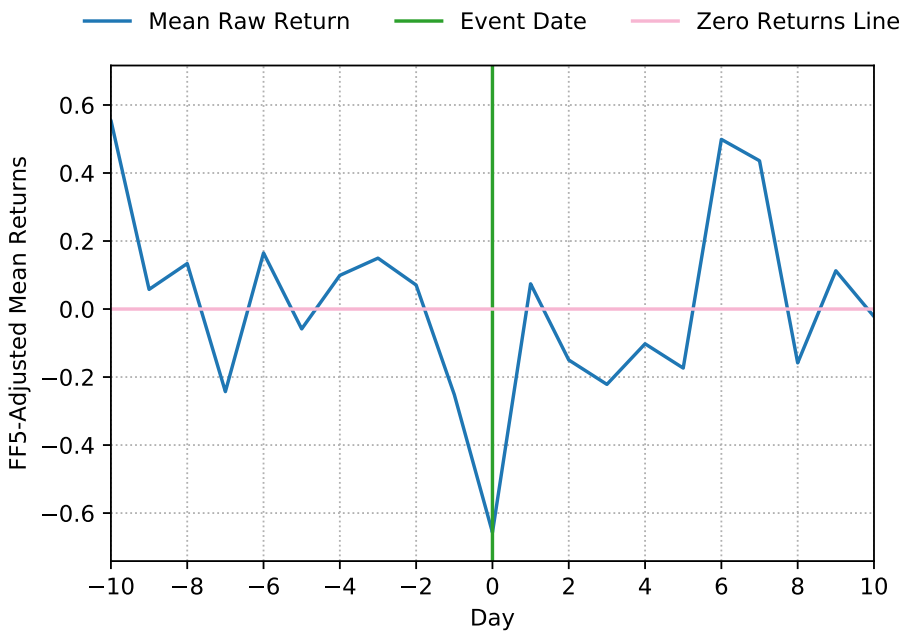
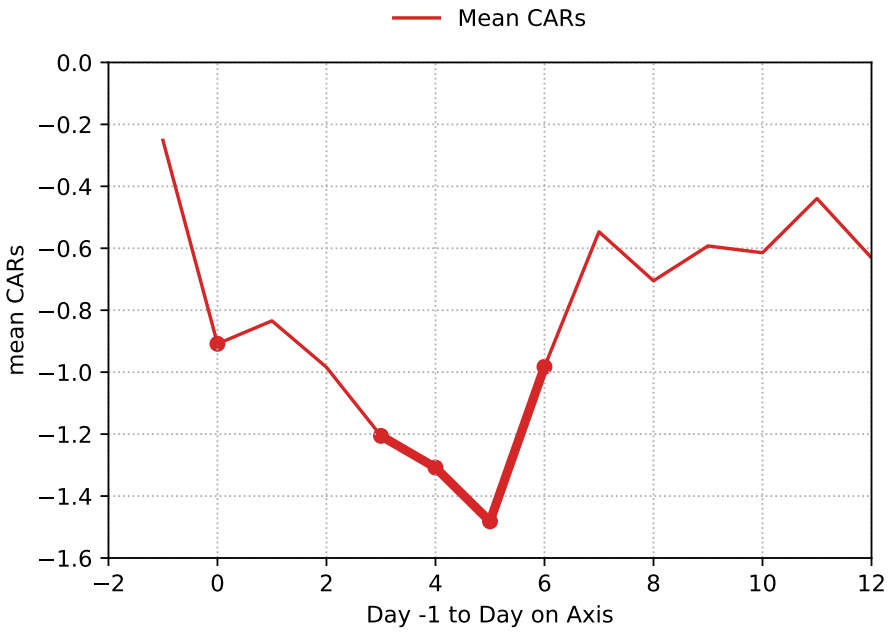
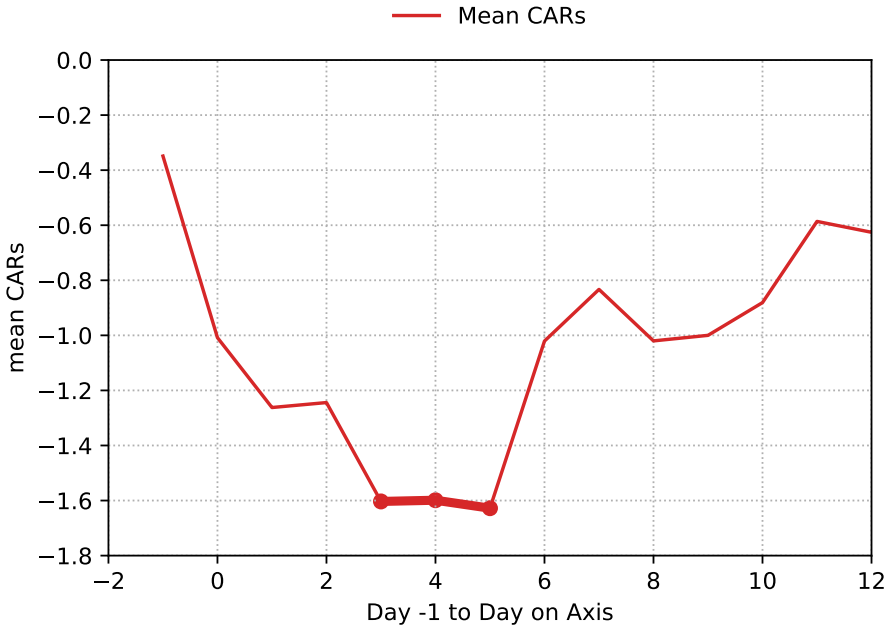


Figure 3: **Exclusions Mean CARs relative to FF5 Factors**, thick line if J_2^*s significant at 10%

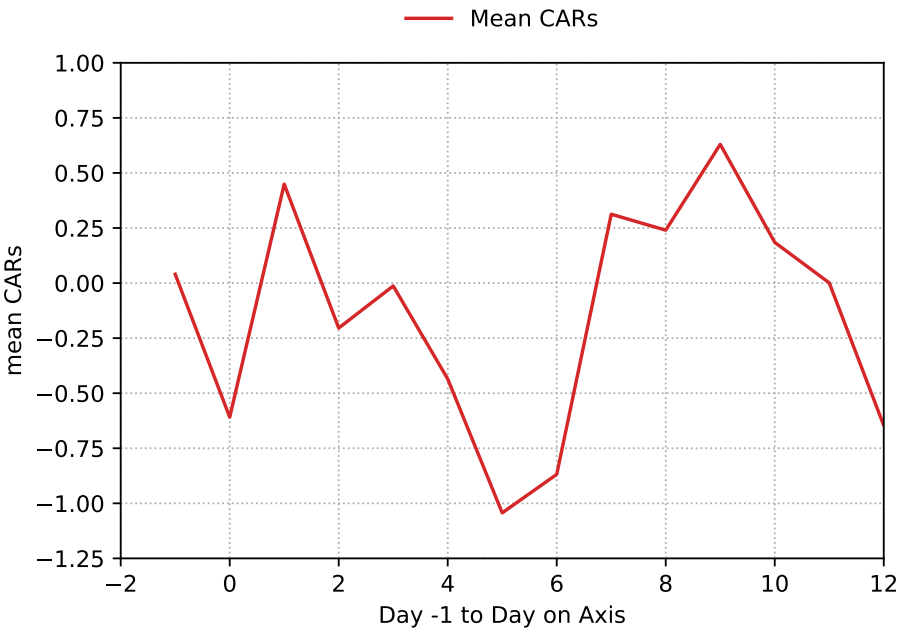
(a) All Exclusions



(b) Product Exclusions



(c) Conduct Exclusions



(d) Reinclusions

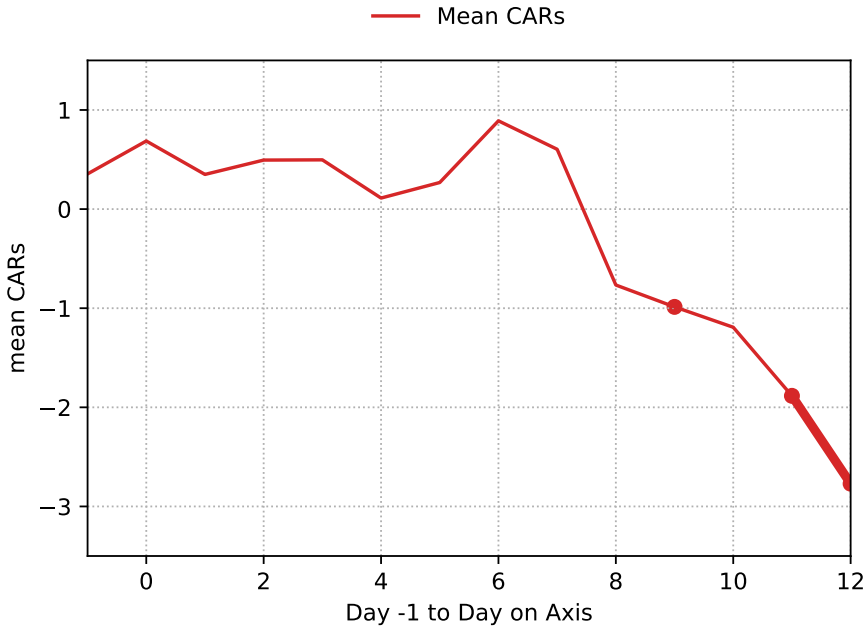


Figure 4: **Non-Exclusions and Exclusions Mean CARs relative to FF5 Factors**

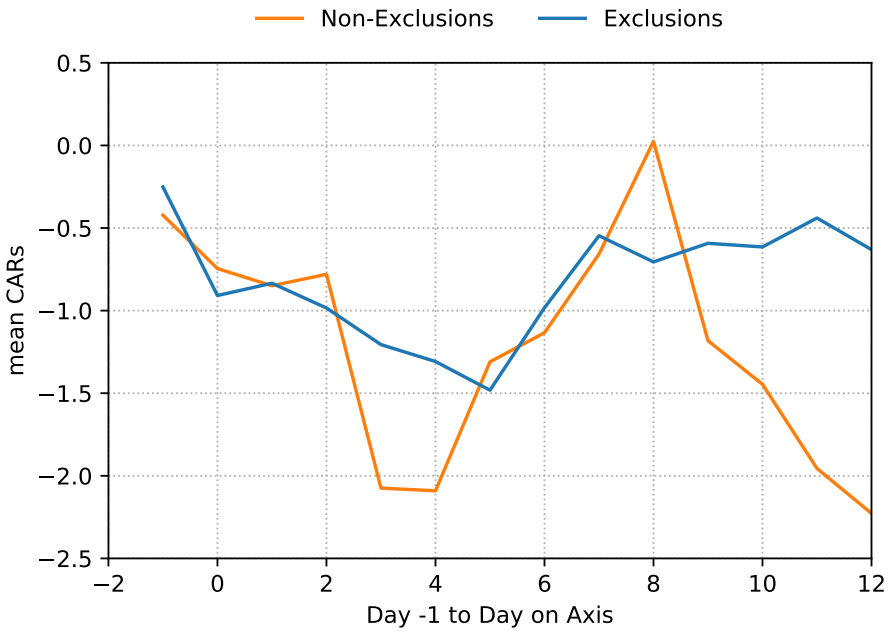
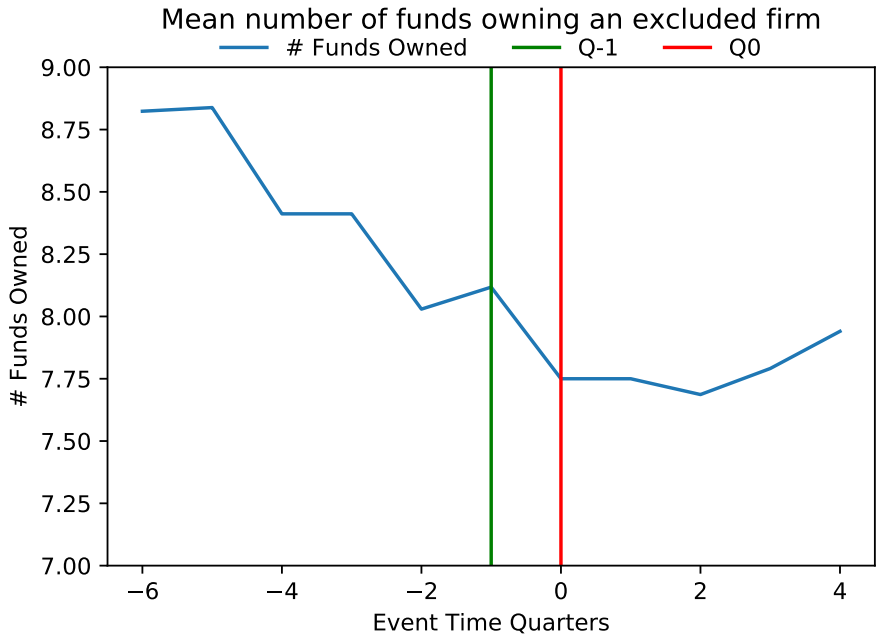


Figure 5: **Pension Fund (exc. GPFG) ownership of excluded firms**

(a) Coal Firms



(b) Tobacco Firms

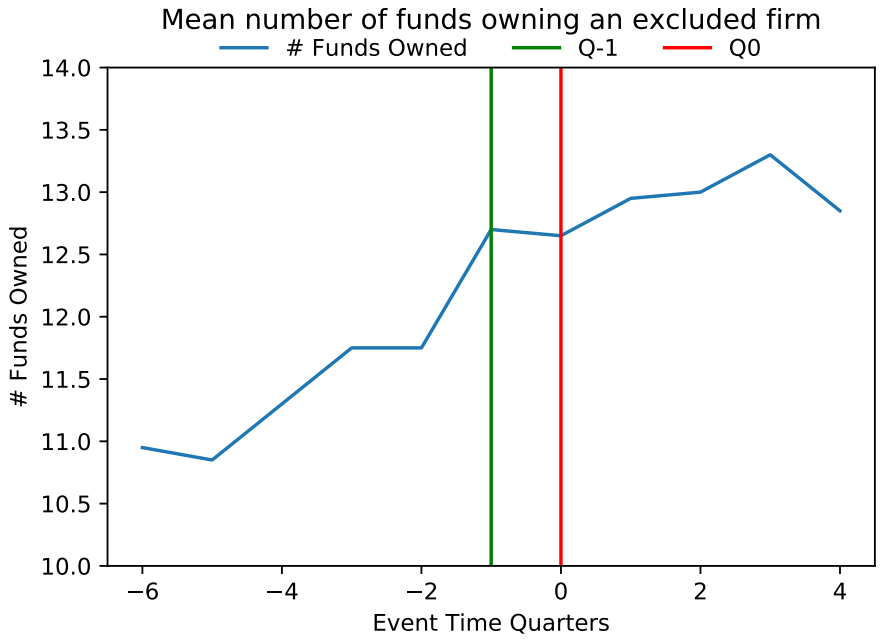
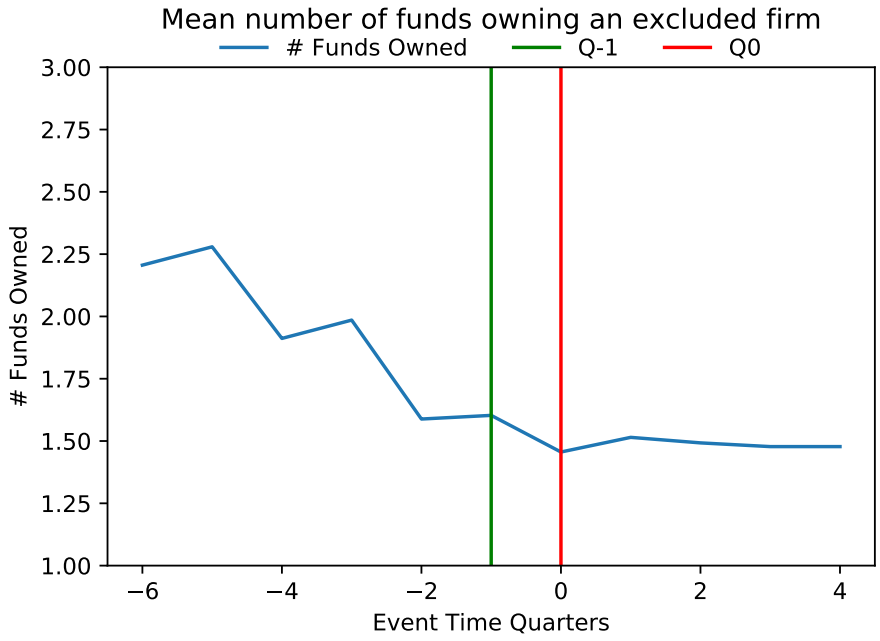


Figure 6: **European Pension Fund (exc. GPFG) ownership of excluded firms**

(a) Coal Firms



(b) Tobacco Firms

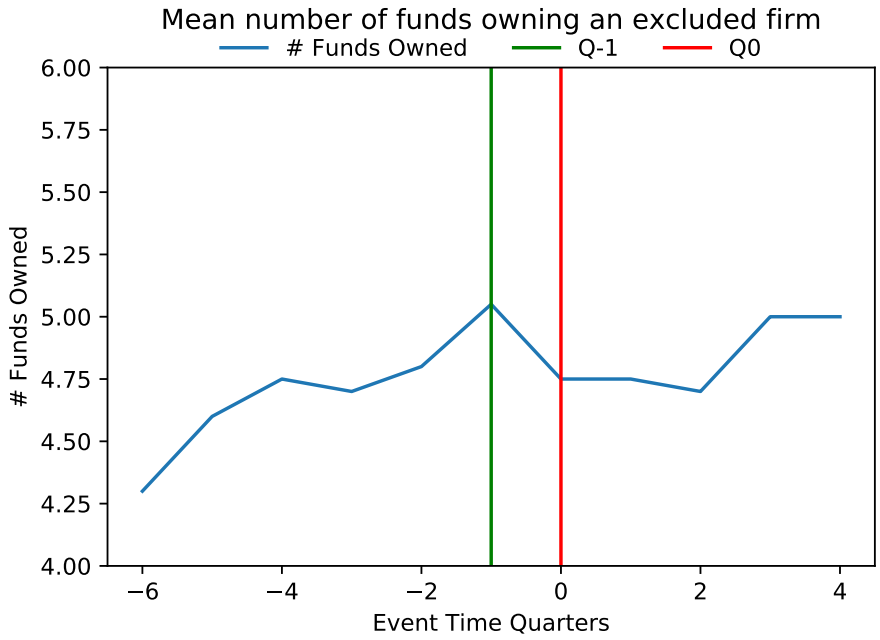
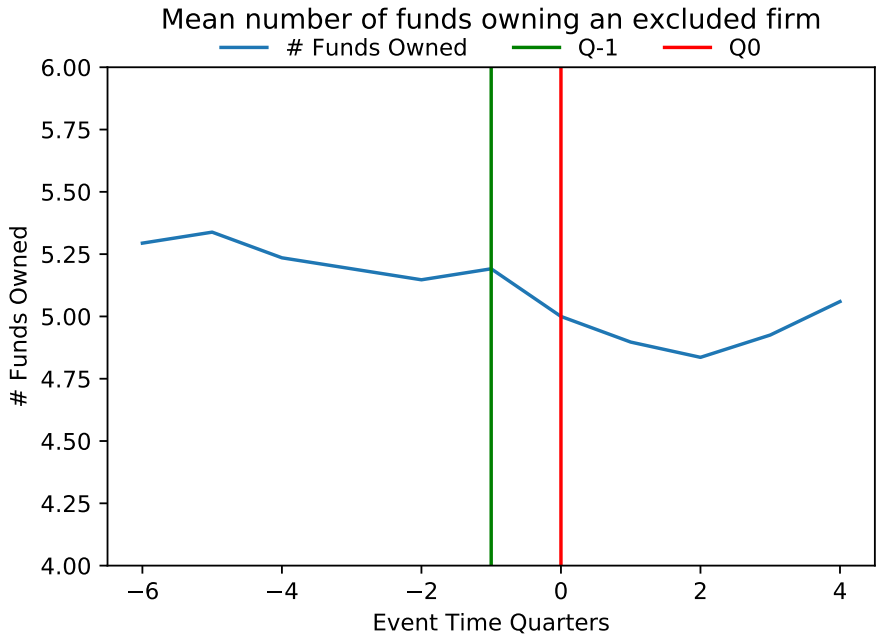


Figure 7: **US Pension Fund (exc. GPFG) ownership of excluded firms**

(a) Coal Firms



(b) Tobacco Firms

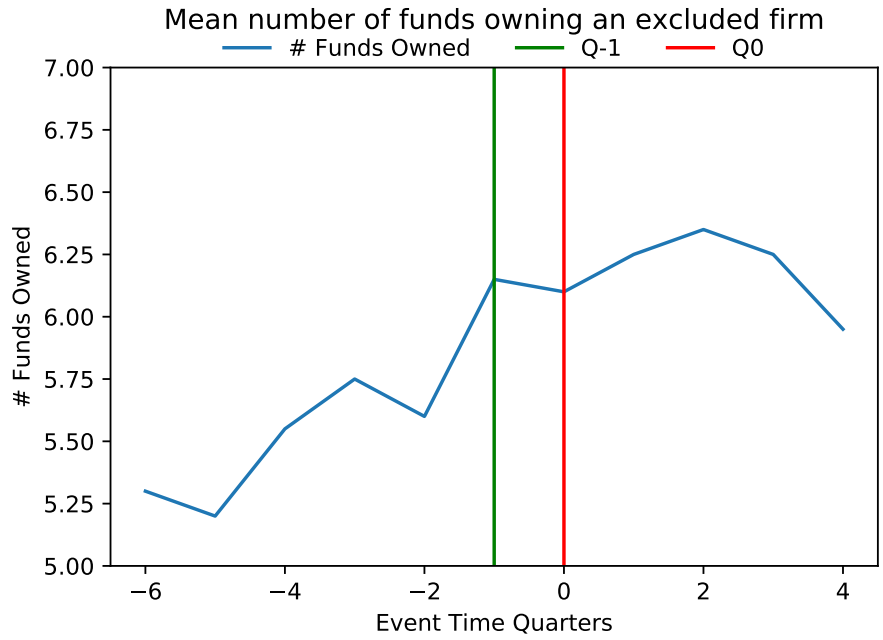
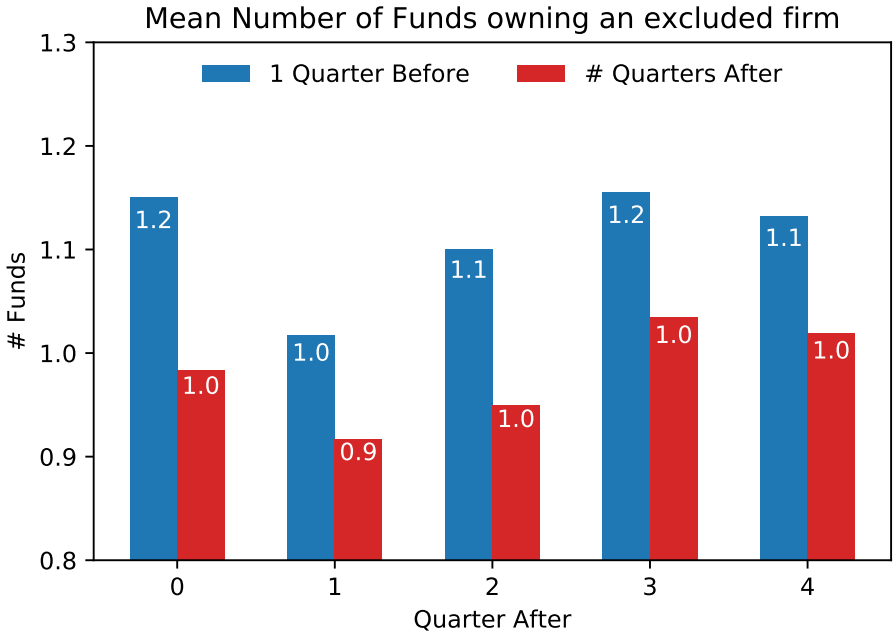
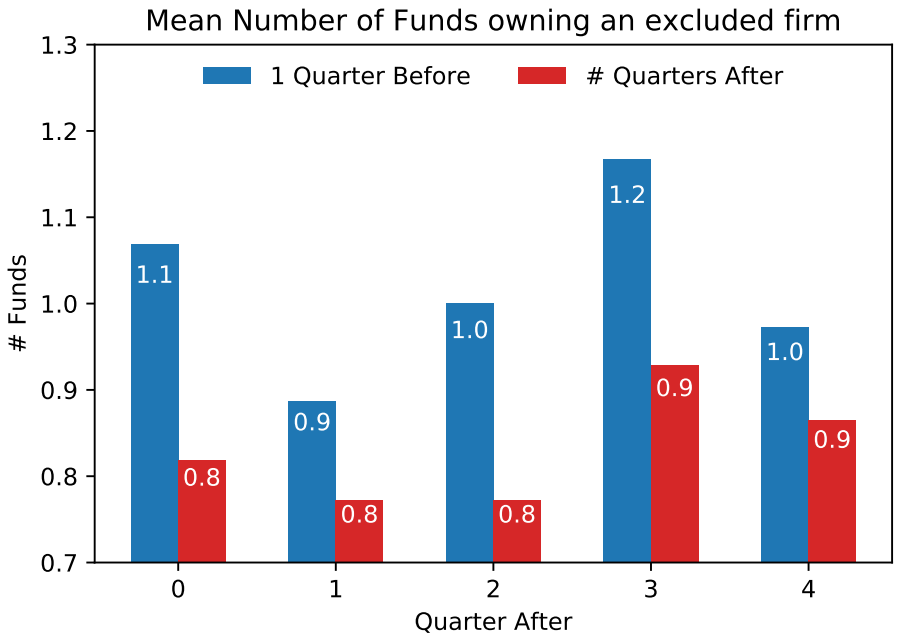


Figure 8: **Responsible Fund Ownership, Non-Index**

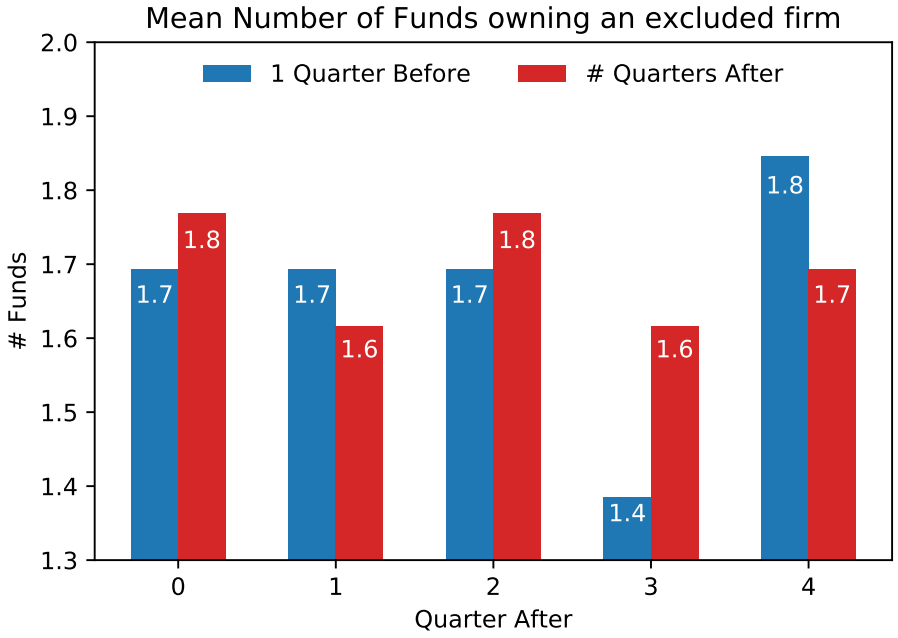
(a) All firms



(b) Product Firms



(a) Conduct Firms



11 Tables

Table 1: Summary Statistics

Panel A: Norges Bank excluded companies sample as of end May 2017 - Returns Analysis

Status	Events
excluded (any time)	150
exclusion revoked	13
excluded again	2
returns or factor data issues	2
misc (lack of clarity on status)	4
Total Sample	144
o/w divested after exclusion announcement	31
o/w no ownership more than 2 quarters prior to exclusion announcement	30
o/w no ownership in quarter prior to exclusion	87
o/w conduct-based exclusions	36
o/w product-based exclusions	108
currently excluded	126

Panel B: Norges Bank excluded companies sample as of end May 2017 - Exclusions by Category

Exclusions	Events	Events in CRSP Database
Conduct	36	13
o/w conduct - other particularly serious violations of fundamental ethical norms	7	5
o/w conduct - serious violations of human rights	3	1
o/w conduct - severe environmental damage	21	7
o/w conduct - companies supplying arms or military equipment to Burma	1	0
o/w conduct - serious violations of individuals rights in war or conflict	3	0
o/w conduct - gross corruption	1	0
Product	108	47
o/w production of cluster munitions	6	4
o/w production of nuclear weapons	14	9
o/w production of tobacco	20	10
o/w production of coal or coal-based energy	68	24

Panel C: Exclusion Sample, events over time, until end May 2017

Year	Events	Events in CRSP Database
2005	8	6
2006	10	6
2007	4	2
2008	5	2
2009	5	3
2010	19	9
2011	5	2
2012	1	0
2013	9	3
2014	0	0
2015	4	1
2016	64	24
2017	10	2

Panel D: Exclusion Sample, events by country , until end May 2017

Country	Events	Events in CRSP Database	Region	Fama French Factors
United States	45	45	North America	North America
China	13	2	Asia-Pacific	Asia-Pacific ex Japan
India	12	1	Asia-Pacific	Asia-Pacific ex Japan
Malaysia	9	0	Asia-Pacific	Asia-Pacific ex Japan
United Kingdom	8	3	Europe	Europe
Japan	7	0	Asia-Pacific	Japan
Hong Kong	6	0	Asia-Pacific	Asia-Pacific ex Japan
South Korea	5	2	Asia-Pacific	Asia-Pacific ex Japan
Canada	5	3	North America	North America
Israel	4	1	Asia-Pacific	Asia-Pacific ex Japan
Australia	3	0	Asia-Pacific	Asia-Pacific ex Japan
Poland	3	0	Europe	Europe
France	2	0	Europe	Europe
Mexico	2	0	Central America	Global ex US
South Africa	2	1	Africa	Global ex US
Chile	2	0	South America	Global ex US
Czech Republic	2	0	Europe	Europe
Brazil	2	0	South America	Global ex US
Philippines	2	0	Asia-Pacific	Asia-Pacific ex Japan
Netherlands	1	0	Europe	Europe
Italy	1	0	Europe	Europe
Russia	1	0	Asia-Pacific	Asia-Pacific ex Japan
Indonesia	1	0	Asia-Pacific	Asia-Pacific ex Japan
Sweden	1	1	Europe	Europe
Peru	1	0	South America	Global ex US
Greece	1	0	Europe	Europe
Ireland	1	0	Europe	Europe
Thailand	1	0	Asia-Pacific	Asia-Pacific ex Japan
Bermuda	1	1	West Indies	North America

Panel E: Exclusion Sample, events by industry, by end May 2017

Industry	Events	Events in CRSP Database
Electric Utilities	31	14
Independent Power Producers and Energy Traders	22	5
Aerospace and Defense	17	12
Tobacco	16	9
Coal and Consumable Fuels	12	3
Diversified Metals and Mining	6	2
Industrial Conglomerates	5	1
Construction and Engineering	4	1
Forest Products	4	0
Gold	3	2
Fertilizers and Agricultural Chemicals	3	2
Multi-Utilities	3	3
Oil and Gas Exploration and Production	4	2
Hypermarkets and Super Centers	2	1
Steel	2	1
Copper	1	1
Environmental and Facilities Services	1	0
Automobile Manufacturers	1	0
Real Estate Operating Companies	1	0
Specialty Chemicals	1	0
Paper Products	1	1
Trading Companies and Distributors	1	0
Casinos and Gaming	1	0
Communications Equipment	1	0
Heavy Electrical Equipment	1	0

Table 2: Exclusion Sample, firm characteristics, sample up to end of May 2017

Metric	N	Mean	Median	Min	Max	Stdev
Age	141	20.25	19	1	36	8.65
Size ($bn)	144	12.01	4.28	0.03	201.68	22.27
Market to Book	140	2.44	1.58	0.00	26.95	3.49
Average Share Turnover (000s)	142	4.62	1.60	0.001	57.28	8.06

Table 3: Abnormal Returns for Exclusions

Panel A: All Exclusions, N = 144

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-0.91	-3.39***	-3.05***	-3.05***	-1.98**
-1 to 5	-1.48	-3.33***	-3.75***	-3.74***	-2.44**
6 to 12	0.85	1.82*	2.34**	2.33**	1.52

Panel B: Product Exclusions, N = 108

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-1.01	-3.46***	-2.54**	-2.54**	-1.52
-1 to 5	-1.63	-3.25***	-3.54***	-3.53***	-2.12**
6 to 12	1.00	2.00**	2.13**	2.12**	1.28

Panel C: Conduct Exclusions, N = 36

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-0.61	-1.01	-1.70*	-1.70*	-1.51
-1 to 5	-1.04	-1.19	-1.38	-1.37	-1.22
6 to 12	0.40	0.34	0.99	0.99	0.88

Panel D: Coal Exclusions, N = 68

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-1.20	-3.47***	-2.02**	-2.01**	-1.11
-1 to 5	-2.27	-3.79***	-4.00***	-4.00***	-2.20**
6 to 12	1.59	2.26**	2.45**	2.45**	1.35

Panel E: Total ex. Coal Exclusions, N = 76

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-0.65	-1.52	-2.29**	-2.29**	-1.98**
-1 to 5	-0.78	-1.16	-1.38	-1.37	-1.19
6 to 12	0.19	0.47	0.90	0.89	0.77

Panel F: Asia-Pacific Exclusions, N = 64

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-0.06	-0.29	-0.89	-0.89	-0.66
-1 to 5	-1.20	-1.66*	-2.12**	-2.11**	-1.56
6 to 12	0.11	0.12	0.50	0.50	0.37

Panel G: North American Exclusions, N = 51

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-2.32	-6.45***	-4.11***	-4.10***	-2.36**
-1 to 5	-3.21	-5.22***	-4.58***	-4.57***	-2.63***
6 to 12	1.90	3.21***	2.53**	2.52**	1.45

Panel H: European Exclusions, N = 20

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	0.14	0.21	0.47	0.47	0.44
-1 to 5	1.60	0.86	1.58	1.58	1.48
6 to 12	0.28	0.09	0.84	0.83	0.78

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 4: Abnormal Returns for Reinclusions

Reinclusions, N = 11

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	0.69	0.86	0.17	0.17	0.16
-1 to 5	0.27	0.10	-0.97	-0.96	-0.93
6 to 12	-3.04	-1.72*	-2.11**	-2.11**	-2.03**

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 5: Summary statistics for potential CARs determinants

Statistic	N	Mean	St. Dev.	Min	Pctl(25)	Median	Pctl(75)	Max
Log M/B	138	0.201	0.395	−1.155	−0.043	0.199	0.419	1.431
Average past return	144	0.078	0.994	−3.639	−0.355	0.0003	0.431	3.058
Turnover as % of Free Float	139	0.833	1.403	0.0004	0.272	0.492	0.814	12.964
Log firm age	142	1.247	0.255	0.000	1.088	1.279	1.431	1.556
North America	144	0.354	0.480	0	0	0	1	1
Europe	144	0.139	0.347	0	0	0	0	1
South America	144	0.035	0.184	0	0	0	0	1
Africa	144	0.014	0.117	0	0	0	0	1
Asia Pacific	144	0.444	0.499	0	0	0	1	1
Central America	144	0.014	0.117	0	0	0	0	1
Conduct	144	0.250	0.435	0	0	0	0.2	1
Product	144	0.750	0.435	0	0.8	1	1	1
change in decision maker	144	0.542	0.500	0	0	1	1	1
Later Reincluded Companies	144	0.076	0.267	0	0	0	0	1
Other Exclusions (cond)	144	0.049	0.216	0	0	0	0	1
Human Rights Exclusions (cond)	144	0.021	0.143	0	0	0	0	1
Environment Exclusions (cond)	144	0.146	0.354	0	0	0	0	1
Burma Exclusions (cond)	144	0.007	0.083	0	0	0	0	1
War and Conflict Exclusions (cond)	144	0.021	0.143	0	0	0	0	1
Corruption Exclusions (cond)	144	0.007	0.083	0	0	0	0	1
Cluster Exclusions (prod)	144	0.042	0.201	0	0	0	0	1
Nuclear Exclusions (prod)	144	0.097	0.297	0	0	0	0	1
Tobacco Exclusions (prod)	144	0.139	0.347	0	0	0	0	1
Coal Exclusions (prod)	144	0.472	0.501	0	0	0	1	1

Table 6: CAR FF5 Model regressions

	Dependent variable:			
	CARs -1 to 5	CARs -1 to 5	CARs -1 to 5	CARs -1 to 5
	(1)	(2)	(3)	(4)
Constant	6.46	6.31	6.49	7.15
	(4.68)	(4.76)	(4.68)	(4.60)
Conduct	−0.20		−0.16	−0.12
	(1.02)		(1.00)	(1.20)
Coal Exclusions (prod)		−0.004		
		(1.85)		
Later Reincluded Companies			−0.68	
			(1.49)	
Not Excluded				−1.66
				(3.63)
Log size ($M)	−0.26	−0.26	−0.26	0.04
	(0.96)	(0.98)	(0.96)	(0.79)
Log M/B	−0.39	−0.42	−0.37	−0.78
	(1.02)	(1.73)	(1.02)	(1.16)
Average past return	0.20	0.20	0.23	−0.60
	(0.53)	(0.52)	(0.54)	(0.63)
Turnover as % of Free Float	−1.35**	−1.36**	−1.35**	−1.26**
	(0.58)	(0.56)	(0.58)	(0.57)
Log firm age	−5.23**	−5.16*	−5.27**	−4.95**
	(2.22)	(2.88)	(2.21)	(1.99)
Asia Pacific	0.42	0.41	0.45	−1.87
	(1.83)	(1.84)	(1.84)	(2.59)
North America	0.60	0.62	0.66	−1.36
	(1.86)	(1.84)	(1.92)	(2.59)
Europe	4.00**	4.01***	4.09**	1.58
	(1.56)	(1.54)	(1.62)	(2.54)
Observations	133	133	133	143
R^2	0.12	0.12	0.12	0.09
Adjusted R^2	0.05	0.05	0.05	0.03
Residual Std. Error	6.66 (df = 123)	6.66 (df = 123)	6.68 (df = 122)	6.91 (df = 132)

Note: *p<0.1; **p<0.05; ***p<0.01
Standard Errors clustered at divestment announcement time

Table 7: Turnover and CARs by region

Region	Turnover as % of Free Float	CARs -1 to 5	N
North America	1.26	-3.27	50
Asia-Pacific	0.65	-1.20	64
Europe	0.54	1.55	17
Africa, Central and South America	0.21	-1.50	8

Table 8: Abnormal Returns for the Oil & Gas sector exclusion proposal, 16 November 2017

Oil & Gas, N = 290

Event Days	avg CARs FF5	J_1 FF5	z-score FF5	J_2 FF5	J_2^* FF5
-1 to 0	-0.43	-1.19	-3.45***	-3.44***	-0.72
-1 to 5	-0.51	-0.32	-2.17**	-2.16**	-0.45
6 to 12	-2.13	-4.79***	-6.00***	-5.99***	-1.26

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 9: Capital IQ ownership data of excluded firms, up to end March 2018

Event Time Quarter	# Firms Available
-8	134
-7	136
-6	143
-5	144
-4	144
-3	144
-2	144
-1	144
0	144
1	144
2	143
3	143
4	140
5	130
6	116
7	115
8	68

Firms available are firms which have reported data on the given event quarter and are still excluded and active

Table 10: Average number of All Pension Funds exc. Norges owning shares in Excluded companies, Quarter -1 vs Quarters -4 to 4, data up to end March 2018

Panel A: No Filter, All Pension Funds exc. Norges, All Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	10.14	9.99	-0.15	144	134
-3	10.14	10.15	0.01	144	130
-2	10.14	9.94	-0.20*	144	124
-1	10.14	10.14	0.00	144	119
0	10.14	9.97	-0.17*	144	121
1	10.14	9.99	-0.15	144	123
2	10.15	10.10	-0.06	143	126
3	10.15	10.36	0.21	143	129
4	9.96	10.23	0.27	140	131

Panel B: No Filter, All Pension Funds exc. Norges, Product Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	10.77	10.60	-0.17	108	118
-3	10.77	10.86	0.09	108	120
-2	10.77	10.50	-0.27*	108	114
-1	10.77	10.77	0.00	108	110
0	10.77	10.48	-0.29***	108	111
1	10.77	10.55	-0.22	108	114
2	10.79	10.64	-0.15	107	119
3	10.79	10.98	0.19	107	121
4	10.79	11.07	0.27	107	122

Panel C: No Filter, All Pension Funds exc. Norges, Conduct Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	8.25	8.14	-0.11	36	89
-3	8.25	8.00	-0.25	36	83
-2	8.25	8.25	0.00	36	82
-1	8.25	8.25	0.00	36	79
0	8.25	8.44	0.19	36	81
1	8.25	8.31	0.06	36	80
2	8.25	8.47	0.22	36	81
3	8.25	8.53	0.28	36	81
4	7.24	7.52	0.27	33	81

Panel D: No Filter, All Pension Funds exc. Norges, Coal-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	8.12	8.41	0.29	68	78
-3	8.12	8.41	0.29	68	76
-2	8.12	8.03	-0.09	68	76
-1	8.12	8.12	0.00	68	73
0	8.12	7.75	-0.37**	68	73
1	8.12	7.75	-0.37*	68	77
2	8.12	7.69	-0.43**	67	77
3	8.12	7.79	-0.33*	67	78
4	8.12	7.94	-0.18	67	78

Panel E: No Filter, All Pension Funds exc. Norges, All exc. Coal-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	11.95	11.39	-0.55**	76	107
-3	11.95	11.70	-0.25	76	105
-2	11.95	11.64	-0.30**	76	99
-1	11.95	11.95	0.00	76	97
0	11.95	11.96	0.01	76	99
1	11.95	11.99	0.04	76	99
2	11.95	12.22	0.28*	76	103
3	11.95	12.63	0.68**	76	105
4	11.64	12.33	0.68**	73	107

Panel F: No Filter, All Pension Funds exc. Norges, Tobacco-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	12.70	11.30	-1.40**	20	73
-3	12.70	11.75	-0.95**	20	74
-2	12.70	11.75	-0.95***	20	71
-1	12.70	12.70	0.00	20	70
0	12.70	12.65	-0.05	20	71
1	12.70	12.95	0.25	20	72
2	12.70	13.00	0.30	20	75
3	12.70	13.30	0.60	20	76
4	12.70	12.85	0.15	20	77

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 11: Average number of European Pension Funds exc. Norges owning shares in Excluded companies, Quarter -1 vs Quarters -4 to 4, data up to end March 2018

Panel A: No Filter, European Pension Funds exc. Norges, All Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	3.00	3.00	0.00	144	40
-3	3.00	3.08	0.08	144	41
-2	3.00	2.90	-0.10*	144	40
-1	3.00	3.00	0.00	144	39
0	3.00	2.88	-0.12**	144	39
1	3.00	2.90	-0.10	144	40
2	3.02	2.87	-0.15*	143	41
3	3.02	3.00	-0.02	143	41
4	2.97	2.96	-0.01	140	42

Panel B: No Filter, European Pension Funds exc. Norges, Product Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	2.96	3.03	0.06	108	39
-3	2.96	3.12	0.16	108	40
-2	2.96	2.82	-0.14*	108	39
-1	2.96	2.96	0.00	108	38
0	2.96	2.77	-0.19***	108	38
1	2.96	2.81	-0.15	108	39
2	2.99	2.81	-0.18*	107	40
3	2.99	2.98	-0.01	107	40
4	2.99	2.99	0.00	107	41

Panel C: No Filter, European Pension Funds exc. Norges, Conduct Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	3.11	2.92	-0.19	36	28
-3	3.11	2.97	-0.14	36	28
-2	3.11	3.11	0.00	36	28
-1	3.11	3.11	0.00	36	28
0	3.11	3.22	0.11	36	28
1	3.11	3.17	0.06	36	28
2	3.11	3.06	-0.06	36	28
3	3.11	3.06	-0.06	36	28
4	2.91	2.88	-0.03	33	27

Panel D: No Filter, European Pension Funds exc. Norges, Coal-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	1.60	1.91	0.31**	68	20
-3	1.60	1.99	0.38***	68	20
-2	1.60	1.59	-0.01	68	20
-1	1.60	1.60	0.00	68	19
0	1.60	1.46	-0.15*	68	19
1	1.60	1.51	-0.09	68	21
2	1.63	1.49	-0.13	67	21
3	1.63	1.48	-0.15	67	21
4	1.63	1.48	-0.15	67	21

Panel E: No Filter, European Pension Funds exc. Norges, All exc. Coal-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	4.25	3.97	-0.28**	76	37
-3	4.25	4.07	-0.18*	76	38
-2	4.25	4.07	-0.18**	76	37
-1	4.25	4.25	0.00	76	37
0	4.25	4.16	-0.09	76	37
1	4.25	4.14	-0.11	76	38
2	4.25	4.09	-0.16	76	39
3	4.25	4.34	0.09	76	39
4	4.21	4.33	0.12	73	40

Panel F: No Filter, European Pension Funds exc. Norges, Tobacco-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	5.05	4.75	-0.30	20	29
-3	5.05	4.70	-0.35	20	29
-2	5.05	4.80	-0.25	20	29
-1	5.05	5.05	0.00	20	29
0	5.05	4.75	-0.30**	20	29
1	5.05	4.75	-0.30	20	29
2	5.05	4.70	-0.35	20	29
3	5.05	5.00	-0.05	20	29
4	5.05	5.00	-0.05	20	30

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 12: Average number of United States Pension Funds owning shares in Excluded companies, Quarter -1 vs Quarters -4 to 4, data up to end March 2018

Panel A: No Filter, United States Pension Funds, All Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	5.90	5.84	-0.06	144	51
-3	5.90	5.88	-0.03	144	46
-2	5.90	5.82	-0.08	144	43
-1	5.90	5.90	0.00	144	42
0	5.90	5.82	-0.08	144	43
1	5.90	5.76	-0.14*	144	42
2	5.90	5.83	-0.07	143	43
3	5.90	5.87	-0.03	143	46
4	5.76	5.74	-0.01	140	45

Panel B: No Filter, United States Pension Funds, Product Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	6.54	6.43	-0.11	108	42
-3	6.54	6.56	0.03	108	44
-2	6.54	6.44	-0.10	108	40
-1	6.54	6.54	0.00	108	40
0	6.54	6.43	-0.11*	108	41
1	6.54	6.37	-0.17	108	41
2	6.53	6.42	-0.11	107	43
3	6.53	6.49	-0.05	107	44
4	6.53	6.51	-0.02	107	43

Panel C: No Filter, United States Pension Funds, Conduct Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	4.00	4.08	0.08	36	46
-3	4.00	3.81	-0.19	36	39
-2	4.00	3.97	-0.03	36	39
-1	4.00	4.00	0.00	36	38
0	4.00	4.00	0.00	36	39
1	4.00	3.94	-0.06	36	38
2	4.00	4.06	0.06	36	38
3	4.00	4.03	0.03	36	38
4	3.24	3.24	0.00	33	38

Panel D: No Filter, United States Pension Funds, Coal-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	5.19	5.24	0.04	68	27
-3	5.19	5.19	0.00	68	27
-2	5.19	5.15	-0.04	68	27
-1	5.19	5.19	0.00	68	27
0	5.19	5.00	-0.19**	68	27
1	5.19	4.90	-0.29**	68	27
2	5.16	4.84	-0.33***	67	27
3	5.16	4.93	-0.24**	67	28
4	5.16	5.06	-0.10	67	27

Panel E: No Filter, European Pension Funds exc. Norges, All exc. Coal-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	4.25	3.97	-0.28**	76	37
-3	4.25	4.07	-0.18*	76	38
-2	4.25	4.07	-0.18**	76	37
-1	4.25	4.25	0.00	76	37
0	4.25	4.16	-0.09	76	37
1	4.25	4.14	-0.11	76	38
2	4.25	4.09	-0.16	76	39
3	4.25	4.34	0.09	76	39
4	4.21	4.33	0.12	73	40

Panel F: No Filter, United States Pension Funds, Tobacco-excluded Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	6.15	5.55	-0.60**	20	33
-3	6.15	5.75	-0.40**	20	33
-2	6.15	5.60	-0.55**	20	31
-1	6.15	6.15	0.00	20	31
0	6.15	6.10	-0.05	20	31
1	6.15	6.25	0.10	20	32
2	6.15	6.35	0.20	20	34
3	6.15	6.25	0.10	20	34
4	6.15	5.95	-0.20	20	34

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 13: Responsible Funds Sample and firms matched to CRSP data

Panel A: Responsible Funds matched to CRSP Data

Number of Responsible Funds by Criteria	Ethical	Social
Total from TR (Eikon)	2151	226
Funds with listed CUSIP	221	211
Matched to CRSP	187	188
Duplicate Portfolios due to Fund Class	2	2
Final Matched to CRSP	185	186
CRSP Holdings Data Available	176	177
Overlap Ethical & Social	176	176

Panel B: Excluded Firms matched to CRSP Data

Excluded Firms	Total	Conduct	Product
Total	144	36	108
Excluded Matched to CRSP	60	13	47
Excluded owned by the Analysed Funds (at some point)	57	13	44
Reincluded	13	6	7
Reincluded Matched to CRSP	6	3	3
Reincluded owned by the Analysed Funds (at some point)	6	3	3

Table 13: Average number of Funds owning shares in Excluded companies, Quarter -1 vs Quarters -4 to 4, Non-Index Funds, All Firms, data to end November 2017

Panel A: No Filter, All Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	0.88	0.95	0.07	60	109
-3	0.98	1.00	0.02	60	116
-2	1.02	0.98	-0.03	60	116
-1	1.32	1.32	0.00	60	127
0	1.15	0.98	-0.17**	60	120
1	1.02	0.92	-0.10	60	119
2	1.10	0.95	-0.15	60	114
3	1.16	1.03	-0.12	58	112
4	1.13	1.02	-0.11	53	106

Panel B: No Filter, Product Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	0.73	0.82	0.09	44	104
-3	0.77	0.77	0.00	44	111
-2	0.82	0.82	0.00	44	112
-1	1.18	1.18	0.00	44	123
0	1.07	0.82	-0.25**	44	116
1	0.89	0.77	-0.11	44	118
2	1.00	0.77	-0.23*	44	114
3	1.17	0.93	-0.24*	42	107
4	0.97	0.86	-0.11	37	101

Panel C: No Filter, Conduct Firms

Quarter # Before or After	Funds Q-1	Funds Q#	Difference	Firms Sample	Funds Sample
-4	1.62	1.62	0.00	13	103
-3	1.92	2.00	0.08	13	104
-2	1.92	1.77	-0.15	13	107
-1	2.08	2.08	0.00	13	118
0	1.69	1.77	0.08	13	114
1	1.69	1.62	-0.08	13	111
2	1.69	1.77	0.08	13	109
3	1.38	1.62	0.23	13	107
4	1.85	1.69	-0.15	13	103

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$

Table 14: Changes to Firm Performance metrics, Year -1 vs Years 0 to 2, data to 8th May 2018

Panel A: Receivables/5 Year Average Assets

Exclusions	Year #	Mean in Year-1	Mean in Year #	Difference	# Firms
All	0	34.49	34.67	0.18	138
All	1	33.66	34.06	0.39	126
All	2	29.47	29.92	0.45	61
Conduct	0	31.49	32.10	0.61	32
Conduct	1	29.28	30.27	0.99	29
Conduct	2	27.49	28.58	1.10	21
Product	0	35.40	35.45	0.05	106
Product	1	34.97	35.19	0.22	97
Product	2	30.51	30.63	0.11	40

Panel B: Net Sales/L1 Assets

Exclusions	Year #	Mean in Year-1	Mean in Year #	Difference	# Firms
All	0	0.63	0.64	0.01	140
All	1	0.66	0.67	0.01	129
All	2	0.88	0.98	0.10**	64
Conduct	0	0.76	0.78	0.02	35
Conduct	1	0.82	0.83	0.00	32
Conduct	2	0.80	0.93	0.13***	24
Product	0	0.58	0.59	0.01	105
Product	1	0.60	0.62	0.01	97
Product	2	0.93	1.02	0.09	40

Significance: $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.10$