The stock market and corporate consequences of ethical exclusions by the world's largest fund

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Abstract

We investigate the stock market and corporate consequences of ethically motivated portfolio exclusions. The divestments by Norway's "Oil Fund," the world's largest SWF, provide a sample of stocks facing widespread exclusions by institutional investors. We estimate a return premium (alpha) of about 5% for this "unethical portfolio." We also consider firms where the oil funds' exclusion has been reversed. For this portfolio of "newly ethical firms" we do not find a return premium going forward. We investigate to what extent these results can be directly linked to the Oil Fund's actions. We do not find evidence of a causal link. We investigate the corporate reactions to exclusions. Only 14% of the excluded firms make sufficient changes to their operations for the exclusions to be revoked.

Keywords: Ethical investing; Exclusions; Cost of Capital; ESG
JEL Codes: G10; G11; G20

Highlights

- We investigate companies subject to ethical exclusions by the Norwegian "Oil Fund"

- A portfolio of excluded "unethical" firms has an alpha of five percent.

- A portfolio of companies whose exclusions have been revoked has an alpha of zero.

- The actions of the Oil Fund by itself are not enough to cause the estimated effects.

- Firms with low ESG scores are more likely to act to reverse exclusions.

Contents

1 Introduction

The implications of ethically motivated portfolio exclusions by institutional investors is a long-standing research issue in sustainable finance. The best-known asset pricing theories (Pástor et al., 2021; Pedersen et al., 2021) imply that firms which are often excluded by institutions have higher returns. Arbitrage arguments by e.g. Berk and van Binsbergen (2025) however limits the suggested return difference. Proponents of exclusions, on the other hand, argue that the threat of exclusions serve to discipline companies. By avoiding activities that lead to exclusions, firms stay away from business areas that seemingly offer high short-term returns, but may for example have negative climate consequences (and low long-term returns).

In this paper, we use the exclusions by the Norwegian Sovereign Wealth Fund GPFG ("The Oil Fund") to add to this literature. We use the twenty-year history of exclusions by the GPFG to speak to four issues in the academic debate: First, is there a return difference linked to ethical issues? Second, how do stock markets react to divestments and announced exclusions? Third, to what extent do corporations react to exclusions? Fourth, do corporations gain (in cost of capital terms) by acting to reverse exclusions?

Using the exclusions by the GPFG is particularly pertinent for answering these questions. The GPFG is one of the World's largest Sovereign Wealth Funds, with assets under management over 1 trillion USD in 2021. The GPFG exclusions are decided upon by a committee (the "Ethical Council") set up by the Norwegian Ministry of Finance which needs to show clear evidence that a given firm violates ethical norms before exclusions are effected. The Ethical Council investigates each firm, often communicating with the firm, before recommending exclusion. This leads us to argue that the GPFG's exclusions are a list of "worst offenders."[1] Unlike most institutional investors, who do not reveal their specific exclusions, the Ethical Council publicly announces that a firm is excluded. The Ethical Council also maintains a list of exclusions on its

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[1] In the terminology of Starks (2023), the GPFG exclusions are the result of a *values* judgement, not results of a *value* estimate.

web page.[2]

This exceptional transparency is our main reason for pointing to the GPFG exclusions as particularly pertinent. Another reason is the length of time over which we observe exclusions. Our data sample starts in 2004, which gives us the long sample period necessary for accurately estimating returns[3]

We start by providing an estimate of the return premium for the "unethical portfolio" of firms excluded by the GPFG. The idea is that the work of the Ethical Council in singling out these particular firms for exclusion is a device for *identifying* stocks likely to be excluded by many institutional investors. Note that for this analysis, we do not assume that other institutional investors rely on the GPFG Ethical Council for their exclusion decisions. The information used by the Ethical Council is mainly public. Other institutional investors can come to the same conclusions as the Ethical Council. We estimate a positive premium (alpha) for the unethical portfolio of 5% in annualized terms.

As part of its mandate, the Ethical Council revisits excluded firms and evaluate whether the conditions for exclusion have changed. Firms that have changed their operations sufficient will no longer be judged as "unethical," These firms are removed from the exclusion list. Similarly to our use of the exclusion decisions by the fund, we use the cases of reversals as an identifying device. What happens to the returns of these firms that are no longer viewed as unethical? We construct a portfolio of companies who have had their exclusions rescinded. Comparing the returns of this portfolio of "newly ethical" stocks before and after their exclusion is revoked, we find that the post-revoke returns fall back immediately to an insignificant excess return (alpha) from the 5.6% (annualized) alpha the same portfolio had before the exclusion was reversed.

Our first two investigations use the ethical exclusions by the oil fund as an identifying device, there is no direct link to actions by the GPFG. We next turn to that possibility. Do actions by the GPFG affect stock market pricing? There are two separate occasions of interest. One, before the exclusion is announced,

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[2]The web page is found at https://www.nbim.no/en/responsible-investment/ethical-exclusions/exclusion-of-companies/.

[3]See (Merton, 1980).

the GPFG divests its stake. The GPFG is a large investor, owning, on average, 1.5% of shares outstanding. This stake is divested over a short period. We ask whether these trades lead to (downwards) price impact. Second, at the time when the exclusion is publicly announced. Do stock prices react?

To investigate causality, we perform two event studies. Given our finding of a negative premium on unethical firms, a causal relationship would be that the actions of the GPFG pushes stock prices down (leading to higher returns going forward). We do not find evidence consistent with such a permanent price decline. While in both cases, there is some evidence of a short-term price fall,[4] at the end of the estimation period there are no significant CAR estimates, which is necessary for there to be a permanent price effect.

We finally look at corporate reactions to their public shaming when excluded by the GPFG. This is at the heart of policy discussions of exclusions. For exclusions to matter they must induce changes to corporate behavior. To investigate changes to corporate behavior we use the GPFG's decisions to revoke their exclusions. We attempt a number of investigations designed to uncover specific causes for a company to make the changes necessary to escape the "unethical" label. Unfortunately, our results are suggestive rather than conclusive. While we show that firms with low ESG scores at the time of exclusion (room for improvement) are more likely to get their exclusion reversed, we fail to conclusively identify the benefits driving firm choices. Our lack of conclusive evidence is likely due to the few cases of reversals, as only 14% of the exclusions have been revoked. Hence, the clear majority of exclusions are *not* revoked.

Even if we cannot provide statistically significant evidence of important determinants of reversals, we still believe it is useful to go into these cases in some detail. To that end, we provide details about the actions taken by corporations that led to the reversal. We also discuss plausible hypotheses, and show our attempts at evaluating them.

Let us summarize our key results and their relation to the research literature. We have two findings about the returns of stocks subject to exclusion.

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[4]Short-term negative announcement effects associated with the Oil Fund's trades are also found in Atta-Darkua (2022), Ayoubi and Enjolras (2020), and Nguyen et al. (2024).

First, we estimate the alpha of the portfolio of "unethical" stocks to be as high as 5% in annual terms. This positive estimate is consistent with the positive estimates of the superior return of "sin" types stocks,[5] but somewhat higher in magnitude, possibly due to the sample of "worst offenders." Therefore, a possible interpretation of our estimate is an upper bound on a return difference linked to ethical exclusions. Second, we add to the literature by showing that estimates of alpha are zero for a portfolio of "newly ethical" stocks, stocks that have had their exclusions reversed.

We next look into causality issues. Do the selloffs and exclusion announcements by the GPFG lead to stock market consequences? Using event studies to evaluate these questions we fail to show any causal evidence of a permanent effect on stock prices. A possible interpretation is that even a fund as large as the GPFG is not able to affect the market on its own.

Concerning corporate consequences of exclusions, our main result is really pointing out the puzzle that so few firms act to reverse exclusions. We showed that the positive alpha associated with being excluded falls to zero once the exclusion is lifted. If we take the stock return to represent the cost of equity capital for the firm, the implication of those estimates is that the firm can reduce the cost of capital by 5% in annual terms. But only 14% of firms change their operations enough to escape the "unethical" label.

The structure of the paper is as follows. Section 2 gives an overview of the issues and sets up the hypotheses we test. Section 3 gives some background on the Norwegian Government Pension Fund Global (GPFG), discusses the data sources and gives some summary statistics. Section 4 provides the results. We finally offer a short conclusion. A separate appendix provides additional supportive analysis.

2   Literature and hypothesis development

We start by giving some institutional and theoretical background before developing the hypotheses to be tested.

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[5]Hong and Kacperczyk (2009) was an early study of sin stocks. See Blitz and Swinkels (2021) for a recent survey of this literature.

2.1 Institutional Investors

Our analysis is concerned with the effect of the decisions of institutional investors. The chief reason to concentrate on this segment is its importance in terms of share of the world portfolio. More and more of the world's equity is held by mutual funds and ETFs.

While the concept of ethical investing has a long history (Liang and Renneboog, 2017), it is in the last fifteen years or so that the ESG viewpoint has moved to the forefront. Mutual funds marketed as "socially responsible" and "sustainable" have seen large inflows to the extent that today, one third of U.S. assets under management are subject to a sustainable investment strategy (SIF, 2020).[6] Regulation is also a driver of the increased ESG focus. The best-known example is the EU's introduction of a taxonomy of sustainable activities, which directly affect institutional investors allocations.

From a large institutional investor's point of view, ESG considerations will affect all its portfolio decisions. The investor's investment universe needs ranking in the ESG dimension, affecting over- and under-weighting decisions. For low ESG-ranked stocks, an institutional investor will react by dialogue or divestment. The most common reaction from institutional investors is dialogue, either directly or through voting at the annual meeting. Institutional investors argue that dialogue is a better way of achieving change. There is also research pointing to the value effect of dialogue.[7] Exclusion is chosen in only a minority of cases and is viewed as a reaction of last resort. Even if it is a last resort, the number of stocks seeing widespread exclusions is increasing.

2.2 Return differences linked to corporate actions

We start our theory discussion with a more general case, equilibrium models where properties of corporations linked to exclusions lead to return differences. This is the literature on return differences between high-quality and

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[6]For the practitioner view of the state of ESG, see the Special report on ESG investing in the 23 July 2022 issue of *The Economist*.

[7]Dimson et al. (2023), Jagannathan et al. (2022), Lewellen and Lewellen (2022), and Slager et al. (2023) provides empirical evidence. Broccardo et al. (2023) provides theoretical arguments.

low-quality ESG firms, often called "greenium." To simplify the discussion, let us label the stocks with high-quality ESG rankings "green" and those with low-quality ESG ratings "brown."[8] There are two theoretical approaches to generating a price (return) difference between brown and green stocks.

The first is a mispricing argument. With this view, current stock prices do not fully reflect the ESG consequences of firms' choices, which could be due to brown stocks' prices not endogenizing the future climate consequences or because the stock market does not appreciate the potential higher future returns for green firms "preparing for the new circular economy." One theoretical approach that generates such results is the classical short-termism argument of e.g. Stein (1989). While the short-termism argument is general, in the context of ESG, a prime source of disagreement concerns future *regulation*. As countries have to adapt to international agreements such as the Paris Climate Accords, firms may be facing intrusive regulation of climate-related aspects of their operations. Disagreement about the degree of intrusion will translate into differences in views on cash flow consequences of regulation.[9]

This first argument is framed in a traditional risk-return framework. The second type of argument moves beyond this by introducing non-pecuniary preferences, where the ESG component of a firm directly affects utility functions. For example, one allows the (dis)utility from owning stock in a company employing child labor to enter the utility function.[10]

The argument of e.g. Pástor et al. (2021) is the presence of a subset of investors that gets utility from green stocks beyond the pure monetary return, green stocks can sustain lower returns.[11] There is, however, a tradeoff. The

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[8]Note that a green/brown categorization is often limited to sustainability criteria. In our discussion, we use it in the more extended sense of ESG criteria.

[9]Empirical evidence consistent with such different views is the differences between Democratic and Republican CEOs in their approach to ESG (Di Giuli and Kostovetsky, 2014).

[10]While the theoretical models typically only consider the preferences of equity buyers, a related argument concerns corporate management. ESG considerations may drive management to deviate from profit-maximizing behavior, either directly from CEO/Management preferences (as in Di Giuli and Kostovetsky (2014)), or indirectly, through large owners' threat of exit affecting managerial decisions – the governance channel (Admati and Pfleiderer, 2009; Gantchev et al., 2022).

[11]Models with similar results include Heinkel et al. (2001), Pedersen et al. (2021) and Zerbib (2022). See also recent surveys by (Gillan et al., 2021, Section 5.2) and Hong and Shore (2023).

higher expected returns for brown firms also mean that the costs of capital for these firms are higher. Thus, when financing new investments, brown firms will face a steeper hurdle rate than green firms. These brown firms will then have an incentive to become greener to access cheaper capital. Firms will be trading off the costs of improving ESG with the benefits of a lower cost of capital. In equilibrium, there will be a set of excluded firms where the costs of improving ESG outweigh the expected gains from a lower cost of capital.

In an article that explicitly models this tradeoff in the context of climate risk, Hong et al. (2023) model the equilibrium return difference between green and brown stocks. By Hong et al.'s argument, the green return premium will be proportional to the costs of ameliorating externalities, which can be sizeable. Their argument implies that the green return premium can be large. Countering this is an argument of, e.g. Luo and Balvers (2017) and Berk and van Binsbergen (2025). Instead of looking at it from the company's point of view, they ask: What will investors do when faced with the opportunity of earning such a large return premium? With a large enough pool of investors who do not care about the causes of exclusion, they will overweight their portfolios with excluded firms, pushing the prices up (and returns down). This is close to an arbitrage argument, relying on stocks being close substitutes.[12] By the Berk and van Binsbergen argument, if there is a green return premium, it will be small in magnitude.

Avramov et al. (2022) points to a moderating effect for the ESG-return relationship: ESG classification uncertainty. Empirical evidence shows that the various ESG ranking providers do not agree on their ESG rankings (Berg et al., 2022b,a). This introduces noise to an ESG-return estimation.

Let us turn to the empirical implications of the above theoretical discussion. These two theoretical models have clear empirical predictions for the return difference between green and brown stocks (the green return premium). Under the pecuniary view, the green return premium will be positive. Under the non-pecuniary view, this premium will be negative. There are less clear predictions on the magnitude of any premium.

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[12]An alternative way to make this argument is to say that share demand is elastic (Ahern, 2014).

A voluminous empirical literature provides estimates of a green return premium, with various assumptions as to what ESG aspect is relevant and variations in asset choice.[13] One strand of this literature investigates the performance of mutual funds with varying degrees of ESG. For example, Renneboog et al. (2008) find that green funds underperform. Liang et al. (2022), who looks at the returns of hedge funds, shows that funds that endorse the United Nations Principles for Responsible Investment (PRI) underperforms other hedge funds by, on average, 2.45% per annum.[14] van der Beck (2021) argues that returns from sustainable investing are strongly driven by price pressure from flows toward sustainable funds.

Our research complements this literature by looking directly at the stocks in question, without the additional layer of the institutional investors. As such, it is closer to a second strand of the research literature, which uses individual stocks, and looks at links between stock returns and company ESG properties. A pioneering study is Hong and Kacperczyk (2009) investigation of so-called "sin stocks," industries such as alcohol, gambling, and tobacco. Studies using ESG rankings to sort into green and brown stocks include El Ghoul et al. (2011), Avramov et al. (2022) and Pástor et al. (2022). These studies generally find negative estimates of the green return premium. Other researchers use more specific aspects of ESG. Chava (2014) investigates the effects of environmental concerns and argues that the stocks excluded by environmental screens have a higher cost of capital and higher expected returns. Similarly, looking at carbon emissions Bolton and Kacperczyk (2021) find that stocks with higher carbon emissions (both in terms of levels and innovations) earn higher returns. Most of the literature uses historical returns in their estimations. An exception is Eskildsen et al. (2024), who uses measures of expected returns to estimate greenium. They find a negative estimate but a smaller magnitude than most empirical estimates.

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[13]Surveys of empirical studies of ESG and performance include Friede et al. (2015), Coqueret (2021), Whelan et al. (2021), and Atz et al. (2023).

[14]There is some discussion as to what degree endorsing the PRI leads to improvements in ESG. Both Kim and Yoon (2020), who looks at active mutual funds, and Brandon et al. (2022), who investigates institutional investors, see signs of PRI used for greenwashing, particularly in the US context.

2.3 Hypothesis development

2.3.1 Are returns for excluded stocks "different"?

Our first hypothesis rely on the exclusions by the oil fund identifying firms that are typically excluded from institutional investor portfolios. If we construct a portfolio of the excluded firms, it represents the returns of "unethical" stocks. A key difference between our study and the "sin"-type of investigations discussed above is that we only look at a small group of excluded firms, not the entire cross-section of stocks in "sinful" industries. While many of the firms excluded by GPFG are within industries typically labeled as sinful they are not exclusively in this narrow group. Our analysis is closer to the Edmans et al. (2022) idea of only divesting from the worst offenders.

To implement the estimation of excess returns linked to exclusion, we construct the return of the portfolio of firms excluded by the oil fund and estimate the abnormal return (alpha) for this portfolio. We will use this alpha as an estimate of the excess return linked to exclusion. While the theory discussion pointed to theoretical arguments for both positive and negative excess return on "brown" firms, the preponderance of evidence is that "brown" portfolios have higher returns. We therefore specify our first hypothesis as:

Hypothesis 1 *The estimated alpha in a performance evaluation of the exclusion portfolio is positive.*

We note that this hypothesis complements earlier studies investigating the returns of the stocks excluded by the GPFG. A recent study[15] by Hoepner and Schopohl (2018) analyzes the exclusions from the GPFG and the Swedish AP-funds. They find no significant return differences relative to the funds' benchmark portfolios, but their time period is shorter. As is well known from Merton (1980), it is necessary with a long time series to estimate average returns with precision.

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[15]Beck and Fidora (2008) and Dewenter et al. (2010) were early studies.

2.3.2 What happens to returns of stocks whose exclusions are rescinded?

To formulate our second hypothesis, we again assume that the exclusion actions of the Ethical Council *identify* a group of companies, in this case, companies whose exclusion is revoked. If the GPFG exclusion is revoked it results from public information showing that the cause for exclusions no longer applies. Other institutional investors observe the same information, and likely also remove the company from their exclusion lists.

If the market reassesses required returns to reflect the change away from an "unethical" classification, we expect there will no longer be a return premium for these companies. To test this hypothesis, we construct a "post-exclusion" portfolio of stocks whose exclusions have been reversed and formulate our second hypothesis:

Hypothesis 2 *The estimated alpha in a performance evaluation of the post-exclusion portfolio is zero.*

2.3.3 Is there a causal effect from the GPFG exclusion actions?

Our first two hypotheses use the ethical evaluation efforts of the Ethical Council as an identification device, they do not require that these effects are *caused* directly by the actions of the GPFG. To investigate causal issues, we do a different analysis, and ask whether there are signs of stock market reactions at the time of the GPFG actions.

There are two separate actions of interest. First, when the Ethical Council decides upon an exclusion, it informs the GPFG, which divests its holdings of that stock. This divestment is done before the Ethical Council publicly announces exclusion. This press release is the second relevant action.

For the GPFG actions to be causal, they must change market beliefs. Here, it must materially update the market's belief that a company is "unethical," prompting selloffs, pushing prices down (and future returns up). What would be the mechanism here? Let us start with the public announcement. It informs the market about the opinions of the GPFG's Ethical Council. The opinion of the Ethical Council is based on public information. Hence, it may not update

the market beliefs much. For example, a company being labeled a coal producer would surprise nobody. However, for more subtle cases, more effort may be required to identify corporate behaviour that is judged as "unethical." For example use of child labor. Given that the Ethical Council has more resources to employ in evaluating public information than many institutional investors, some of their exclusion announcements may therefore be surprising, and lead belief updates.[16]

To evaluate this question we formulate an event study centered on the exclusion announcement by the Ethical Council, and specify the hypothesis:

Hypothesis 3 *The Cumulative Abnormal Return shows a permanent downward shift at the exclusion announcement by the GPFG.*

We also want to evaluate the first action by the GPFG, which was selling of their stake in the company in the period before the announcement of an exclusion. To motivate this investigation we rely on market microstructure literature measuring the trading cost for large institutional investors. It is well understood that trades by large institutional investors have market impact (Keim and Madhavan, 1998). The GPFG is no exception, several microstructure studies have used trades by the GPFG to show that their trades have market impact.[17] Such market impact increases with trade size and is larger the shorter the period used to complete the trade. For the market impact to be permanent, though, it must lead to an update in market beliefs (Bikker et al., 2007). In market microstructure models, order flow is used by traders to update beliefs. A large negative order flow may lead market participants to suspect that this stock is subject to exclusions. On average, the funds holds 1.5% of the outstanding shares in the companies they invest in,[18] a substantial quantity to offload over a short period. As noted earlier, the fund must complete these sles within two months.

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[16]A related possibility is that other institutional investors save on their compliance costs by relying on the GPFG's identification of questionable companies. This is consistent with a number of other Norwegian institutional investors announcing that they will exclude all companies excluded by the GPFG. See the Appendix.

[17]van Kervel and Menkveld (2019), Næs and Ødegaard (2006), and Naes and Skjeltorp (2003) all document that trading by the GPFG involves market impact.

[18]See The Funds Annual Report 2023, pg 23.

To investigate this issue, we rely on the same type of event study used to investigate the announcement return, but instead, look at the CAR evolution in the period *before* the announcement, to formulate our

Hypothesis 4 *The CAR over the 2-month period before the announcement is negative.*

This part of our study is related to several recent event studies of the exclusion announcements by the oil fund (Atta-Darkua, 2022; Ayoubi and Enjolras, 2020; Nguyen et al., 2024). They all estimate negative announcement price effects in a short window around the announcement.[19] Our analysis complements these studies by using the event study to study the period *before* the announcement.

2.3.4 Corporate reactions to exclusion

Our final empirical investigation looks at a firm's reaction to its exclusion by the GPFG. In particular, do companies act to reverse the exclusion?

To develop our hypotheses, consider the decision problem faced by a corporation. An excluded corporation can make changes to operations to remove the cause of exclusion. If, for example, a company is excluded because of its production of cluster munitions, it could close this production line. In making this decision, the company is trading off the cost (loss of profit from the cluster munition production) with potential benefits.[20]

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[19]Atta-Darkua (2022) uses data from 2004–2017, and find an estimate of $CAR(-1,5) = -1.72\%$. Ayoubi and Enjolras (2020) uses data in the period 2006–2018, and estimate $CAR(-1,1) = -0.986\%$. Nguyen et al. (2024) uses data in the period 2004–2021 and estimate $CAR(-1,1) = -0.20\%$. Note that this last study also include announcements of *observations* (cases where the fund announces that they are evaluating the firm for possible future exclusions).

[20]The literature on whether/how firms react to ESG pressure, be it from the public, or its owners, is limited. For example Becht et al. (2023) looks at social media divestment campaigns against oil and gas producers. Gantchev et al. (2022) looks at public E&S (Environmental and Social) news coverage, and show that firms change their E&S policies in response to these E&S incidents. Turning to actions by owners, Heath et al. (2023) look at SRI funds, argue that these do not change firm behaviour, and even coin the term "impact washing" for their behavior. On the other hand, Rohleder et al. (2022) looks at mutual funds' decarbonization trades, and find that divested firms reduce their carbon emissions.

We will use the cases where exclusions are reversed to investigate this. For an exclusion to be reversed, firms must have taken a positive action to remove the cause of exclusion, for example, by shutting down a product line. Can we show that the sample of firms getting the exclusion reversed is consistent with such a tradeoff theory?

In the theoretical models, the benefit boils down to a lower cost of capital for new investment. There are, however, other possible issues the corporations may factor in. For example, the exclusion announcement may lead to consumer boycotts and other reputational cost that hurts corporate cash flow.

The above discussion leads to the following specific hypotheses:

Hypothesis 5 *The easier it is for the firm to take the necessary actions to reverse the exclusion (lower cost), the higher the probability of exclusion being reversed.*

Hypothesis 6 *The higher the benefit of a lower cost of a capital, the higher the probability of exclusion being reversed.*

In testing Hypothesis 6 we will use the company's need for capital as a proxy for the benefit of a low cost of capital.

3   Setting and data

3.1   The oil fund and the fund's exclusions

In this section, we provide some background information on Norway's GPFG, and the fund's evolving ESG and exclusion policies.[21]

The fund's purpose is the management of Norway's considerable resource wealth stemming from oil and gas production in the North Sea. The fund translates the oil and gas in the North Sea into a well-diversified financial portfolio invested outside of Norway. The fund started investing in equity in 1998, with a split into 40% equity and 60% fixed-income securities. The equity

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[21]For more information we refer to NBIM's recent survey of their ESG history (NBIM, 2020). For more academic views of the fund, we refer to Chambers et al. (2012, 2021) and the evaluations of the fund's performance: Ang et al. (2009), Ang et al. (2014), Dahlquist and Ødegaard (2018) and Bauer et al. (2022).

fraction has since increased to its current level of 70%, and several other asset classes, such as real estate and infrastructure investments, have been added. In our discussion, we will concentrate on the equity part of the portfolio. The equity part of the GPFG was valued at 8.9 trillion NOK (1 trillion USD) at year-end 2021. At the time, the fund was invested in 9,338 stocks across 65 countries.

The fund is managed by Norges Bank (the central bank of Norway) on behalf of Norway's Ministry of Finance (which is instructed by the Norwegian Parliament). The fund can thus be viewed as being owned by the people of Norway. The Ministry attempts hands-off management of the fund by limiting instructions to an investment mandate (Ministry of Finance, 2021). For our purposes, the most important part of this mandate is that the Ministry of Finance specifies a *target portfolio*, a weighted average of the developed world stock markets, close to a world portfolio, together with a maximal allowable tracking error (the difference between the return of the target portfolio and the GPFG portfolio). This construction ensures that the fund should be thought of as a "near index fund."[22]

3.1.1 Exclusions

Exclusions of companies from the fund's equity universe will lead to deviations from a well-diversified market portfolio, thus a cost for the GPFG.[23] Exclusions still happen, though, and are the subject of this article. It is helpful to consider political issues to understand the reasons for exclusions.

By adding equities to the GPFG asset mix, the Norwegian Parliament effectively became part-owners of thousands of companies worldwide. As an owner, one is arguably party to the actions of companies one owns, which can quickly become a political issue. The first ethically motivated exclusion took place in 2002 of Singapore Tech, a producer of anti-personnel mines (Ministry

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[22]Using standard classifications of mutual funds, (Dahlquist and Ødegaard, 2018, pg 91) shows that the GPFG's active share is so low that it would be classified as an index fund.

[23]Note that the Ministry of Finance adjusts the target index for the asset allocator, removing the excluded firms from this index. This means these exclusions will not lead to tracking error for the asset allocator, but the exclusions still lead to the GPFG portfolio deviating from an unconstrained portfolio from the point of view of the ultimate owners, the people of Norway.

of Finance, 2002). The first specific mention of Singapore Tech was in a 2001 discussion in the Parliament between human rights organizations and Christian Democratic and Social Democratic political parties. Singapore Tech was the only company mentioned by name, but the broader discussion raised the question of a need to ensure ethical guidelines for the fund's investments.

In the autumn of 2002, the Norwegian government appointed a public committee to propose ethical guidelines for the fund. The committee argued that owning shares or bonds in a company that can be expected to commit gross unethical acts can be considered as complicity in these actions (Graver et al., 2003). In the revised national budget of 2004, policymakers established ethical guidelines aligned with the committee's recommendations.

The Council on Ethics was established in November 2004, marking the starting point of our sample. Its primary role is to advise Norges Bank on observing and excluding companies from the fund. The Ministry of Finance sets the ethical guidelines, including product-based exclusions – such as tobacco, cannabis, certain types of weapons, and coal — and conduct-based exclusions, covering human rights abuses, environmental damage, unacceptable levels of greenhouse gas emissions, corruption, and sale of weapons to specific states. The exclusion threshold is high. Only companies representing an unacceptably high future ethical risk to the fund are excluded.

The Ministry of Finance and the GPFG's management recognize that exercising ownership rights, rather than exclusion, might be a more effective way to mitigate the risk of continued norm violations. As a result, exclusion decisions are informed by discussions with the Fund, which provides insights from its corporate interations (Ministry of Finance, 2021).

To illustrate the process of exclusions, let us use the case of Wal-Mart. Historically, this is the most visible exclusion by the GPFG.[24] Wal-Mart was excluded June 6, 2006, based on violations of human rights, where the list of violations included child labor, gender discrimination, suppression of unionization and hazardous working conditions. At the time, Wal-Mart was already targeted by institutional investors, to the degree that Wal-Mart saw it necessary in January 2005 to place a full-page ad in US newspapers like the *Wall Street*

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[24]Much of this detail is from Ang (2008).

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Journal and *New York Times*, with a letter from their CEO countering criticism of the company. In the period before the exclusion, the ethical council interacted with Wal-Mart. This does not seem to have gone too well, as in the ethical councils recommendation to the Ministry they write[25] "there are no indications that the company is planning to change their conduct." When Wal-Mart was excluded, it made a big splash in the media. The American ambassador to Norway even visited the Norwegian Ministry of Finance to complain.

The Ethical Council publishes its announcement after Norges Bank has agreed. The process provides the fund time to divest before the exclusions is officially announced.[26]

Throughout the 2005-2021 period, 189 companies have been excluded for shorter or longer periods. In Table 1 we break down the official reasons for exclusion. The majority of exclusion justifications are product-based, with the production of coal the largest group.[27] The 189 excluded firms is a minimal number compared to the fund's investment universe, where the fund had almost ten thousand different companies in its portfolio at year-end 2021. Exclusion is thus truly an exceptional reaction for the GPFG.

The excluded stocks are distributed across 32 countries. The largest number is in the US, with 51 exclusions. Following the US are China and India, with 27 and 13 exclusions, respectively.[28]

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[25]Advise from the ethical council to the ministry in a letter of 15 nov 2005. (Our translation.)

[26]The time frame Norges Bank has had to implement their selloff has varied. An early mandate for the ethical council (Etikkrådet (Council of Ethics), 2006, pg. 9) explicitly gave Norges Bank two months to sell their stake before the exclusion was announced. This mention of an explicit time is no longer present in more recent mandates. The mandate is now just specifying that the ethical council will make their announcement after Norges Bank's announcement of the divestiture — which means the fund has ample opportunity to sell its stake before anything is public.

[27]The ethical council also announces that some firms are placed on observation, with a warning they may face future exclusion. We do not include these cases, as they are very few. In the period of our study only 22 firms were on the observation list for shorter or longer periods.

[28]See the Appendix for detailed breakdowns by country, industry, and year, as well as a complete list of companies.

3.1.2 Revoking exclusions

Through continued dialogue with the excluded firms, the Ethical Council can revoke the decision to exclude in the event of a change in operations for the excluded company. Of the 189 excluded firms, 26 have had their exclusion revoked and again been allowed to enter the GPFG portfolio.

It is helpful to go into some detail here. Table 2 provides the detailed reasons for all revoked exclusions. As the table shows, the typical reason for exclusions to be reversed is a stop to the company's involvement in offending activities. For example, the first exclusion was reversed in 2006. It involved the firm *Kerr-McGee Corp*, initially excluded due to participation in oil exploration in Western Sahara. Their exclusion was revoked when the company ended its involvement with this oil field. Another well known example is Wal-Mart, the largest company excluded. At the time of the exclusion in 2006, the ethical council cited a number of outstanding lawsuits on labor issues, mostly involving attempts to limit unionization, as well as issues with child labor in the supply chain. When the exclusion was revoked, all these lawsuits had been settled. Wal-Mart had also instituted certification and audit procedures for its supply chain.

There is only one example of a reversal that does not involve active measures from the company. That is the case of Dongfeng Motor Group. The company was excluded because it supplied military material to Myanmar. Myanmar was under sanctions by the UN Security Council. When these sanctions were lifted in 2014, the exclusion of Dongfeng was revoked.

For the rest, the active measures necessary to lift exclusions are costly for the companies involved. They have to close production lines or sell off subsidiaries. To return to the Wal-Mart example, the necessary certification and audit activities for a company with this wide product range are costly. What is less clear is to what degree these costs are triggered by the company's exclusion by the GPFG. Wal-Mart's certification work against child labor, for example, could also have been motivated by threatened boycotts by consumers.

3.1.3 How standard are the GPFG exclusions?

To close our discussion of the GPFG, let us consider how similar these exclusions are to those of other institutional investors. The majority of exclusions are product based. These products (tobacco, weapons, etc.) are by now standard exclusion reasons among institutional investors.

As for the conduct based exclusions, more judgement is involved. For a number of these, such as Wal-Mart, GPFG was one of the early movers, certainly in terms of publicly announcing their exclusion. GPFG is widely acknowledged as an example in the financial industry due to its transparency, among others, concerning its ESG decisions. Many institutional investors do not publicly announce their exclusions, making it hard to judge how widespread the GPFG exclusions are followed. We know that all larger Norwegian banks and pension funds follow the exclusions announced by the ethical council.[29] Also, most banks have some exclusion policies. For example, while SEB, Danske Bank, BlackRock, and Morgan Stanley HSBQ have similar robust exclusion criteria in writing, their published lists of excluded companies are not identical to those followed by the GPFG.

Hence, we don't know to what degree this exact set of conduct-based exclusions are acted upon outside of Norway. We, however, note that many of the GPFG exclusions have made headlines in newspapers like the *Wall Street Journal* and the *Financial Times*. As clearer evidence of influence, we note that in the step before exclusion, corporate engagement, GPFG is part of a network of institutional investors cooperating to influence firms on environmental and social issues (Dimson et al., 2023). Finally, the criteria used by the GPFG in their exclusions are similar to the criteria published by other large institutional investors and investor groupings.[30]

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[29]In the appendix we give a list of these funds.

[30]See for example lists published by The World Bank's International Finance Corporation and European finance institution's EDFI.

3.2 Data

3.2.1 Exclusions

Our source of data on exclusions is announcements from the Ethical Council and GPFG. From these announcements, we construct a history of companies excluded, with the key dates those of the GPFG news release. For the identified companies, we gather stock market data from Refinitiv, including daily prices and shares outstanding. We also gather exchange rates from Yahoo Finance. Of the 189 excluded companies, we can match 184 stocks with Refinitiv data. In Panel A of Figure 1 we give an overview of the exclusions over time. The number of exclusions has been increasing gradually, except for a major jump in exclusions in 2016. That is the year when the Fund introduces the production or use of coal as a separate product-based cause of exclusion (coal-based exclusions are shown separately in the figure).

3.2.2 Equity data

The basis for our analysis is equity returns. In addition to the returns, we calculate market capitalizations as the product of shares outstanding and closing prices. All returns and market capitalizations are denominated in dollars (USD). Table 3 provides some data descriptives. In addition, Panel B of Figure 1 provide information on the size distribution of the excluded firms. Many are relatively small, half of the firms in the sample have a market capitalization below 6 billion USD, but there are also some very large companies, with the largest equity value being 316 billion USD.

3.2.3 Corporate data

In addition to the equity returns, in the later analysis of revoked exclusions, we use various corporate data, such as ESG scores, accounts, and data on raising equity capital. This data is collected from Eikon Refinitiv. As our measure of the corporate ESG score, we select the `TRESGCS` score, which combines the

self-reported scores with additional information on company controversies.[31] The ESG score is between 0 and 100, increasing in ESG quality. ESG scores are not available for all companies. We have been able to identify the scores of 144 companies. Panel C of the table provides descriptives for the company ESG scores of excluded firms' portfolios.

We also collect the history of annual accounts (income and balance statements) for the firms in the sample. The accounting variables we use in the later analysis are the growth of earnings (EPS) and revenues. We use growth measures as they are easier to compare across countries and accounting regimes. Panel C of Table 3 provides descriptive statistics for these measures.[32]

We further collect data on deals related to corporate capital raising. The data contains details about dates, amounts, and types of capital events. We concentrate on equity capital and remove issues of debt and convertible securities.

4 Results

4.1 Investigating the "unethical" portfolio

This section analyzes Hypothesis 1, the return premium for the "Unethical portfolio." Does the portfolio of excluded firms have exceptional returns? We construct Exclusion Portfolios, letting a stock enter the Exclusion Portfolio at the start of the month after the GPFG has excluded the company. If an exclusion is revoked, the stock leaves the Exclusion Portfolio at the end of the month of the announcement of the revoke decision. We consider two methods to calculate portfolio returns: equally-weighted and value-weighted, where the latter uses market capitalizations as weights. Table 4 gives descriptive statistics for various portfolio returns.

To formally make a return comparison, it is necessary to account for risk

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[31]Refinitiv defines TRESGCS as "Overall company score based on the reported information in the environmental, social and corporate governance pillars (ESG Score) with an ESG Controversies overlay."

[32]For the changes in earnings we remove cases where the initial EPS is close to zero, to avoid extreme values.

differences through a performance estimation in an asset pricing model setting. To measure portfolio performance we rely on the Fama-French international five-factor model (Fama and French, 2017):[33]

$$
\begin{aligned}
(r_{p,t} - r_{f,t}) \;=\; & \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t \\
& + b^{RMW}RMW_t + b^{CMA}CMA_t + \varepsilon_{p,t},
\end{aligned}
$$

where the factors are international versions of the corresponding US factors (Fama and French, 2015).[34] Column (1) in Panel A of Table 5 reports estimates of the global five-factor Fama-French model. For our purposes, the key result is the alpha estimate, which is a positive, statistically significant alpha, in annualized terms 5.2%. Thus, the premium for this portfolio of "ethically challenged" firms is more than 5%.

To show robustness, we also report several alternative formulations, including one-factor (CAPM), three- and four-factor specifications. The finding of a positive alpha is confirmed using the alternative asset pricing specifications in models (2)–(4) in the table, where the alpha estimates vary between 4.4% and 6% in annual terms.

The equally-weighted portfolio above measures the expected return difference without regard to company size. Another approach is to think in terms of economic importance. To measure this, we consider the value-weighted version of Exclusion Portfolio, where the return of each excluded stock is weighted by market capitalization. Panel B of Table 5 reports performance regressions using this portfolio. The alpha estimates are higher for the value-weighted portfolio than the equally-weighted one. In annual terms, the alpha in the five-factor model is almost 7%.

The tables also show estimates of the factor loadings. We note that the estimate of the market beta is below 1, for both the equally-weighted and value-weighted exclusion portfolios. The exclusion portfolios thus have lower systematic risk than the market. One cause for this is the many coal-related

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[33]See Dahlquist et al. (2015) and Dahlquist and Ødegaard (2018) for a discussion of relevant performance measurement for a fund like GPFG.

[34]The factors are downloaded from Ken French's homepage. We are grateful to him for making the data available to the research community.

companies in the exclusion portfolio. Many of these companies are utilities with corresponding low betas.

The fund excludes companies for different reasons, with the main distinction being conduct and product-based exclusions. In Table 6 we report regression results for the two subsamples, using both equally and value-weighted portfolios. In either case, we find that the alphas of the conduct based exclusion portfolios are double those of the alphas for the product based exclusion portfolios.[35]

The results can be summarized as showing that portfolios of firms excluded by the GPFG have a significant positive alpha in the region of 5% in annual terms. The estimate of the return to this portfolio of unethical (brown) firms is positive, in line with most of the literature, lending support to the non-pecuniary type of model. It is larger in magnitude than most estimates in the literature, possibly reflecting the sample of the "worst offenders." [36]

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[35]We speculate that this result can be related to the Berk and van Binsbergen (2025) argument of trading against exclusions. Product based exclusions, such as those based on tobacco and weapons, are also those that is are labelled "sinful" in this literature. The original "sin" results are so well known that the financial industry has created numerous mutual funds and ETFs investing in "sin stocks." Conduct based exclusions are less likely to be covered by such funds.

[36]We have performed a larger number of additional robustness tests, which we will not show explicitly, just mention the key findings. The analyses are provided in a separate Internet Appendix. First, we have looked at the timing of when stocks enter or exit the exclusion portfolio. In addition to analysis delaying the entry into the exclusion portfolio, we have also done the estimations including the month of the exclusion, without seeing any major changes in the alpha estimates. We also look at keeping stocks in the exclusion portfolio after their exclusion is revoked, without a major effect on portfolio performance. We also construct a portfolio of the excluded firms two years *before* the oil funds exclusion. While not significant, the point estimates of alpha are of a similar magnitude to the post-exclusion portfolio. Further, we split the estimation period into two subperiods, 2005–2015 and 2016-2021. We find that in the later period, the alpha estimates are still positive but lower and not always significant. We however note that this period only contains six years, which means the sample period is relatively short. We have also done the analysis separately on just the US companies in the portfolio. Here we also find a significantly positive alpha. We also look at whether the group of coal companies has a different effect on returns. Constructing an exclusion portfolio without the coal companies we find similar alpha estimates to the returns in the paper. We also construct a portfolio of just coal companies. This is again similar to the whole portfolio. Finally, in the value-weighted portfolio there is one company, Wal-Mart, which has a very large weight in the early part of the period. We have therefore redone the analysis removing Wal-Mart from the value-weighted portfolio. This does not change our inferences.

4.2 Investigating the "newly ethical" portfolio

We next investigate what happens to the return of firms that get off the GPFG exclusion list. We construct a "Revoked Portfolio" containing previously excluded stocks. We let stocks enter the Revoked Portfolio at the end of the calendar month in which their exclusion is revoked.

Again, we conducted a regression analysis to make a formal statement about performance. The regression results in Panel A of Table 7 shows that the Revoked Portfolio does not have significant alpha. Some point estimates are even negative. The relevant comparison is the performance of these stocks while they were excluded. We, therefore, consider the constituent stocks in the Revoked Portfolio before their exclusion is revoked. (This sample is a subset of the Exclusion Portfolio in the previous subsection.)

In Panel B of Table 7 we show the results. Here, we find that the portfolio of these stocks had a significantly positive alpha of 5.6% in annualized terms. Firms that contributed to superior performance of the Exclusion Portfolio thus revert to a "normal" portfolio alpha of zero once they get off the exclusion list.

4.3 Do stock prices react to actions by the GPFG?

We now turn to Hypotheses 3 and 4, concerning stock price reactions around the time of the GPFG exclusion actions. These hypotheses both test for a permanent fall in stock prices coinciding with the exclusion actions by the GPFG. We will perform two event studies. Some care is necessary in constructing these event studies, as these events happenen in a diverse set of equity markets. we translate all returns to USD returns for internal consistency, and evaluate returns relative to an international asset pricing model. We choose the international CAPM as an asset pricing model.[37]

$$E[r_{i,t}] = r_{f,t} + \beta_i(E[r_{m,t}] - r_{f,t}),$$

where $r_{i,t}$ is the dollar return of the stock, $r_{f,t}$ the US risk-free rate, and $r_{m,t}$ is the return on a world market index. We use Ken French's index of global

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[37]We have considered a number of alternative specifications. One is to use an (international) market model. Another estimation looks at just US listed firms, using an index for the US market. These specifications are provided in the Appendix.

developed markets as market index. As risk-free rate we use the Ken French estimate. The method of calculation is standard (MacKinlay, 1997). To calculate a Cumulative Abnormal Return, one picks a starting point m days before the exclusion announcement, and ends n days after the announcement ($CAR(-m, n)$). $\widehat{\beta}_i$ is estimated using a three-year pre-period of daily (dollar) returns.[38] This beta is then used in the calculation of abnormal returns

$$AR_{i,t} = r_{i,t} - \left(r_{f,t} + \widehat{\beta}_i (r_{m,t} - r_{f,t}) \right)$$

which are aggregated into cumulative abnormal returns: $CAR_{i,t} = \sum_{j=-m}^{t} AR_{i,j}$. The event date (day 0) is the announcement of the exclusion. $CAR(-m, t)$ is calculated by aggregating over stocks i.

The first event study starts one day before the exclusion announcement by the GPFG and ends five trading days later ($CAR(-1, 5)$). (Roughly one week after the announcement.) The second event study start on trading day -40 (roughly two calendar months) before the exclusion announcement. The evolution of these CARs is presented in Figure 2, Panels A and B show the CAR evolution. To show the statistical significance of the estimates, Panels C and D show corresponding estimates of the MacKinlay (1997) θ_1 statistic.

Let us first consider the $CAR(-1, 5)$ case. We find a significantly negative $CAR(-1, 0)$, but for this to reflect a permanent fall in price we need the CAR at the end of the week to be significantly negative, which we don't find.

Let us next consider the two-month case. The point estimates of CAR for the first week are negative. However only one of these ($CAR(-40, -39)$) is significantly so. After this, prices start drifting upward, as the increasing CAR shows. At the two-month point ($CAR(-40, -1)$ the CAR estimate is positive. The results are clearly a rejection of the hypothesis of a negative CAR.

These figures contradict any notion that there is a permanent drop in stock prices linked to the GFPG exclusion.

The event study in Panel B is consistent with the evidence in the extant event studies (Atta-Darkua, 2022; Ayoubi and Enjolras, 2020; Nguyen et al., 2024), which all start at date -1, and find significantly negative short term

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[38]We have investigated the robustness of this choice by replicating the analysis using a two-year period. The results are provided in the Appendix.

estimates of CAR. Our interpretation is somewhat different, however. We want to test for a permanent price effect, and therefore, concentrate on the fact that after five days, the CAR is not significant.

Where we add to the extant studies is by looking at the two-month period prior to the exclusion announcement.[39]

4.4 Corporate reactions to exclusions

Our final two hypotheses are concerned with corporate reactions to exclusions. We need to employ several econometric methods to analyze these hypotheses. Our analysis will be partial, there is no single framework where all the proposed mechanisms can be tested. We instead look at this hypothesis by hypothesis.

4.4.1 The company cost of improving ESG

We start by investigating Hypothesis 5, which states that the probability of revoking the exclusion is linked to the cost of the necessary actions. For this particular hypothesis, we model it in the econometric context of modelling the *time period* a firm stays excluded. We turn to the econometric framework of duration, or survival, analysis. This style of analysis treats the *time* until an event as the object of study. In the present context, we are interested in the time until a given stock drops out of the exclusion sample. Survival analysis will estimate the likelihood of exit, adjusting for the sample being right-truncated. The right truncation is due to the large number of firms still excluded at the end of the sample, whose exit time is still in the future.

In survival analysis, we work with survival curves (roughly: the probability of survival till a given time), or hazard curves (roughly: the probability of exit

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[39]We have done a number of robustness exercises on these results, which are detailed in the Internet appendix. One possible objection to our results is the use of a world market portfolio. Event studies are typically done relative to a local market index. To show the robustness to this we do the estimation for only the exclusions of the US companies, where we use a US market portfolio. While there are some differences in terms of levels, they give the same conclusions. We have also investigated the sensitivity of the results to the length of time in the estimation of beta, where we instead of a three–year pre-period use a two–year period.

at a given time). Figure 3 illustrates estimated survival and instantaneous hazard curves for the sample of excluded firms. One observation to make, which is easiest to observe using the estimated hazard curve: the likelihood of exit increases with time in the sample.

To proxy for the ease with which firms can improve their ESG, we consider the corporations' ESG scores. While the oil funds exclusions are for specific ethical reasons, these are typically reasons that will also lead to a bad ESG score. We, therefore, look for a relationship between a firm's ESG score and the likelihood that the firm will have its exclusion revoked.

We estimate this by asking whether the level of the ESG score at the time of exclusion affects the survival time. This is a classical survival analysis, where the analysis test whether survival times are affected by initial conditions, and is modelled by investigating determinants of a Cox proportional hazard function.[40] We use the firm's combined ESG Score as determinant. We also control for firm size and the source of exclusion (product or conduct-based), as well as control for annual fixed effects. Differentiating between product and conduct-based firms is relevant because it affects the ease with which firms can change their ESG score. A firm will find it hard to do much about a product-based exclusion, such as coal production, without becoming a very different firm. A conduct-based exclusion, however, such as employing child labour, is easier to take action on.

Table 8 shows the results. We find that the ESG score has a significantly negative coefficient. The interpretation of a negative coefficient is that increasing the explanatory variable in question *decreases* the hazard rate, i.e., it increases the survival time. Thus, a low ESG score leads to a *higher* probability of having the exclusion revoked. A possible interpretation is that it will be less costly for firms to improve on a low ESG basis. Alternatively, the firm has much room for improvement.

To supplement the survival regressions, we provide some additional descriptives. Figure 4 plots the annual average ESG score for firms still excluded by 2021 and for firms which have had their exclusion revoked. The average firm that later got off the exclusion list had a lower ESG rating, particularly

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[40]In the appendix, we provide evidence using alternative functional assumptions.

in the early part of the period. A word of warning, however. The figure uses ex-post information (whether the stock has dropped off the excluded list) in the grouping. It should, therefore, only be viewed as supportive of the econometric analysis, which does not suffer from an ex-post bias.

4.4.2 The cost of corporate capital channel

We now turn to Hypothesis 6, the cost of capital channel. We look at the cost-of-capital issue in an indirect way by looking at the times cost of capital matters most to a corporation, namely the times when the corporation needs to interact with the capital markets to raise new capital. We look at measures of the need for new capital and ask: Are firms that need new capital more likely to get their exclusion reversed?

Growth-driven need for capital One way to assess capital needs is to look at corporate growth. Growing companies are more likely to need new capital. High revenue growth will likely lead to investment needs as the firm's scope increases. On the other hand, the effects of increases in earnings are less clear. While increases in earnings may indicate investment needs, high earnings also imply a higher ability to finance investments using retained earnings.

We look at whether revenue or earnings growth affects the likelihood that a firm's exclusion is revoked. To estimate this, we can not use the survival framework of the previous section, as accounts change every year, leading to time-varying covariates. Instead, we use a method better known in finance, binary choice models. Since accounts are annual, each year, we look at the binary event that a firm either stays on the excluded list or not. We stack these annual choices into a probit formulation, using the two mentioned accounting variables: earnings growth and revenue growth. We include firm size (market cap) and exclusion cause (conduct/product) as control variables in the estimations.

The results in Panel A of Table 9 show that the coefficient on revenue growth is positive, albeit only significant at the 10% level. The implication is that currently, high-revenue-growth firms are more likely to get their exclusion revoked. We note that here too we find that conduct-based exclusions are more

likely to be revoked.

This can be argued for through the cost of capital. High revenue growth is associated with a need for investments and hence new capital. Firms with high capital needs would want to get off the exclusion list, if possible. If these firms have scope for improving ESG they will want to do it.

Actually Raising Equity Capital   In the previous estimation, we looked at conditions that would lead to a need for raising capital. An alternative investigation of Hypothesis 6 is to use data on the actual raising of capital. We have to that end collected data on corporate equity deals, which allows us to identify the firms that raise equity capital.

As a simple investigation, we count the firms issuing equity (without any accounting for the the capital issue's relative size). Panel B of Table 9 summarizes the results. Of the 151 companies that were still excluded at the end of the sample, 37% had raised capital at least once during the period they had been excluded. Of the 21 firms that got off the exclusion list without delisting, 11, or 57%, have raised equity capital in the shorter time after the exclusion was revoked.

The lack of clear statistical significance in our estimates is behind our characterization of the results on the cost of capital channel as suggestive rather than conclusive.

5   Conclusion

We used the exclusions by the Norwegian Government Pension Fund Global, the world's largest SWF, to identify a set of firms typically excluded by institutional investors. We use these firms to look at four separate issues.

First, we use the returns of excluded firms to estimate the return differential of excluded vs non-excluded firms. Applying a battery of performance tests to portfolios of excluded firms, we establish that these portfolios have a considerable excess return (alpha) relative to the predictions of standard asset pricing models. The portfolios of these stocks have statistically significant alpha esti-

mates as high as 5% in annual terms. When we compare different reasons for exclusion, the stocks excluded for reasons of conduct have higher alphas than product-based exclusions. The returns of small firms do not drive these results, as value-weighted versions of the portfolios have even higher alpha estimates than the equally weighted ones.

Second, we look at what happens to alpha when firms' exclusions are revoked. We compare the alpha of a portfolio of revoked firms before (while they are still excluded) and after the exclusion is revoked. We find that the estimated alpha of this portfolio falls from significant 5.6% (in annual terms) to close to zero and insignificant.

Third, we look at the stock price reaction to exclusions by the GPFG using event studies to look at whether there is a causal link from the GPFG actions. Earlier research has found a negative announcement effect around the GPFG's exclusions. While we confirm a short-term negative effect on the day of the announcement, we temper this by observing that this reverses. After a week, there is no significant effect (CAR). We also use an event study to look at the period when the GPFG divests its stake. Again, we find no sign of a permanent negative CAR.

Finally, we investigate company reactions to exclusions. We consider the firms that have acted to reverse their exclusions. First, only 14% of the firms in the sample had their exclusion revoked, so it does not seem like a strong incentive. On the other hand, many of these firms may not be able to change enough to reverse the exclusion. Coal-related firms, for example, have little opportunity, at least in the short term, to move into other lines of business, consistent with the observation that most exclusions revoked are linked to conduct based criteria.

We ask why those few firms pay the cost necessary to reverse the GPFG exclusion. We identified several hypotheses linked to the cost of changing ESG, the marginal benefit of a lower cost of capital. Our results show that the ESG rating at the time of exclusion matters. Lower-ranked ESG firms seem to find it easier to get the exclusion revoked. We also investigated the cost of capital channel by asking whether firms that got their exclusion revoked were more likely to need capital. Here, we investigate corporate growth-motivated capital

needs, and actual raising of equity capital. While the results are consistent with our explanations, they are not significant, probably due to the low number of observations.

What are the implications of the above results? How can we reconcile the large magnitude of the alpha of this sample of "unethical firms" with the lack of price reaction at the announcement of the exclusions? A plausible explanation is that the exclusion by the GPFG in itself contains little additional information. The basis for their exclusions are public sources about the company's activities, something which is also available to everybody else. The information in the exclusion announcement is about the GPFG's *evaluation* of this public information. The event study results indicated that even the selling off by an owner owning 1.5% of the company's stock before announcing their exclusion does little to shift the market evaluation of prices.

This perspective is also relevant for our result that the alpha falls to zero when exclusions are revoked. The ethical council has used public information about companies to determine that the cause of exclusion is no longer there. This is a confirmation that the corporations have changed. The ESG-linked aspect of the firms operations has changed, and an ESG-linked premium may no longer be there, which is what the fall in alpha post-exclusion imply.

Our results have implications for the political debate on exclusions, which often centers on using exclusions to influence the cost of capital and achieve policy goals. In most cases, announced exclusions have minimal impact on stock prices and, consequently, on firms' incentives. However, in some instances, exclusions can drive corporate change—mainly when the cost to the firm is low or when the firm urgently needs capital. For these firms, exiting the exclusion list can be beneficial, as reflected in a reduced cost of capital post-exclusion. From a policy perspective, the key takeaway is that broad exclusions are unlikely to drive significant corporate change. More targeted exclusions, however, may be more effective. To change broad industries, more targeted regulation may be necessary (Pedersen, 2024).

We view the corporate finance dimension as the most promising research direction following our research. What firms react to conduct-related exclusions? How firms react to ESG-related shocks is also a topic of explicit interest

to regulators, for example, in the final design of the EU reporting standards
and taxonomy.

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Figure 1: The number of excluded shares over time and the size distribution of companies excluded

The figure in panel A shows the number of stock returns in the exclusion portfolios, broken down by product-based and conduct-based. The product-based category is further divided into coal-based and other product-based exclusions. Panel B illustrates the distribution of equity market capitalization (in billions USD) for the excluded firms. They are shown separately for firms with market cap below 10 billion USD (left-hand figure) and above 10 billion USD (right-hand figure). Monthly estimates are calculated for all excluded firms. The figure only uses data for the period each firm is excluded. Values in US dollar terms. Data from the Ethical council, GPFG and Refinitiv.

Panel A: The number of excluded shares over time
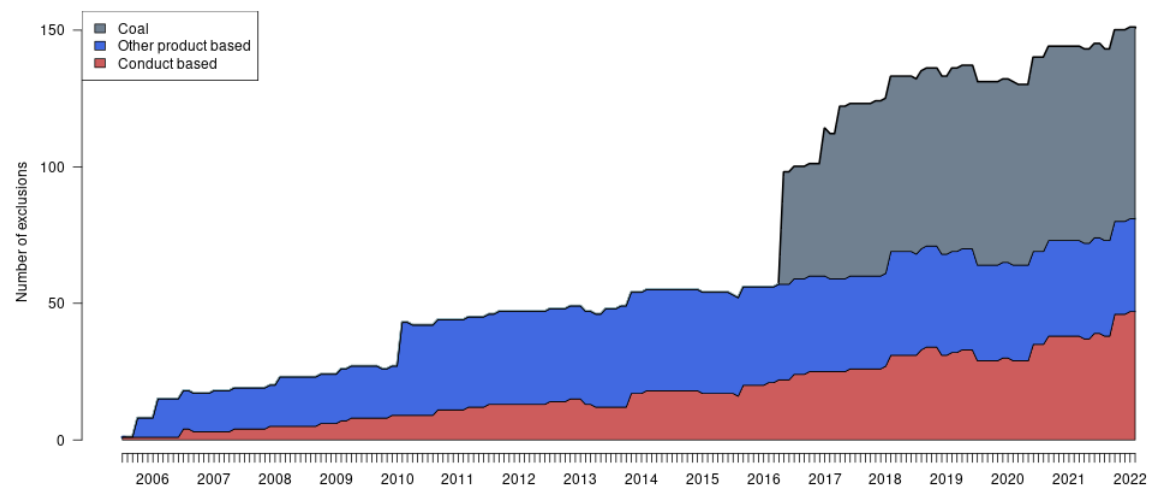
Panel B: Distribution of firm size (Market capitalization)

B.1: Mkt Cap $\leq$ 10 billion USD   **B.2**: Mkt Cap > 10 billion USD
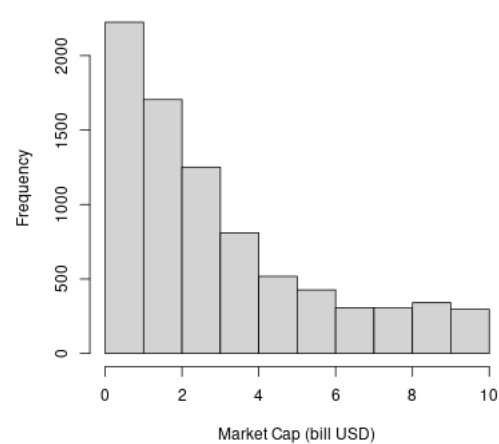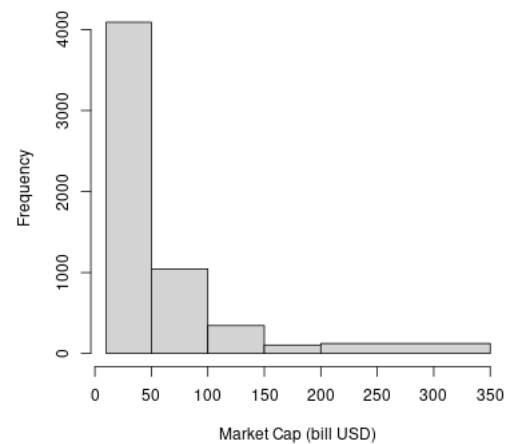
Figure 2: Event Study of Exclusion Announcement

The figures show the results of event studies of the oil fund's exclusions announcements. The figures in Panels A and B plots averages across firms of cumulative abnormal returns (CAR). The figures in Panels C and D show the statistical significance of the estimates using the MacKinlay (1997) θ_1 statistic. The horizontal line indicates the 5% significance level under a normal distribution. All returns are calculated from the perspective of a US investor, denominated in USD. Abnormal returns AR are calculated as $AR_{i,t} = r_{i,t} - \left(r_{f,t} + \widehat{\beta}_i(r_{m,t} - r_{f,t}) \right)$, where $r_{i,t}$ is the dollar return of the stock, $r_{f,t}$ the US risk-free rate, and $r_{m,t}$ is the return on a market index. The abnormal return (AR) is calculated using a world market index, Ken French's index of global developed markets. As risk-free rate we use the Ken French estimate. The parameter $\widehat{\beta}_i$ is estimated using a three-year pre-period using daily returns. The CAR is aggregated from abnormal returns as $CAR_{i,t} = \sum_{j=-m}^{t} AR_{i,j}$ and then aggregated across stocks. The event date is the announcement of the exclusion. In panels A and C we start estimation one day before the event date and end it five days after. In panels B and D we start estimation two calendar months before the announcement and end it five days after. See the Internet Appendix for details. CAR in percent.

Panel A: Event study (-1,5)
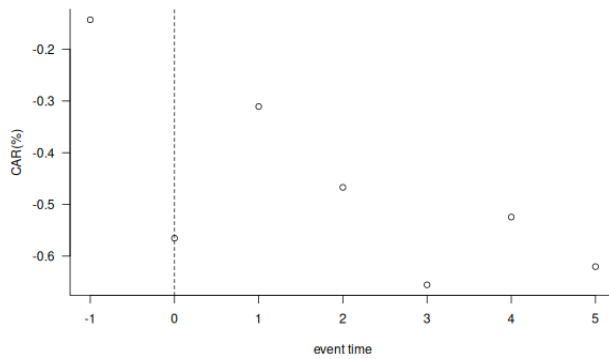
Panel B: Event study (-40,5)
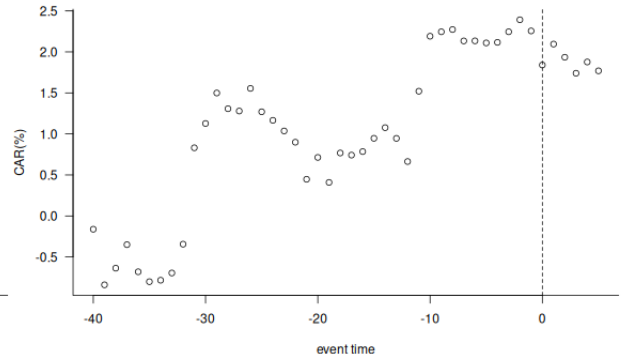
Panel C: Statistical analysis (-1,5)
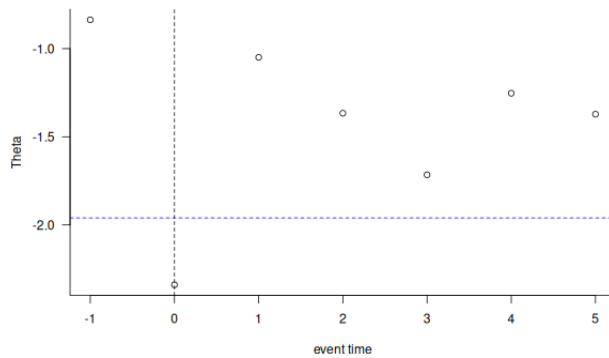
Panel D: Statistical analysis (-40,5)
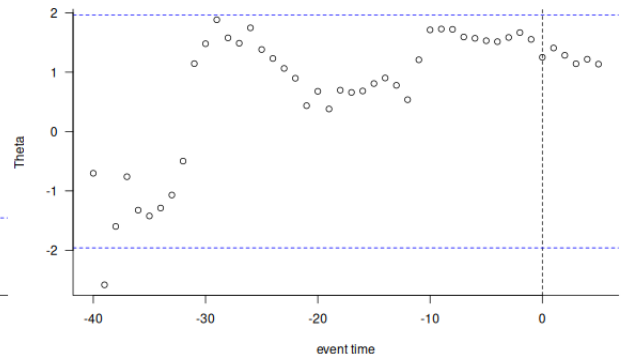
Figure 3: Survival and Hazard curves for the Exclusion Portfolio

Panel A: Survival curve, adjusting for right-truncation. The broken lines indicate one standard deviation. Panel B: Instantaneous hazard curve (smoothed estimate). Both are estimated using the sample of excluded firms, where exit is either a delisting or the exclusion is revoked. Survival curve estimated using R library `survival`, Instantaneous hazard curve estimated the R library `muhaz`. Data sources: Ethical Council, GPFG, and Refinitiv.

Panel A. Survival curve
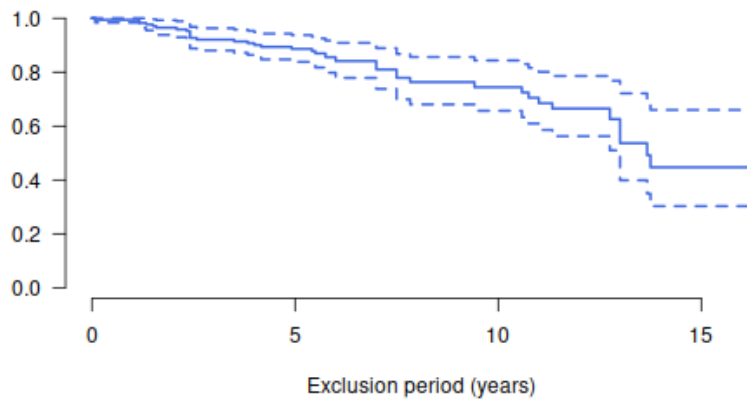
Panel B. Instantaneous hazard curve (smoothed)
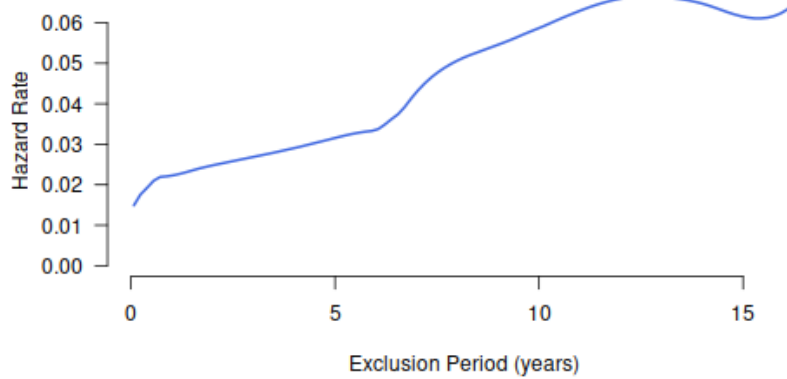
Figure 4: ESG scores of Excluded Firms, Revoked and Non-Revoked.

The figure plots the crossectional average ESG score (Refinitiv TRESGCS). The averages are done for all shares (blue circles), shares still excluded by the end of the period (brown crosses), and shares no longer excluded, either by delisting or having the exclusion revoked (green triangles). Data sources: Ethical Council, GPFG, and Refinitiv.
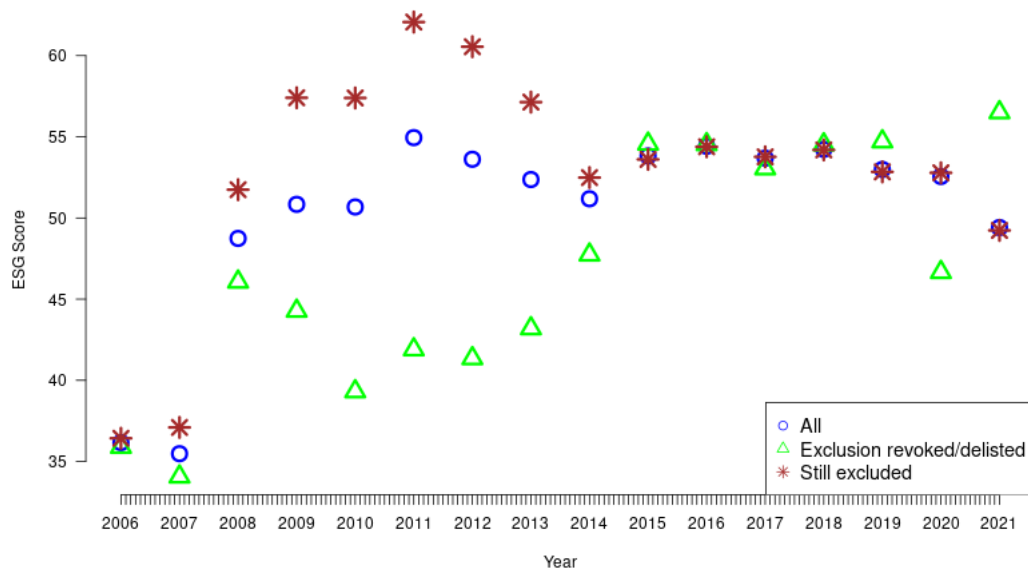
Table 1: Reasons for exclusions

Overview of the reasons for exclusions in the period 2005–2021. The reasons are grouped into two major causes, conduct and product based. Data from the Ethical Council and GPFG.

Exclusion reasons	Events
Conduct	67
Environmental damage	28
Individuals' rights in war or conflict	12
Violation of human rights	12
Environmental damage / Violation of human rights	4
Violation of ethical norms	5
Greenhouse gas emissions	4
Gross corruption	2
Product	122
Coal or coal-based energy	75
Weapons	26
Tobacco	21

Table 2: Overview of reasons for exclusions to get revoked

The tables summarize the causes for exclusions to be revoked. Panel A looks at the more common causes, and lists the companies to which that cause applies. Panel B gives the reasons for the remaining companies, with details for each company. Data source: Ethical Council and GPFG.

Panel A - Reasons for exclusions to be revoked. Grouped by reason for exclusion

- *Cluster munitions production* was one of the first reasons for exclusion. The following companies had their exclusion revoked when they no longer were involved in such production: General Dynamics Corp, Hanwha Corp, L3 Communications Holdings, Raytheon Co, and Thales SA.

- *Nuclear munitions production* was also one of the first criteria that lead to exclusion. The following companies had their exclusion revoked when they no longer were involved in such production: AECOM, BAE systems, Finmeccanica SPA. Serco Group PLC, and United Technologies Corp.

- *Coal production*. Companies where more than 30% of revenues are from Coal-related activities were excluded starting in 2016. The following companies had their exclusion revoked when their coal-related activities went below 30%: Anglo American Plc, Drax Group Plc, and Empire District Electric Company.

- *Western Sahara*. Companies that were involved in activities in the disputed area of Western Sahara were excluded. The following companies had their exclusion revoked when they were no longer involved in Western Sahara: Cairn Energy Plc, Kosmos Energy Ltd, FMC Corp, Kerr-McGee Corp, Nutrien Ltd, and San Leon Energy Plc.

- *Tobacco*. The tobacco criterian was introduced in 2010, where companies involved in production of tobacco were excluded. The following companies which no longer produce tobacco have had their exclusions revoked: Grupo Carso SAB de CV, and Mativ Inc.

Table 2: (Continued)

Panel B. Reasons for exclusions to be revoked. Individual companies

- *Africa Israel Investments Ltd* was in 2010 excluded for involvement in construction projects in the occupied territories in the West Bank. The exclusion was revoked in 2020 when this activity ceased.

- *Atal SA* is a Polish company that was excluded in 2018 due to employment of North Korean labourers. Poland in 2019 confirmed all North Korean labourers had left the country, and the company exclusion was revoked in 2021.

- *Dongfeng Motor Group Co. Ltd* is a Hong Kong company that was excluded for supplying military materiel to Myanmar. The Myanmar criterion was reversed after the Security Council lifted sanctions on the country, and Dongfel Motor Group's exclusion was revoked in 2014.

- *DRD Gold Ltd.*, a US mining company, was excluded in 2009 due to mining in Papua New Guinea and Fiji. These mines were sold by the company, and the exclusion was revoked in 2009.

- *IJM Corp* was excluded due to the risk of the company being responsible for severe environmental damage through its conversion of tropical forest into oil palm plantations. In 2021, IJM Corp divested its stake in its plantations business. The exclusion of IJM was revoked in 2021.

- *Precious Shipping Plc* and *Thoresen Thai Agencies Plc* were both excluded due to their participation in beaching, sending old ships to be broken down on beaches in Bangladesh. For both companies this activity was stopped, and their exclusions were revoked.

- *Rio Tinto Plc* was excluded in 2008 due to serious environmental damage caused by operations at the Grasberg mine in Indonesia. In 2018, Rio Tinto sold all its interests in the mine. The exclusion was therefore reversed in 2019.

- *Singapore Technologies Engineering Ltd.* was the first exclusion from the GPGF in 2002, on grounds of production of anti-personnel landmines. The exclusion was revoked in 2023 when this production ceased.

- *Texwinca Holdings Co* is a Chinese company that produces textiles and garments. In 2018 the Council on Ethics recommended the exclusion of the company on the grounds of systematic labour rights abuses at two garment factories wholly owned by the company Megawell, in which Texwinca held 50 percent of the shares. Megawell was wound up in 2019, and its two garment factories closed down. The exclusion was then reversed.

- *Wal-Mart Stores Inc* was excluded in 2006. Among the reasons for exclusion was labour relations, where Wal-Mart had outstanding ligation with a number of employees, and use of child labour in the supply chain. The exclusion was revoked in 2019. Among the reasons for this was the settlement of the lawsuits with employees, and Wal-Mart's work on certifying their supply chain.

Table 3: Equity and corporate data. Descriptives

Panel A provides descriptive statistics for the data series. Returns are monthly percentages (not annualized). Market Cap are monthly figures, calculated as month-end price times shares outstanding. Returns and values in US dollar terms. Panel B provides summary descriptives for the ESG scores for the sample of excluded stocks. Panel C provides descriptives for the measures of earnings and revenue growth for the sample of excluded stocks. For all these descriptives we find the current estimates each month, and average over these monthly estimates using only periods in which the firm is excluded. This corresponds to a weighted average where weights are increasing in the time each firm is excluded. Data sources: Ethical Council, GPFG and Refinitiv.

Panel A: Stock market data – Descriptives

	min	mean	med	max
Monthly Return (percent)	-72.8	1.1	0.6	166.2
Market Cap (bill USD)	0.0	20.4	6.0	315.8

Panel B. ESG Scores – Descriptives

	min	mean	median	max
TRESGCS	4.8	51.4	50.4	89.3

Panel C: Corporate data – Descriptives

	Min	Q1	Median	Mean	Q3	Max
EPS change	-19.3	-0.25	0.06	0.96	0.42	359.3
Revenue change	-0.99	-0.02	0.04	0.08	0.10	11.3

Table 4: Descriptives, exclusion portfolio returns

Describing portfolio returns for the various exclusion portfolios. All returns in USD. Returns and Excess returns in monthly percentage returns. Sharpe Ratio is $\text{avg}(r_i - r_f)/\text{sd}(r_i - r_f)$. The first column in each table describes the market portfolio, where the market is proxied by the Global market portfolio of Ken French. The other portfolios are exclusion portfolios. All – all exclusions. Conduct, Product, Coal, and US exclusions – subsets of exclusions.

Panel A: Equally-weighted exclusion portfolio

	Market	All	Conduct	Product	Coal	US
			EW Exclusion Portfolios			
Average return (%)	0.79	1.17	1.44	1.00	1.02	1.24
Std.dev	0.79	5.21	7.73	4.92	4.33	5.06
Average excess return (%)	0.01	1.07	1.35	0.91	0.94	1.14
Sharpe Ratio	0.15	0.21	0.17	0.18	0.22	0.23
n	199	199	199	196	69	199

Panel B: Value-weighted exclusion portfolio

	Market	All	Conduct	Product	Coal	US
			VW Exclusion Portfolios			
Average return(%)	0.79	1.37	1.67	1.22	1.27	1.37
Std.dev	0.79	4.23	5.64	4.77	3.47	4.11
Average excess return (%)	0.01	1.28	1.58	1.13	1.19	1.28
Sharpe Ratio	0.15	0.30	0.28	0.24	0.34	0.31
n	199	199	199	196	69	199

Table 5: Estimates of alpha for exclusion portfolios

Column (1) reports estimates of the regression $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t + b^{RMW}RMW_t + b^{CMA}CMA_t + \varepsilon_{p,t}$, where r_{pt} is the return of the exclusion portfolio, r_{mt} the return of a world market portfolio, r_{ft} the risk-free rate, SMB, HML, RMW, CMA and WML the Ken French factors. Column (2) estimates the one-factor CAPM $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + \varepsilon_{p,t}$, (3) estimates of the regression three-factor regression $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t + \varepsilon_{p,t}$, and (4) the four-factor regression $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t + b^{WML}WML_t + \varepsilon_{p,t}$. The Exclusion Portfolios constructed from shares excluded from the GPFG. Data is from 2005 to 2021. The international asset pricing returns and factors are from Ken French's data page. Standard errors are Newey-West adjusted. Annualized alphas are calculated from monthly α_i as Annual $\alpha_i = (1 + \alpha_i)^{12} - 1$. Significance levels are indicated as: * $p < 10\%$, ** $p < 5\%$, *** $p < 1\%$. All individual returns are denominated in USD. Data sources: Ethical Council, GPFG, Ken French, and Refinitiv.

Panel A: Equally-weighted exclusion portfolio

	(1)	(2)	(3)	(4)
Alpha	0.004***	0.004**	0.004***	0.005***
	(0.002)	(0.002)	(0.002)	(0.002)
Rm-Rf	0.961***	1.021***	0.993***	0.962***
	(0.040)	(0.049)	(0.042)	(0.049)
SMB	0.173		0.178	0.177
	(0.115)		(0.115)	(0.123)
HML	0.467***		0.310***	0.224***
	(0.115)		(0.074)	(0.089)
RMW	0.155			
	(0.156)			
CMA	−0.257			
	(0.233)			
WML				−0.138***
				(0.076)
Annualized Alphas(percent)	5.170	4.420	5.220	5.980
Adj. R^2	0.809	0.788	0.808	0.813
Num. obs.	199	199	199	199

Panel B: Value-weighted exclusion portfolio

	(1)	(2)	(3)	(4)
Alpha	0.006***	0.007***	0.007***	0.007***
	(0.002)	(0.002)	(0.002)	(0.002)
Rm-Rf	0.871***	0.801***	0.809***	0.817***
	(0.040)	(0.038)	(0.037)	(0.038)
SMB	−0.313***		−0.421***	−0.421***
	(0.113)		(0.116)	(0.111)
HML	0.183*		0.264***	0.287***
	(0.102)		(0.078)	(0.100)
RMW	0.340***			
	(0.143)			
CMA	0.373***			
	(0.139)			
WML				0.036
				(0.064)
Annualized Alphas(percent)	6.850	9.000	9.010	8.810
Adj. R^2	0.785	0.735	0.773	0.772
Num. obs.	199	199	199	199

Table 6: Estimates of alpha for conduct and product-based exclusion portfolios

The table shows estimates of the regression $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t + b^{RMW}RMW_t + b^{CMA}CMA_t + \varepsilon_{p,t}$, where $r_{p,t}$ is the return on the exclusion portfolio. We consider two different samples of exclusion portfolios: The stocks excluded based on conduct, or based on product. For each of these samples we calculate equal- or value-weighted portfolios. The international factors are from Ken French's homepage. Standard errors are Newey-West adjusted. Significance levels are indicated as: * $p < 10\%$, ** $p < 5\%$, *** $p < 1\%$. All individual returns denominated in USD. Data sources: Ethical Council, GPFG, Ken French, and Refinitiv.

	Conduct		Product	
	EW	VW	EW	VW
Alpha	0.007*	0.009***	0.003	0.004**
	(0.004)	(0.003)	(0.002)	(0.001)
Rm-Rf	1.061***	0.793***	0.926***	0.935***
	(0.130)	(0.077)	(0.037)	(0.037)
SMB	0.139	−0.269	0.167	−0.280**
	(0.293)	(0.255)	(0.136)	(0.128)
HML	0.967***	0.293	0.295***	0.208*
	(0.214)	(0.165)	(0.107)	(0.107)
RMW	0.231	0.419	0.164	0.345*
	(0.349)	(0.285)	(0.174)	(0.211)
CMA	−1.241***	0.306	0.070	0.305*
	(0.412)	(0.244)	(0.167)	(0.157)
Annualized Alphas(percent)	8.540	11.310	3.370	4.680
Adj. R^2	0.579	0.371	0.766	0.731
Num. obs.	199	199	196	196

Table 7: The Post-Exclusion Portfolio

The tables show performance analysis on the revoked. The revoked portfolio is constructed from all firms that have had their exclusions revoked and remain listed. Panel A shows a performance analysis where stock enter the portfolio the month after the exclusion is rescinded. The table shows regressions with the return of the post-revocation portfolio as the dependent variable. Each column reports estimates of the regression $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t + b^{RMW}RMW_t + b^{CMA}CMA_t + \varepsilon_{p,t}$, where r_{pt} is the return of the post-revocation portfolio, r_{ft} the risk-free rate, SMB, HML, RMW, CMA and WML the Ken French factors. The first column shows the results for the equally-weighted post-exclusion portfolio, and the second column for the value-weighted. Panel B shows the same regressions, but for this portfolio of revoked firms in the period *before* the exclusion is revoked (i.e., while the stocks are still excluded). Data for 2006–2021. The international asset pricing factors are from Ken French's data page. Standard errors are Newey-West adjusted. Significance levels are indicated as: * $p < 10\%$, ** $p < 5\%$, *** $p < 1\%$. All individual returns are denominated in USD. Data sources: Ethical Council, GPFG, Ken French, and Refinitiv.

Panel A: Performance analysis - revoked portfolio after exclusion lifted

	(EW)	(VW)
Alpha	0.000	−0.000
	(0.003)	(0.003)
Rm-Rf	1.119***	1.014***
	(0.074)	(0.070)
SMB	0.375	−0.196
	(0.197)	(0.195)
HML	0.359	−0.148
	(0.167)	(0.185)
RMW	0.176	−0.043
	(0.283)	(0.265)
CMA	0.066	0.329
	(0.341)	(0.259)
Annualized Alphas(percent)	0.350	−0.120
Adj. R^2	0.586	0.676
Num. obs.	150	148

Panel B: Performance analysis - revoked portfolio before exclusion lifted

	(EW)	(VW)
Alpha	0.005***	0.006***
	(0.002)	(0.002)
Rm-Rf	0.957***	0.866***
	(0.041)	(0.039)
SMB	0.201*	−0.281***
	(0.128)	(0.115)
HML	0.469***	0.186*
	(0.119)	(0.098)
RMW	0.139	0.320**
	(0.161)	(0.145)
CMA	−0.238	0.396***
	(0.240)	(0.144)
Annualized Alphas(percent)	5.630	7.400
Adj. R^2	0.804	0.774
Num. obs.	200	200

Table 8: Contributions to survival of exclusion

The table summarizes analyses of the estimation of contributions to a Cox proportional hazard model. Explanatory variables: *ESG score*: (Refinitiv TRESGCS). *Ind(Conduct)*: Dummy variable equal to one if the exclusion is for a conduct-based reason. *ln(Mkt Cap)*: Firm equity size (the logarithm of the market capitalization at yearend). All values in USD terms. Data sources: Ethical Council, GPFG, and Refinitiv.

	(1)	(2)	(3)	(4)
ESG Score	-0.03^{***}	-0.03^{***}	-0.02^{**}	-0.03^{**}
	(0.01)	(0.01)	(0.01)	(0.01)
Ind(Conduct)		0.85^{**}		0.98^{***}
		(0.39)		(0.44)
ln(Mkt Cap)			-0.05	-0.11
			(0.09)	(0.10)
AIC	219.27	217.21	221.05	218.16
R^2	0.03	0.06	0.04	0.07
Max. R^2	0.77	0.77	0.77	0.77
Num. events	28	28	28	28
Num. obs.	150	150	150	150
PH test	0.47	0.76	0.55	0.68

$^{***}p < 0.025$; $^{**}p < 0.05$; $^{*}p < 0.1$

Table 9: The need for new capital – estimates

In panel A, the tables report results of probit estimates of determinants of exclusion revoked by the GPFG. Two separate probit estimations:

$$p(\text{Exclusion Revoked}) = \begin{cases} f(\text{EPS growth, Controls}). \\ f(\text{Revenue growth, Controls}) \end{cases}$$

In each case, for each year, the dependent variable tests whether a firm stays excluded or not that year. The dependent variable is equal to one if a firm's exclusion is revoked in a given calendar year. Explanatory variables are: `EPS growth`: Percentage change in EPS from the previous year to this year. *Revenue growth*: Percentage change in total earnings from the previous year to this year. *ln(Mkt Cap)*: Firm Size – The log of year-end market capitalization, denominated in USD. *Ind(Conduct)*: Dummy variable equal to one if the exclusion is for a conduct-based reason. Estimations (3) and (4) include annual fixed effects (unreported) and are estimated without a constant term. T statistics in parentheses. Significance levels are indicated as: * $p < 10\%$, ** $p < 5\%$, *** $p < 1\%$.

In panel B, the table gives the number of firms in each group that have raised equity capital at least once in the period. For the firms still excluded, the period is the whole exclusion period. For the firms having had the exclusion revoked, it is the period *after* the exclusion is revoked. Data sources: Ethical Council, GPFG, and Refinitiv.

Panel A: Probit estimation of determinants of discontinuation of exclusion

	(1)	(2)	(3)	(4)
(Intercept)	−3.38***	−3.32***		
	(1.11)	(1.13)		
Growth EPS	−0.01		−0.02	
	(0.03)		(0.04)	
Growth Revenue		0.40		0.47*
		(0.25)		(0.28)
Ind(Conduct)	0.60***	0.47**	0.67***	0.52**
	(0.19)	(0.19)	(0.20)	(0.20)
ln(Mkt Cap)	0.05	0.05	0.06	0.06
	(0.05)	(0.05)	(0.05)	(0.05)
Annual fixed effects			X	X
Log Likelihood	−99.68	−100.13	−89.16	−89.04
Num. obs.	975	969	975	969

Panel B: Raising new equity capital

	Firms raising capital	
	Number	Percent
Firms still excluded	56	37.1
Firms with exclusion revoked and not delisted	11	57.9