

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

February 2025

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A Additional results for section 3

A.1 Other Norwegian Institutional Investors

As mentioned in the text, a number of other Norwegian institutional investors commit to follow the GPFG exclusions. Table A.1 lists the institutional investors in question.

Table A.1: Funds committing to following the Ethical Councils exclusion recommendations

List of funds complying with the ethical council guidelines

- DnB Asset Management
- Equinor Asset Management
- Folketrygdfondet
- KLP
- Nordea
- Pareto
- Sparebank 1 SR bank
- Sparebanken Vest
- Sparebank 1 SMN
- Storebrand

A.2 Additional descriptives on exclusions

Table A.2: Exclusions over time

This table displays the number of new exclusions, exclusions revoked, and re-exclusions by year.

Year	New Exclusions	Exclusions Revoked	Re-exclusions
2005	9		
2006	11	1	
2007	2		
2008	4		
2009	5	2	
2010	21	1	
2011	5	1	
2012	1		
2013	9	3	
2014	1	1	
2015	4		
2016	61		
2017	11	1	
2018	13	2	1
2019	5	6	
2020	15	3	
2021	12	5	
Total	189	26	1

Table A.3: Exclusions by industry

This table displays the exclusions grouped by industry. The classification follows the industry group from the Refinitiv Business Classification system (TRBC).

Industry	TRBC Code	Exclusions	Exclusions Revoked
Electrical Utilities & IPPs	591010	56	2
Aerospace & Defense	521010	20	7
Food & Tobacco	541020	18	
Coal	501010	14	
Metals & Mining	512010	14	3
Construction & Engineering	522010	10	1
Oil & Gas	501020	9	3
Chemicals	511010	6	2
Paper & Forest Products	513010	5	
Pharmaceuticals	562010	5	
Freight & Logistics Services	524050	4	1
Textiles & Apparel	532020	4	1
Consumer Goods Conglomerates	544010	3	1
Multiline Utilities	591040	3	
Real Estate Operations	601010	3	
Automobiles & Auto Parts	531010	2	1
Homebuilding & Construction Supplies	532030	2	1
Machinery, Equipment & Components	521020	2	
Professional & Commercial Services	522030	2	
Communications & Networking	571020	1	
Diversified Industrial Goods Wholesalers	522020	1	
Diversified Retail	534020	1	1
Food & Drug Retailing	543010	1	1
Hotels & Entertainment Services	533010	1	
Insurance	553010	1	1
Specialty Retailers	534030	1	
Total		189	26

Table A.4: Exclusions by country

This table displays the exclusions grouped by firm's country of domicile.

Country	Exclusions	Exclusions Revoked
United States	51	10
China	27	2
India	13	
United Kingdom	11	5
Israel	10	
Canada	9	1
Japan	8	
Malaysia	8	
South Korea	7	1
Brazil	5	
Australia	4	
Poland	4	1
South Africa	3	1
Taiwan	3	
Thailand	3	1
Chile	2	
Czech Republic	2	
France	2	1
Mexico	2	2
Netherlands	2	
Philippines	2	
Egypt	1	
Germany	1	
Greece	1	
Indonesia	1	
Ireland	1	
Italy	1	1
Peru	1	
Russian Federation	1	
Singapore	1	
Sweden	1	
Switzerland	1	
Total	189	26

Table A.5: Sample of stocks

Overview of sample content. Data from the Ethical council, GPFG and Refinitiv.

Status	Events
Total exclusions	189
Exclusion revoked	26
Excluded again	1
Not matched with Refinitiv	5
Total sample	184
Conduct-based exclusions	67
Product-based exclusions	122

Table A.6: Reasons for delistings

The table summarize the main reasons why firms delist. Data source: Ethical Council and GPFG.

Cause	no
M&A	9
Going private	5
Bankruptcy	1
Total	15

B Additional results for section 4

B.1 Additional results for section 4.1

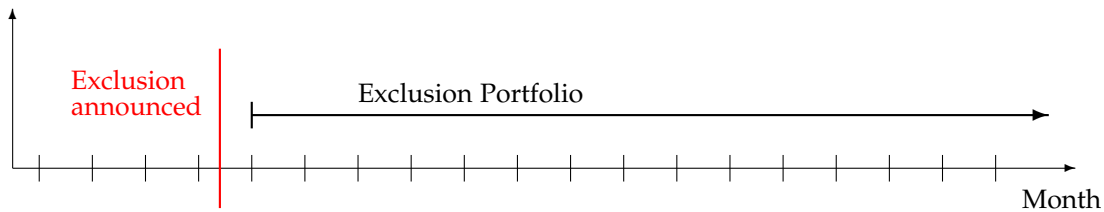
B.1.1 Additional descriptives for exclusion portfolio returns

Figure B.1 illustrates the portfolio construction.

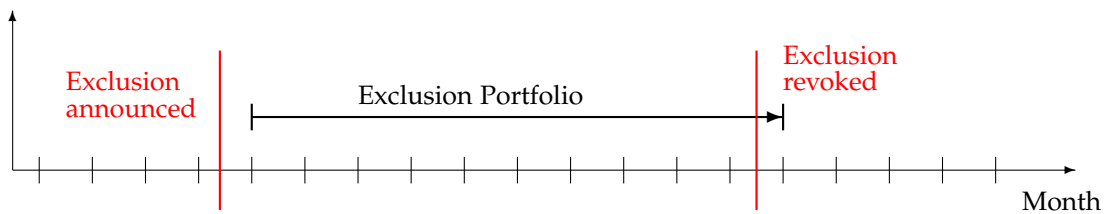
Figure B.1: Illustrating the construction of the Exclusion Portfolio

The figures illustrate the timing of stocks entering the Exclusion Portfolio (Panel A) and exiting the Exclusion Portfolio (Panel B).

Panel A: Exclusion Portfolio, firms still excluded



Panel B: Exclusion Portfolio, firms with a revoked exclusion



B.1.2 Cumulative returns of the Exclusion Portfolios

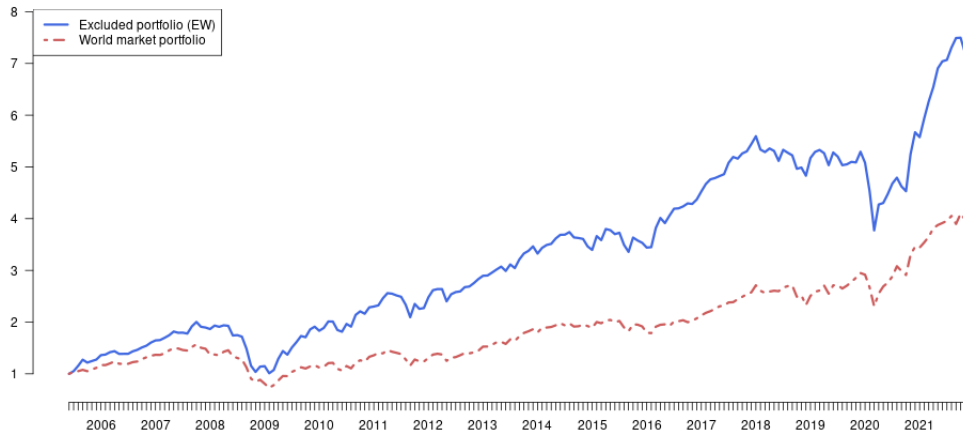
A simple, intuitive way to compare returns of two portfolios is to plot their cumulative returns. In Panel A of Figure B.2 we compare the evolution of the equally weighted exclusion portfolio with a global market portfolio. The exclusion portfolio clearly outperforms the market portfolio over the period.

One observation is worth making using this picture. During the two large crises in this period, the '08 global financial crisis and the '20 Covid crisis, the decline in the exclusion portfolio seems more prominent. This corresponds to research evidence from Lins et al. (2017) who show that high-quality ESG firms performed better during the '08 Financial Crisis. Albuquerque et al. (2020) make a similar observation at the onset of the Covid-19 crisis in March '20. As the Exclusion Portfolio contains low-quality ESG firms, these results suggest that the Exclusion Portfolio will underperform in these two periods. This fits with the arguments of Hoepner et al. (2023) that ESG is mainly about downside risk.

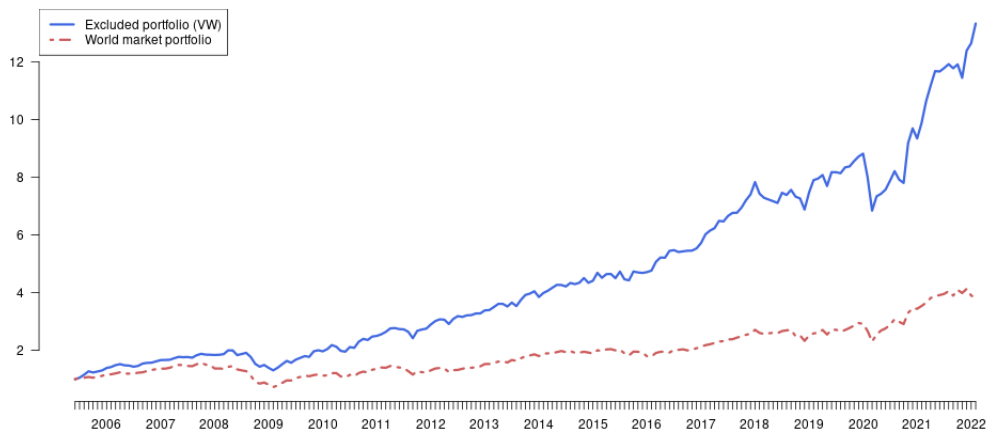
Figure B.2: Cumulative returns of the exclusion portfolios

The figures show the cumulative returns from two investments: The exclusion portfolio (black line), and the world market portfolio provided by Ken French (broken line). Cumulative returns are calculated as $CR_{p,T} = \prod_{t=1}^T (1 + r_{p,t})$, where $r_{p,t}$ is the monthly portfolio return in month t . Panel A: The equally weighted exclusion portfolio. Panel B: The value weighted exclusion portfolio. All individual returns are denominated in USD. Data sources: Ethical Council, GPFG and Refinitiv.

Panel A: Equally weighted exclusion portfolio



Panel B: Value weighted exclusion portfolio



B.1.3 The US exclusion portfolio

To facilitate direct comparisons with studies on the US market, we also look at the subsample of only US-listed stock.

Figure B.3 gives some descriptives for the US exclusion portfolio. Panel A shows the time series evolution of the number of shares in the portfolio. In the period 2006-2013 the portfolio contained between 10 and 20 stocks, a number that jumped to almost 40 in 2016, with a large number of coal-related exclusions. Panel B plots the cumulative returns for the US exclusions portfolio and compares them to a US index, the S&P 500 index (not the world index shown earlier). We are observing the same pattern. The exclusion portfolios generally have superior returns to the market index but with marked larger falls during the '08 and '20 crises.

Table B.1 shows the results of estimating a Fama French five-factor model (Fama and French, 2015) for the US exclusion portfolios. Note that this estimation uses Ken French's US factors, not his global factors. We again find highly significant alpha estimates, with annualized alpha estimates of 4.9% for the equally weighted and 7.2% for the value weighted US portfolios.

Table B.1: Estimates of alpha for US stocks

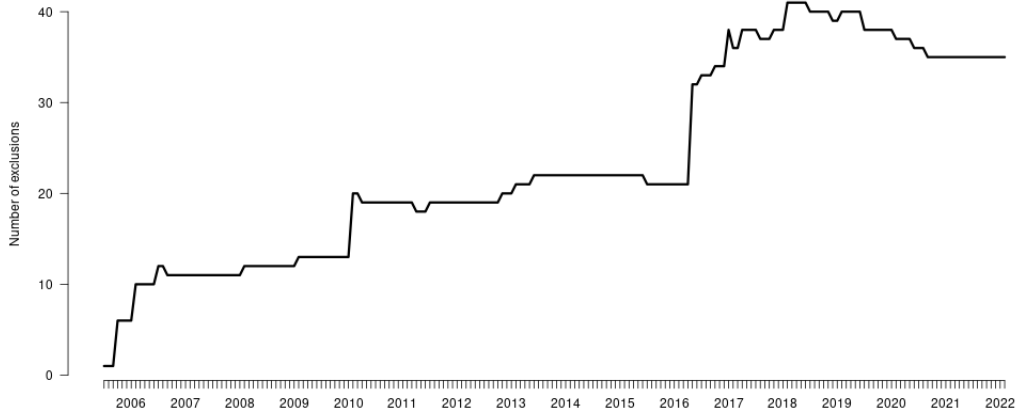
The table shows estimates of the regression $(r_{p,t} - r_{f,t}) = \alpha + \beta(r_{m,t} - r_{f,t}) + b^{SMB}SMB_t + b^{HML}HML_t + b^{RMW}RMW_t + b^{CMA}CMA_t + \varepsilon_{p,t}$, where $r_{p,t}$ is the return on the exclusion portfolio only using stocks with a US primary listing. For this estimation portfolio we use Ken French's US factors. 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, GPF, Ken French and Refinitiv.

	Equally Weighted	Value Weighted
Alpha	0.004* (0.002)	0.006*** (0.002)
Rm-Rf	0.925*** (0.050)	0.783*** (0.045)
SMB	0.012 (0.089)	-0.280*** (0.080)
HML	0.239*** (0.081)	0.168*** (0.073)
RMW	0.050 (0.117)	0.258*** (0.106)
CMA	0.073 (0.146)	0.173 (0.132)
Annualized Alphas(percent)	4.870	7.200
Adj. R ²	0.710	0.644
Num. obs.	200	200

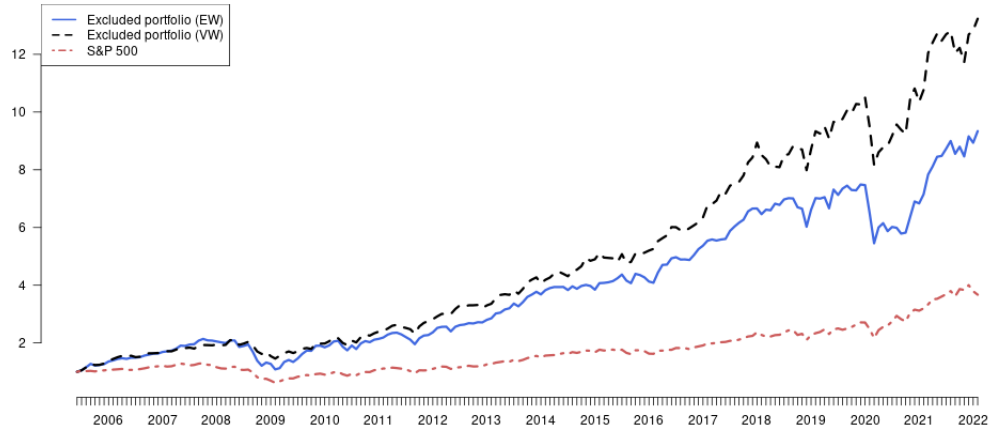
Figure B.3: The US exclusion portfolios

The figures summarize the US part of the exclusion portfolio. Panel A: The number of stocks in the US exclusion portfolio. Panel B: Comparison of cumulative returns, calculated as $CR_T = \prod_{t=1}^T (1 + r_{pt})$, where r_{pt} is the monthly portfolio return.

Panel A: Number of exclusions



Panel B: Cumulative returns



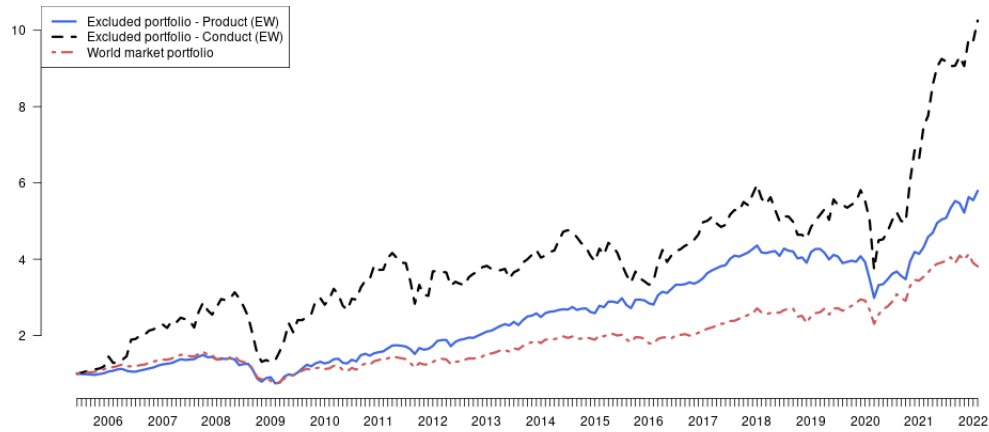
B.1.4 Additional performance analysis - sub-portfolios

The paper provides alpha analysis of conduct and product based exclusion portfolios. In this appendix we show the wealth evolution of these portfolios.

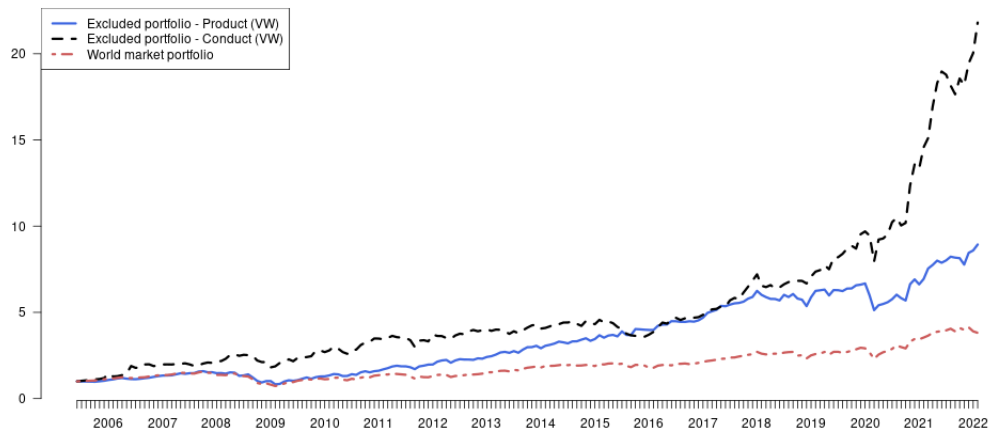
Figure B.4: The cumulative return of conduct and product based exclusions

Comparisons of cumulative return, calculated as $CR_T = \prod_{t=1}^T (1 + r_{pt})$, where r_{pt} is the monthly portfolio return. In each figure, comparing conduct and product based exclusion portfolios with a global market portfolio. Panel A: Equally weighted exclusion portfolios. Panel B: Value weighted exclusion portfolios. In both cases the world market portfolio is from Ken French international factor returns.

Panel A: Equally weighted exclusion portfolios



Panel B: Value weighted exclusion portfolios



B.1.5 Additional performance analysis – Sub-periods

We also perform the regression analysis for the two sub-periods 1995–2015 and 2016–2021. The break is picked as the end of 2015 due to the large addition of exclusions based on the coal criterion in 2016. Table B.2 shows the results.

Table B.2: Alpha estimation for sub-periods

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. Two sub-periods: 2005–2015 and 2016–2021. The international factors are from Ken French's homepage. Standard errors are Newey-West adjusted. Significance levels are indicated as: * $p < 10\%$, ** $p < 5\%$, *** $p < 1\%$.

Panel A: Equally weighted exclusion portfolio.

	(2005–15)	(2016–21)
Alpha	0.006*** (0.002)	0.003 (0.002)
Rm-Rf	0.955*** (0.057)	0.930*** (0.071)
SMB	0.070 (0.130)	0.372* (0.165)
HML	0.331** (0.188)	0.231 (0.145)
RMW	-0.027 (0.297)	0.197 (0.176)
CMA	-0.623*** (0.154)	0.458* (0.252)
Annualized Alphas(percent)	7.860	3.320
Adj. R ²	0.833	0.800
Num. obs.	126	73

Panel B: Value weighted exclusion portfolio.

	(2005–15)	(2016–21)
Alpha	0.007*** (0.002)	0.004* (0.001)
Rm-Rf	0.840*** (0.040)	0.958*** (0.046)
SMB	-0.402*** (0.134)	-0.317* (0.161)
HML	-0.064 (0.141)	0.128 (0.178)
RMW	0.274 (0.195)	0.183 (0.203)
CMA	0.168 (0.144)	0.704*** (0.264)
Annualized Alphas(percent)	8.440	5.010
Adj. R ²	0.782	0.825
Num. obs.	126	73

B.1.6 Coal or no coal

The coal criterion is closer to a pure product criterion, and may be viewed as closer to a standard ESG ranking criterion for exclusion. To evaluate the degree to which the coal part of the exclusion portfolio is different, we do two analyses.

1. Construct an exclusion portfolio without the coal-related stocks.
2. Construct an exclusion portfolio for the coal-related stocks, only. Note that this portfolio starts in 2016, the first year of the coal criterion.

Table B.3 shows the results of these regressions. The first two, which shows estimates of alpha for EW and VW versions of the exclusion portfolio, demonstrate that the results for the exclusion portfolio are not driven by coal stocks. For both portfolios the alphas are comparable to the estimates in the paper, which are for the portfolio with coal companies included. The estimates for the coal portfolios should be compared to the estimates for the portfolio for the second subperiod in Table B.2. Compared to those, the alphas for the coal portfolio are somewhat higher in magnitude.

Table B.3: Alpha regression for the "all but coal" portfolio and the coal portfolio

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. Results for four different portfolios. (1) and (2) are exclusion portfolios leaving out the coal-related exclusions, i.e. they are "all but coal" exclusions. (3) and (4) are exclusion portfolios of *only* coal-related exclusion by the oil fund. For both cases the first is an equally weighted portfolio, the second a value weighted. Significance levels are indicated as: * $p < 10\%$, ** $p < 5\%$, *** $p < 1\%$.

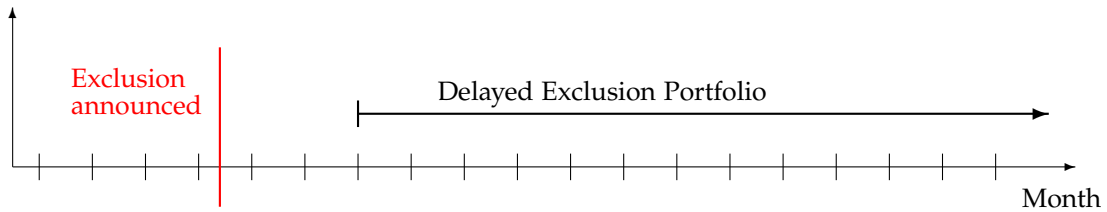
	All but coal EW	All but coal VW	Coal EW	Coal VW
Alpha	0.004*** (0.002)	0.006*** (0.002)	0.005 (0.004)	0.007** (0.003)
Rm-Rf	1.019*** (0.043)	0.906*** (0.051)	0.696*** (0.084)	0.574*** (0.061)
SMB	0.205* (0.122)	-0.268*** (0.120)	0.643*** (0.248)	0.060 (0.226)
HML	0.515*** (0.105)	0.206** (0.117)	0.023 (0.169)	0.064 (0.230)
RMW	0.195 (0.172)	0.352** (0.172)	0.316 (0.290)	0.437 (0.257)
CMA	-0.274* (0.186)	0.427*** (0.149)	0.871*** (0.306)	0.711** (0.380)
Annualized Alphas(percent)	5.119	7.031	5.558	8.345
Adj. R ²	0.828	0.767	0.563	0.503
Num. obs.	200	200	70	70

B.1.7 Delayed entry

We consider the robustness of the results with respect to *timing*. In particular, we investigate whether the short period after the GPFG announcement may influence the results. To that end we create an exclusion portfolio where the stock entry into a portfolio is delayed. This method is illustrated in Figure B.5.

Figure B.5: Illustrating the construction of the delayed entry exclusion portfolio

The figure illustrates the delay of the entry of the excluded portfolio by a number of months after the month in which exclusion is announced. This is the Delayed Exclusion Portfolio.



We consider two alternative lengths of delay: One and two calendar months after the month of announcement. Table B.4 shows the results. We note that the estimates of alpha are still highly significant, albeit slightly lower. For example, in the equally weighted case, the alpha estimate of 5.17% falls to 4.62% if entry into the exclusion portfolio is delayed with one month, and further to 4.32% if delayed with two months. The value weighted case is similar. These results confirm that the positive alpha is a long-term feature, not just driven by short-term price effects.

Table B.4: Alpha estimation for exclusion portfolio with delayed entry

Panel B reports results of an alpha estimation of the Delayed Exclusion Portfolio. The columns report 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 of the exclusion portfolio, $r_{f,t}$ the risk free rate, SMB , HML , RMW , CMA and WML the Ken French factors. The equally weighted portfolio is constructed from shares excluded from the GPF, but the entry into the exclusion portfolio is delayed with either one month (columns (1)-(2)) or two months (columns (3)-(4)). Data is from 2005 to 2021. The international asset pricing 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 returns are denominated in USD. Data sources: Ethical Council, GPF, Ken French and Refinitiv.

Panel B: Delayed Exclusion Portfolios – regression results

	1 month delay		2 month delay	
	ew	vw	ew	vw
Alpha	0.004** (0.002)	0.005*** (0.002)	0.004** (0.002)	0.005*** (0.002)
Rm-Rf	0.964*** (0.044)	0.870*** (0.043)	0.961*** (0.045)	0.870*** (0.043)
SMB	0.212* (0.128)	-0.283*** (0.112)	0.195 (0.132)	-0.291*** (0.115)
HML	0.468*** (0.113)	0.204* (0.104)	0.466*** (0.104)	0.191* (0.092)
RMW	0.210 (0.180)	0.417*** (0.188)	0.200 (0.172)	0.410*** (0.177)
CMA	-0.213 (0.233)	0.412*** (0.136)	-0.212 (0.216)	0.433*** (0.129)
Annualized Alphas(percent)	4.620	6.420	4.320	6.040
Adj. R ²	0.790	0.753	0.799	0.764
Num. obs.	199	199	198	198

B.1.8 Importance of revoked exclusions for overall portfolio magnitude

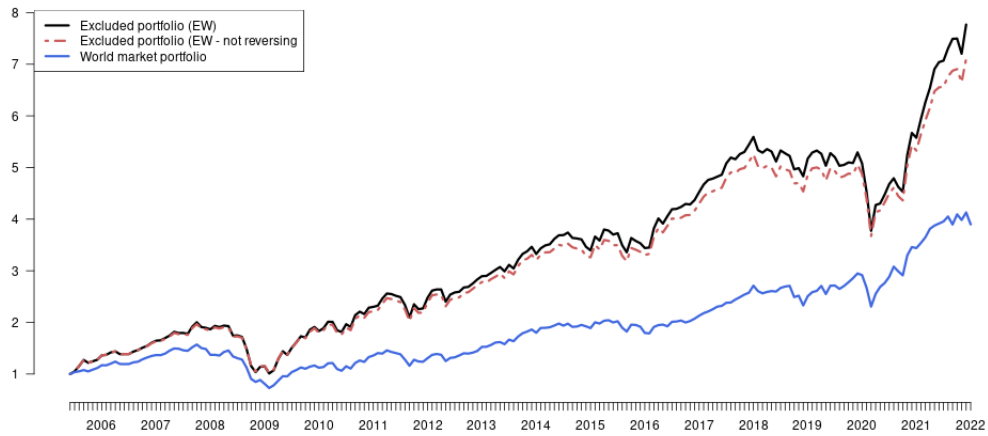
A possible problem with our analysis concerns the fact that we remove stocks from the Exclusion Portfolio when those stocks are “let back” into the GPFG investment universe when the stocks exclusion is revoked. Arguably this induces an ex post issue into the analysis. If these stocks have lower returns after their exclusion is revoked, this does not enter our overall Exclusion Portfolios. To gauge the magnitude of this potential bias we construct portfolios not subject to this ex post problem, where we keep the revoked stocks in the portfolio past the date when their exclusion is revoked. Comparing the return of these portfolios with the exclusion portfolios in the paper, where stocks are removed from the exclusion portfolio, we can see whether this issue can explain the magnitude of the return premium for the exclusion portfolios.

Figure B.6 shows the results, where the interesting comparison is between the two exclusion portfolios. The returns of exclusion portfolio where we do not remove the stocks when the exclusion is revoked *are* lower than the portfolio used in the paper (where stocks are removed), but the difference is trivial. This is true for both the equally weighted and value weighted versions of the portfolios. This result supports our finding of a zero alpha for the portfolio of revoked firms.

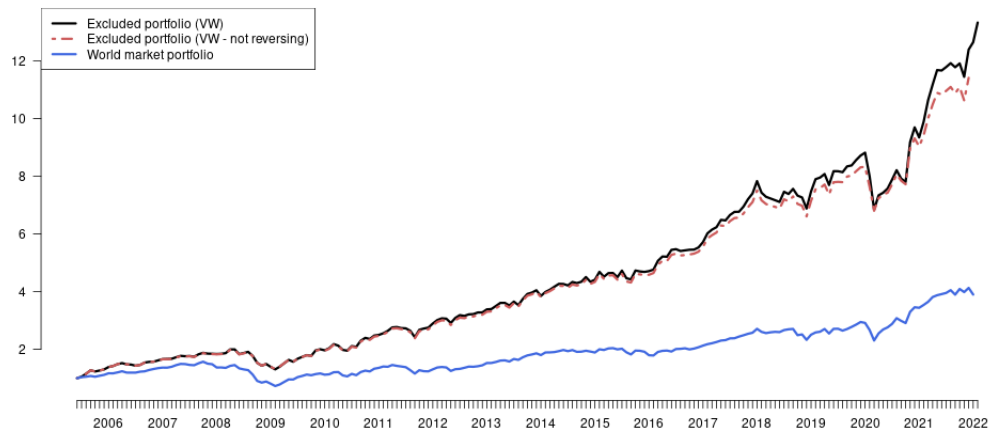
Figure B.6: Portfolio evolution, portfolio keeping stocks whose exclusion is revoked

Comparison of cumulative returns, calculated as $CR_T = \prod_{t=1}^T (1 + r_{pt})$, where r_{pt} is the monthly portfolio return. Calculated for three different portfolios. A global market portfolio, a portfolio where stocks are kept in the portfolio when the exclusion is revoked, and the exclusion portfolios as used in the paper (revoked stocks are removed from the exclusion portfolio). Panel A: Equally Weighted portfolios. Panel B: Value weighted portfolios. The world market portfolio is the equally and value weighted world market portfolios from Ken French international factor returns.

Panel A: Equally weighted portfolios



Panel B: Value weighted exclusion portfolio

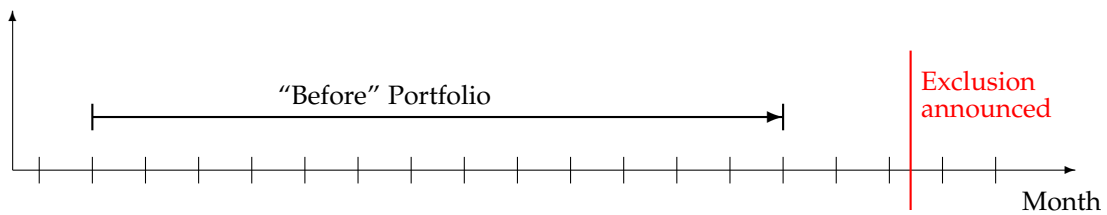


B.1.9 Constructing a portfolio before the firms are excluded.

As a robustness investigation we look at the excluded companies in the period *before* the announcement by the GPF. If the estimated premium reflect properties of the companies in question, and the low ESG/bad ethics is observable, other investors may be excluding the firm even if the GPF has not yet announced its divestment. It is therefore of interest to show an alpha estimate for such a portfolio. We construct this by keeping companies in this portfolio in two years before they are excluded by GPF. Figure B.7 illustrates the method. We actually end the period two months before the GPF announcement, which implies that the stock enter the pre-exclusion portfolio two years and two months earlier.

Figure B.7: Exclusion portfolio before GPF exclusion

The figure illustrates the creation of a portfolio in a period before the GPF announce their exclusion. This is the Pre-Exclusion Portfolio.



The alpha estimates for this "Pre-Exclusion" Portfolio are shown in columns (1) and (2) of Table B.5. While the alpha estimates are not significant, the point estimates are similar to those of the Exclusion portfolios. The lack of significance may be due to the limited number of stocks in the "Pre-Exclusion" portfolio.

Table B.5: Performance estimation of Exclusion portfolio before exclusion

The table reports the results of the performance estimation for this period. The columns report 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 of the exclusion portfolio, $r_{f,t}$ the risk free rate, SMB , HML , RMW , CMA and WML the Ken French factors. The equally weighted portfolio is constructed from shares excluded from the GPFG, but the entry into the exclusion portfolio is delayed with either one month (columns (1)-(2)) or two months (columns (3)-(4)). Data is from 2005 to 2021. The international asset pricing 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.

	"Before" Portfolio	
	ew	vw
Alpha	0.004 (0.003)	0.004 (0.004)
Rm-Rf	0.813*** (0.080)	0.794*** (0.085)
SMB	0.157 (0.209)	0.362 (0.291)
HML	0.227 (0.162)	0.010 (0.209)
RMW	-0.682*** (0.281)	-0.654* (0.483)
CMA	-0.504* (0.243)	0.082 (0.361)
Annualized Alphas(percent)	5.073	5.412
Adj. R ²	0.524	0.392
Num. obs.	222	196

B.2 Additional results for section 4.2

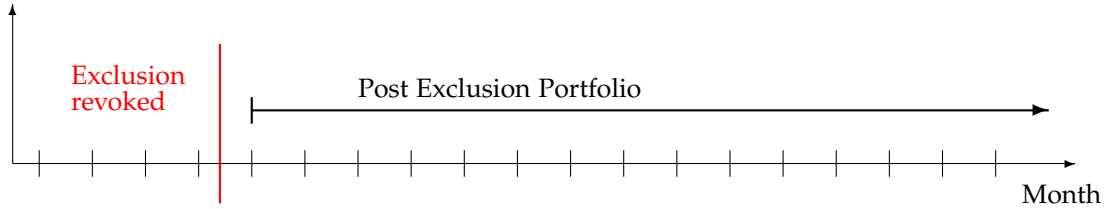
B.2.1 Additional results on “Post Exclusion Portfolio”

This subsection provided additional detail on the “Post Exclusion Portfolio” containing stocks which were previously excluded, but have now been let back in.

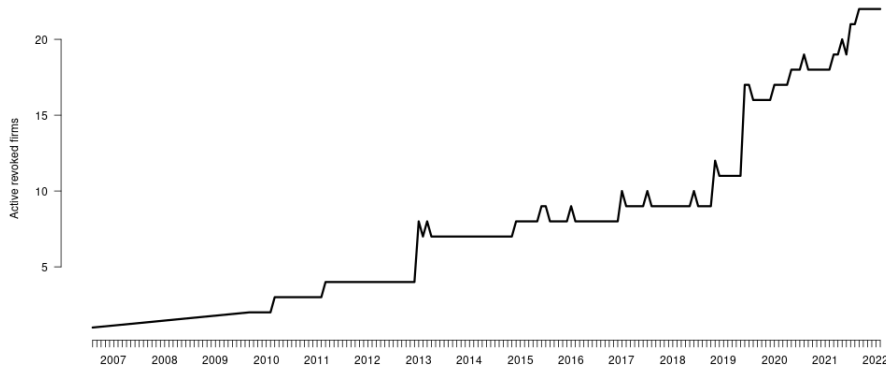
Figure B.1: The Post-Exclusion Portfolio - Descriptives and return evolution

Panel A illustrates the method of constructing the portfolio. The figure in panel B shows the number of firms which have had their exclusion revoked, and remain listed. The post-exclusion portfolio is constructed as an equally weighted portfolio of all firms which have had their exclusions revoked and remain listed, starting the month after the exclusion is rescinded. In Panel C we show cumulative returns illustrating the portfolio evolution. The figure shows the cumulative returns from two investments: The equally weighted post-revocation portfolio (black line), and the world market portfolio provided by Ken French (broken line). Cumulative returns are calculated as $CR_{p,T} = \prod_{t=1}^T (1 + r_{p,t})$, where $r_{p,t}$ is the monthly portfolio return. All individual returns are denominated in USD. Data sources: Ethical Council, GPF, Ken French and Refinitiv.

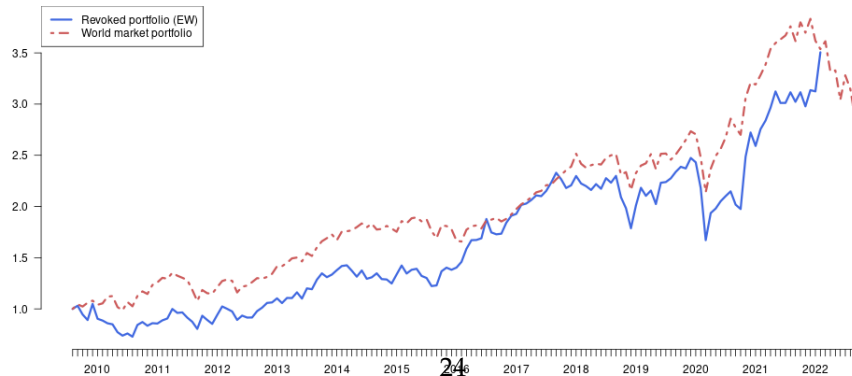
Panel A: Illustrating the construction of the Post-Exclusion Portfolio



Panel B: Number of stocks with exclusions revoked and still listed



Panel B: Cumulative returns for the Post-Exclusion Portfolio



B.3 Additional results for section 4.3

This appendix provides further details and robustness relative to the event studies shown in the paper.

B.3.1 The event study – Methods

The method of calculation follows MacKinlay (1997). In the text we use the maintained asset pricing model:

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

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 market index. As market index we use Ken French's index of global developed markets. As risk-free rate we use the Ken French estimate.

To calculate a Cumulative Abnormal Return one picks a starting point m days before the exclusion announcement, ending n days after the announcement ($CAR(-m, n)$). $\hat{\beta}_i$ is estimated using a three-year pre-period of daily (dollar) returns. This beta is then used in the calculation of abnormal returns

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

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.

To calculate test statistics, we follow MacKinlay (1997), and calculate θ_1 as

$$\theta_1(\tau_1, \tau_2) = \frac{\overline{CAR}(\tau_1, \tau_2)}{\text{var}(\overline{CAR}(\tau_1, \tau_2))^{\frac{1}{2}}},$$

where τ_1 is the first date of the CAR estimation, and τ_2 the last date. Under the null of no effects, θ_1 has a $N(0, 1)$ distribution. We plot estimates of θ_1 for all the event studies illustrated with CAR plots.

In this appendix we will also illustrate the alternative case of a market model as the maintained asset pricing model:

$$r_{i,t} = \alpha_i + \beta_i r_{m,t} + \epsilon_{it}$$

The market model is estimated using the same procedure as above. This lead to the abnormal return calculation.

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

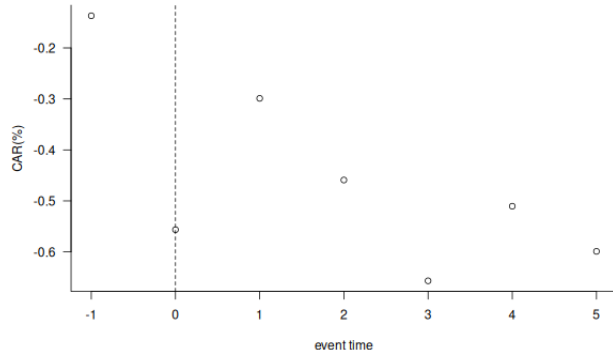
B.3.2 The event study – Robustness

Robustness – two years in the beta estimation In the paper we use three years in the beta estimation. We also consider a shorter time periods of two years in the beta estimation. Figure B.1 shows the results.

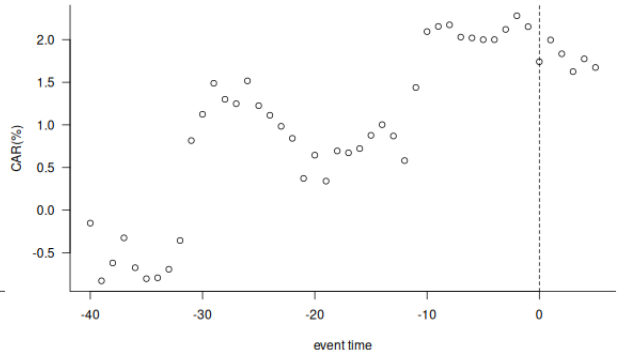
Figure B.1: Event Study of Exclusion Announcement

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 $AR_{i,t} = r_{i,t} - (r_{f,t} + \hat{\beta}_i(r_{m,t} - r_{f,t}))$, 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 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 $\hat{\beta}_i$ 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.

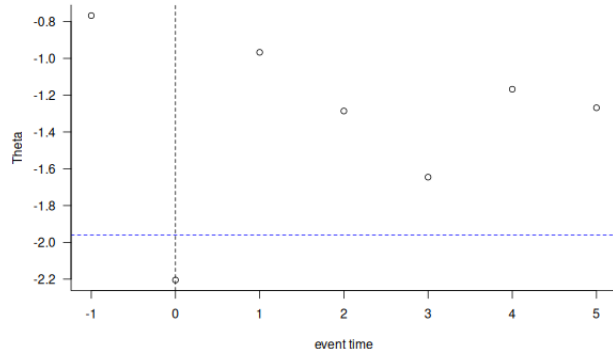
Panel A: Event study (-1,5)



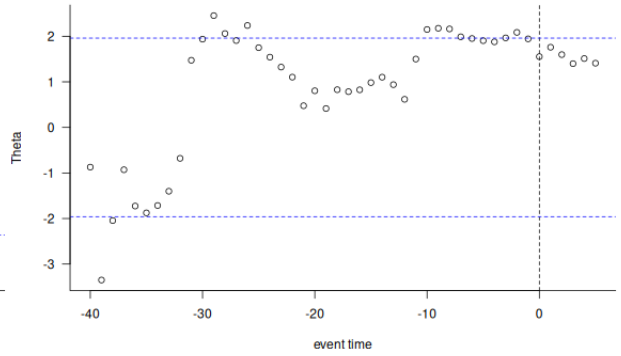
Panel B: Event study (-40,5)



Panel C: Statistical analysis (-1,5)



Panel D: Statistical analysis (-40,5)

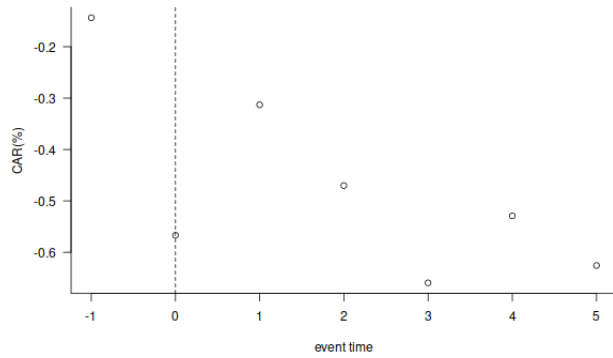


Robustness - Market Model In the paper we use CAPM as the maintained asset pricing model. We also consider using the Market Model. Figure B.2 shows the results.

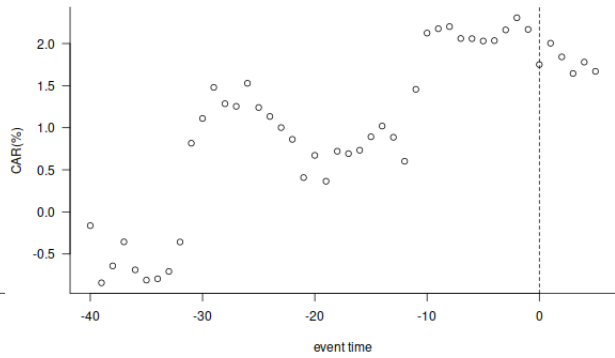
Figure B.2: Event Study of Exclusion Announcement

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 $AR_{i,t} = r_{i,t} - (\alpha_i + \hat{\beta}_i(r_{m,t} - r_{f,t}))$, where $r_{i,t}$ is the dollar return of the stock, 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. The parameters α_i and $\hat{\beta}_i$ are 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.

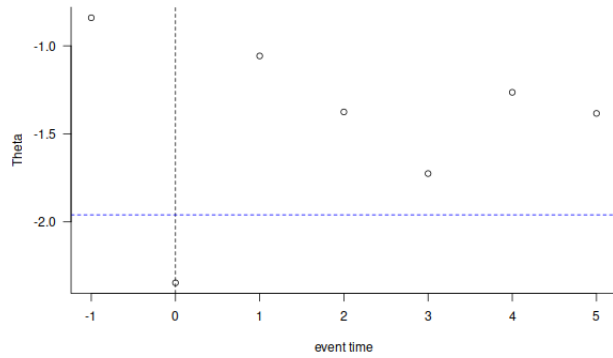
Panel A: Event study (-1,5)



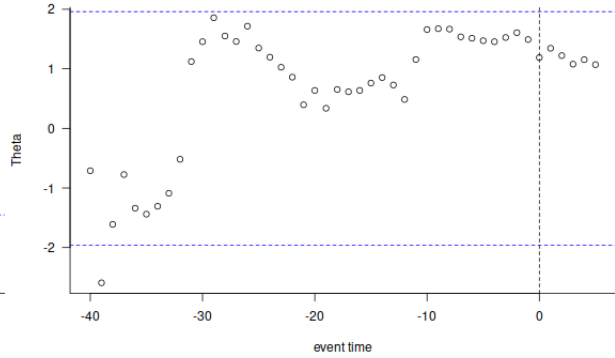
Panel B: Event study (-40,5)



Panel C: Statistical analysis (-1,5)



Panel D: Statistical analysis (-40,5)



B.4 Additional results for section 4.4

B.4.1 Additional analysis of revoke decisions

In this section we provide additional supportive analysis of the survival analysis. In the paper the survival analysis is based on a Cox proportional hazard model. To show that the results are robust to alternative distributional assumptions. Table B.1 provides a corresponding survival regression, using a Weibull probability distribution.

Table B.1: Contributions to time till exit of exclusion

The table summarizes analyses of estimation of contributions to a Survival regression, with a weibull prob distribution. Explanatory variables: ESG score (Datastream TRESGCS), Firm size (log market cap), dummy for whether exclusion is conduct based.

	(1)	(2)	(3)	(4)
(Intercept)	1.48 (1.15)	2.29*** (0.32)	2.36*** (0.33)	2.13* (1.23)
ESG Score	0.01* (0.01)	0.01** (0.01)	0.02** (0.01)	0.01* (0.01)
Ind(Conduct)	-0.56** (0.27)		-0.52** (0.26)	
ln(Mkt Cap)	0.04 (0.05)			0.01 (0.06)
ln(Scale)	-0.53*** (0.21)	-0.50*** (0.21)	-0.51*** (0.20)	-0.51*** (0.21)
AIC	249.12	249.84	247.53	251.82
BIC	264.17	258.87	259.57	263.87
Log Likelihood	-119.56	-121.92	-119.76	-121.91
Num. obs.	150	150	150	150

*** $p < 0.025$; ** $p < 0.05$; * $p < 0.1$

B.4.2 Executive compensation

In this section we give some information for a hypothesis that was not deemed of enough importance to show in the final version of the paper.

An issue that plausibly may affect corporate reactions to exclusions is executive compensation. If exclusions lead to a stock price decline, executive options will fall in value. Executives will then have an incentive to argue for the importance of reversing exclusions.

To test this we formulate

Hypothesis 1 *Companies with higher sensitivity of options to stock price declines (delta) are more likely to see exclusions being reversed.*

We construct a proxy for the sensitivity of executive options to changes in stock prices. This is approximated as the delta of a generic at-the-money call with one-year maturity.¹

Let us now look at the results. As discussed, executives will be concerned if exclusions affect stock prices, as a price drop will affect the value of executive options. To test the hypothesis we introduce a measure of option sensitivity to changes in stock price (option delta) as a predictive variable in the duration analysis performed in section 4.4. The estimation including option sensitivity as an explanatory variable is shown in the last column of Table B.2. The coefficient on option sensitivity is not significant, and it even has the wrong sign, as it is positive. In this analysis, a positive coefficient has the interpretation that it increases the time till exit. We conclude that we don't find effects linked to the sensitivity of corporate options, and reject the Hypothesis.

¹The delta is calculated as $\Delta_c = N(d_1)$, where $d_1 = \left(r + \frac{1}{2}\sigma^2\right) / \sigma$, N the cumulative normal distribution function, r an estimate of the risk free rate, and σ the option volatility. We use the US one-year treasury rate as a proxy for the risk-free rate on this one-year option. The option volatility is estimated from daily dollar returns for the three years leading up to the estimation date. The delta is evaluated at the time of the exclusion announcement by the GPF.

Table B.2: 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, GPF, and Refinitiv.

	(1)	(2)	(3)	(4)	(5)
ESG Score	-0.03*** (0.01)	-0.03*** (0.01)	-0.02** (0.01)	-0.03** (0.01)	-0.02** (0.01)
Ind(Conduct)		0.73* (0.40)		0.85* (0.44)	0.77 (0.48)
ln(Mkt Cap)			-0.06 (0.09)	-0.11 (0.09)	-0.11 (0.08)
Delta					4.87 (5.76)
AIC	218.84	217.97	220.54	219.01	220.49
R ²	0.03	0.05	0.04	0.06	0.06
Max. R ²	0.77	0.77	0.77	0.77	0.77
Num. events	28	28	28	28	28
Num. obs.	149	149	149	149	149
PH test	0.46	0.76	0.55	0.70	0.43

*** $p < 0.025$; ** $p < 0.05$; * $p < 0.1$

C List of Exclusions

This section gives a detailed list of the companies used in the analysis.

Table C.3: List of excluded companies

Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Aboitiz Power Corp.	USA	2016	Coal or coal-based energy
AECOM	USA	2018 2020	Weapons <i>Sale of subsidiary</i>
Aerojet Rocketdyne Holdings Inc.	USA	2008	Weapons
AES Corp/VA	USA	2016	Coal or coal-based energy
AES Gener SA	Chile	2016	Coal or coal-based energy
Africa Israel Investments Ltd.	Israel	2010 2020	Individuals' rights in war or conflict <i>Going private</i>
AGL Energy Ltd.	Australia	2020	Coal or coal-based energy
Allete Inc.	USA	2016	Coal or coal-based energy
Alliant Energy Corp.	USA	2016	Coal or coal-based energy
Altria Group Inc.	USA	2010	Tobacco
Ameren Corp.	USA	2016	Coal or coal-based energy
American Electric Power Co. Inc.	USA	2016	Coal or coal-based energy
Anglo American Plc.	South Africa	2020 2021	Coal or coal-based energy <i>Change in product mix</i>
Ashtröm Group Ltd.	Israel	2021	Individuals' rights in war or conflict
Atal SA	Poland	2018 2021	Violation of human rights <i>Other reason</i>
BAE Systems Plc.	UK	2006 2013	Weapons <i>Change in product mix</i>
BAE Systems Plc.	UK	2018	Weapons
Barrick Gold Corp.	Canada	2009	Environmental damage
Beijing Tong Ren Tang Chinese Medicine Co. Ltd.	China	2021	Environmental damage
Bharat Heavy Electricals Ltd.	India	2017	Environmental damage
Boeing Co.	USA	2006	Weapons
British American Tobacco Bhd.	Malaysia	2010	Tobacco
British American Tobacco Plc.	UK	2010	Tobacco
BWX Technologies Inc.	USA	2013	Weapons
Cairn Energy Plc.	UK	2016 2018	Violations of ethical norms <i>Cease of activity</i>
Canadian Natural Resources Ltd.	Canada	2020	Greenhouse gas emissions
Capital Power Corp.	Canada	2016	Coal or coal-based energy

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Table C.3 – Continued from previous page

Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Cenovus Energy Inc.	Canada	2020	Greenhouse gas emissions
Centrais Eletricas Brasileiras SA (Eletrobras)	Brazil	2020	Violation of human rights
CESC Ltd.	India	2016	Coal or coal-based energy
CEZ AS	Czech Republic	2017	Coal or coal-based energy
China Coal Energy Co. Ltd.	China	2016	Coal or coal-based energy
China Power Int. Development Ltd.	Hong Kong	2016	Coal or coal-based energy
China Resources Power Holdings Co. Ltd.	Hong Kong	2016	Coal or coal-based energy
China Shenhua Energy Co. Ltd.	China	2016	Coal or coal-based energy
China Traditional Chinese Medicine Holdings Co. Ltd.	Hong Kong	2021	Environmental damage
Chugoku Electric Power Co. Inc.	Japan	2016	Coal or coal-based energy
CLP Holdings Ltd.	Hong Kong	2016	Coal or coal-based energy
Coal India Ltd.	India	2016	Coal or coal-based energy
Consol Energy Inc.	USA	2016	Coal or coal-based energy
Daewoo International Corp.	South Korea	2015	Environmental damage
Danya Cebus Ltd.	Israel	2010	Individuals' rights in war or conflict
Datang Int. Power Generation Co. Ltd.	China	2016	Coal or coal-based energy
DMCI Holdings Inc.	USA	2016	Coal or coal-based energy
Dongfeng Motor Group Co. Ltd.	Hong Kong	2009 2014	Individuals' rights in war or conflict <i>Other reason</i>
Drax Group Plc.	UK	2016 2020	Coal or coal-based energy <i>Change in product mix</i>
DRD Gold Ltd.	USA	2007 2009	Environmental damage <i>Cease of activity</i>
DTE Energy Co.	USA	2016	Coal or coal-based energy
Duke Energy Corp.	USA	2016	Environmental damage
EADS Finance BV*	The Netherlands	2005	Weapons
EADS NV	France	2005	Weapons
El Sewedy Electric Co	Egypt	2020	Environmental damage
Elbit Systems Ltd.	USA	2009	Violations of ethical norms
Elco Ltd.	Israel	2021	Individuals' rights in war or conflict
Electra Ltd.	Israel	2021	Individuals' rights in war or conflict
Electric Power Development Co. Ltd.	Japan	2016	Coal or coal-based energy
Electricity Generating Plc.	Thailand	2016	Coal or coal-based energy
Emera Inc.	Canada	2016	Coal or coal-based energy
Empire District Electric Company	USA	2016 2017 2021	Coal or coal-based energy <i>M&A</i> <i>Change in product mix</i>

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Table C.3 – Continued from previous page

Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Eneva SA	Brazil	2017	Coal or coal-based energy
Engie Energia Chile SA	Chile	2016	Coal or coal-based energy
Evergreen Marine Corp. Taiwan Ltd.	Taiwan	2018	Environmental damage Human rights
Evergy Inc.	USA	2019	Coal or coal-based energy
Exxaro Resources Ltd.	South Africa	2016	Coal or coal-based energy
Finmeccanica Sp. A.	Italy	2006 2013	Weapons <i>Change in product mix</i>
FirstEnergy Corp.	USA	2016	Coal or coal-based energy
Fluor Corp.	USA	2018	Weapons
FMC Corp.	USA	2011 2013	Violations of ethical norms <i>Cease of activity</i>
Formosa Chemicals & Fibre Corp.	Taiwan	2020	Violation of human rights
Formosa Taffeta Co. Ltd.	Taiwan	2020	Violation of human rights
Freeport McMoRan Copper & Gold Inc.	USA	2006	Environmental damage
G4S Plc.	UK	2019 2021	Violation of human rights <i>M&A</i>
General Dynamics Corp.	USA	2005 2019	Weapons <i>Change in product mix</i>
Genting Bhd.	Malaysia	2015	Environmental damage
Glencore Plc.	Switzerland	2020	Coal or coal-based energy
Grand Pharmaceutical Group Ltd.	China	2021	Environmental damage
Great River Energy*	USA	2017	Coal or coal-based energy
Grupo Carso SAB de CV	Mexico	2011 2019	Tobacco <i>Sale of subsidiary</i>
Guangdong Electric Power Development	China	2016	Coal or coal-based energy
Gudang Garam Tbk. Pt.	Indonesia	2010	Tobacco
Gujarat Mineral Development Corp. Ltd.	India	2016	Coal or coal-based energy
Halcyon Agri Corp. Ltd.	Singapore	2019	Environmental damage
Hanwha Corp.	South Korea	2008 2021	Weapons <i>Change in product mix</i>
HK Electric Investments	Hong Kong	2017	Coal or coal-based energy
Hokkaido Electric Power Co. Inc.	Japan	2016	Coal or coal-based energy
Hokuriku Electric Power Co.	Japan	2016	Coal or coal-based energy
Honeys Holding Co. Ltd.	Japan	2021	Violation of human rights
Honeywell International Group	USA	2006	Weapons
Huabao International Holdings Ltd.	Hong Kong	2013	Tobacco
Huadian Energy Co Ltd	China	2017	Coal or coal-based energy
Huadian Power Int. Corp. Ltd.	China	2016	Coal or coal-based energy

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Table C.3 – Continued from previous page

Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Huaneng Power Int. Inc.	China	2016	Coal or coal-based energy
Huntington Ingalls Industries Inc.	USA	2018	Weapons
Idacorp Inc.	USA	2016	Coal or coal-based energy
IJM Corp. Bhd.	Malaysia	2015	Environmental damage
Imperial Oil Ltd.	Canada	2020	Greenhouse gas emissions
Imperial Tobacco Group Plc.	UK	2010	Tobacco
Inner Mongolia Yitai Coal Co. Ltd.	China	2016	Coal or coal-based energy
ITC Ltd.	India	2010	Tobacco
Jacobs Engineering Group Inc.	USA	2013	Weapons
Japan Tobacco Inc.	Japan	2010	Tobacco
Jastrzebska Spolka Weglowa SA	Poland	2016	Coal or coal-based energy
JBS SA	Brazil	2018	Gross corruption
Kerr-McGee Corp.	USD	2005 2006 2006	Individuals' rights in war or conflict <i>M&A</i> <i>Other reason</i>
Korea Electric Power Corp.	South Korea	2017	Coal or coal-based energy
Korea Line Corp.	South Korea	2018	Environmental damage Human rights
Kosmos Energy Ltd.	USA	2016 2018	Violations of ethical norms <i>Cease of activity</i>
KT&G Corp.	South Korea	2010	Tobacco
L3 Communications Holdings	USA	2005 2011 2019	Weapons <i>Cease of activity</i> <i>M&A</i>
Lingui Development Bhd.	Malaysia	2011 2013	Environmental damage <i>Going private</i>
Lockheed Martin Corp.	USA	2005	Weapons
Lorrillard Inc.	USA	2010 2015	Tobacco <i>M&A</i>
Lubelski Wegiel Bogdanka SA	Poland	2016	Coal or coal-based energy
Luthai Textile Co. Ltd.	China	2018	Violation of human rights
Malakoff Corp Bhd.	Kuala Lumpur	2017	Coal or coal-based energy
MGE Energy Inc.	USA	2016	Coal or coal-based energy
Mivne Real Estate KD Ltd.	Israel	2021	Individuals' rights in war or conflict
MMC Norilsk Nickel	Russia	2009	Environmental damage
New Hope Corp. Ltd.	Australia	2016	Coal or coal-based energy
Northrop Grumman Corp.	USA	2006	Weapons
NRG Energy Inc.	USA	2016	Coal or coal-based energy
NTPC Ltd.	India	2016	Coal or coal-based energy

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Table C.3 – Continued from previous page

Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Nutrien Ltd.	Canada	2011 2019	Environmental damage <i>Cease of activity</i>
Oil & Natural Gas Corp Ltd.	India	2021	Individuals' rights in war or conflict
Okinawa Electric Power Co. Inc.	Japan	2016	Coal or coal-based energy
Orbital ATK Inc. (prev. Alliant Techsystems Inc)	Australia	2005 2018	Weapons <i>M&A (Bought by Northrop Grumman Corp.)</i>
Otter Tail Corp.	USA	2017	Coal or coal-based energy
PacifiCorp*	USA	2018	Coal or coal-based energy
Page Industries Ltd.	India	2020	Violation of human rights
Peabody Energy Corp.	USA	2016	Coal or coal-based energy
PGE Polska Grupa Energetyczna SA	Poland	2017	Coal or coal-based energy
Philip Morris CR AS	Czech Republic	2010	Tobacco
Philip Morris Int. Inc.	USA	2010	Tobacco
PNM Resources Inc.	USA	2016	Coal or coal-based energy
Poongsan Corp.	South Korea	2006	Weapons
POSCO	South Korea	2015	Environmental damage
Pyxus Int. (prev. Alliance One International Inc.)	USA	2010 2020	Tobacco <i>Bankruptcy</i>
Precious Shipping Plc.	Thailand	2018 2021	Environmental damage Human rights <i>Other reason</i>
Public Power Corp. SA	Greece	2016	Coal or coal-based energy
Raytheon Co.	USA	2005 2017 2020	Weapons <i>Change in product mix</i> <i>M&A</i>
Reliance Infrastructure Ltd.	India	2016	Coal or coal-based energy
Reliance Power Ltd.	India	2016	Coal or coal-based energy
Reynolds American Inc.	USA	2010 2017	Tobacco <i>M&A</i>
Rio Tinto Plc.	Australia	2008 2019	Environmental damage <i>Sale of subsidiary</i>
RWE AG	Germany	2020	Coal or coal-based energy
Safran SA	France	2006	Weapons
Samling Global Ltd.	Malaysia	2010 2013	Environmental damage <i>Going private</i>
Sasol Ltd	South Africa	2020	Coal or coal-based energy
Schweitzer-Mauduit International Inc.	USA	2013	Tobacco
SDIC Power Holdings Co. Ltd.	China	2017	Coal or coal-based energy
Serco Group Plc.	UK	2008	Weapons
Shanghai Industrial Holdings Ltd.	Hong Kong	2011	Tobacco

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Table C.3 – Continued from previous page

Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Shapir Engineering and Industry Ltd.	Israel	2021	Individuals' rights in war or conflict
Shikoku Electric Power Co. Inc.	Japan	2016	Coal or coal-based energy
Shikun & Binui Ltd.	Israel	2012	Individuals' rights in war or conflict
Souza Cruz SA	Brazil	2010 2016	Tobacco <i>Going private</i>
Suncor Energy Inc.	Canada	2020	Greenhouse gas emissions
Swedish Match AB	Sweden	2010	Tobacco
Ta Ann Holdings Bhd.	Malaysia	2013	Environmental damage
Tata Power Co. Ltd.	India	2016	Coal or coal-based energy
Tenaga Nasional Bhd.	Malaysia	2016	Coal or coal-based energy
Textron Inc.	USA	2009	Weapons
Texwinca Holdings Co.	Hong Kong	2019 2020	Violation of human rights <i>Cease of activity</i>
Thales SA	France	2005 2009	Weapons <i>Change in product mix</i>
Thoresen Thai Agencies Plc	Thailand	2018	Environmental damage Human rights
Tong Ren Tang Technologies Co. Ltd.	Hong Kong	2021	Environmental damage
TransAlta Corp.	Canada	2016	Coal or coal-based energy
Tri-State Generation and Transmission Association Inc.*	USA	2018	Coal or coal-based energy
United Technologies Corp.	USA	2006 2010	Weapons <i>Change in product mix</i>
Universal Corp. VA	USA	2010	Tobacco
Vale SA	Brazil	2020	Environmental damage
Vector Group Ltd.	USA	2010	Tobacco
Vedanta Ltd.	India	2014	Environmental damage
Vedanta Resources Plc.	India	2007 2018	Environmental damage <i>M&A</i>
Volcan Compania Minera SAA	Peru	2013	Environmental damage
Wal-Mart de Mexico SA*	Mexico	2006 2019	Violation of human rights <i>Other reason</i>
Wal-Mart Stores Inc.	USA	2006 2019	Violation of human rights <i>Other reason</i>
Washington H Soul Pattinson & Co. Ltd.	Australia	2019	Coal or coal-based energy
WEC Energy Group Inc.	USA	2016	Coal or coal-based energy
Whitehaven Coal Ltd.	Australia	2016	Coal or coal-based energy
WTK Holdings Bhd.	Malaysia	2013	Environmental damage
Xcel Energy Inc.	USA	2016	Coal or coal-based energy
Yankuang Energy Group Co. Ltd.	China	2016	Coal or coal-based energy

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Table C.3 – Continued from previous page

Company name	Country	Excluded Revoked	Reason for exclusion Reason for revoke
Yunnan Baiyao Group Co. Ltd.	China	2021	Environmental damage
Zijin Mining Group Co. Ltd.	China	2013	Environmental damage
ZTE Corp.	USA	2016	Gross corruption
Zuari Agro Chemicals Ltd.	India	2013	Violation of human rights

Note: The table displays the firms that are or have been excluded. We have treated Rio Tinto Plc and Rio Tinto Ltd as one company. Danya Cebus Ltd. was delisted in 2015 and relisted in 2021 - exclusion decision has not changed. Singapore Technologies Engineering is not included in the sample. In the case where a company is no longer excluded, but the decision has not been revoked, the company has ceased to exist.

** marks the companies for which we could not identify the pricing information of the common shares from Refinitiv*

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