

# Appendix to “The expected returns of ESG excluded stocks. Shocks to firms costs of capital? Evidence from the World’s largest fund”

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## A Additional results for section 2

### A.1 Additional descriptives on exclusions

Table A.1: 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.2: 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.3: 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

## B Additional results for section 3

### B.1 Additional descriptives for exclusion portfolio returns

Table B.1 gives descriptive statistics for the various portfolio returns.

**Table B.1: 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	EW Exclusion Portfolios			
			Conduct	Product	Coal	US
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	VW Exclusion Portfolios			
			Conduct	Product	Coal	US
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

### **B.1.1 Cumulative returns of the Exclusion Portfolios**

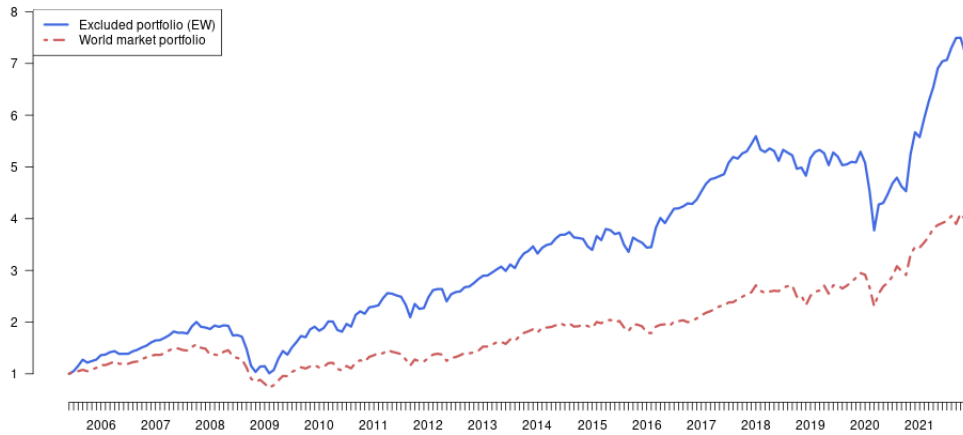
A simple, intuitive way to compare returns of two portfolios is to plot their cumulative returns. In Panel A of Figure B.1 we compare the evolution of the equally weighted exclusion portfolio with a global market portfolio. The exclusion portfolio clearly outperforms the market portfolio over the period.

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.

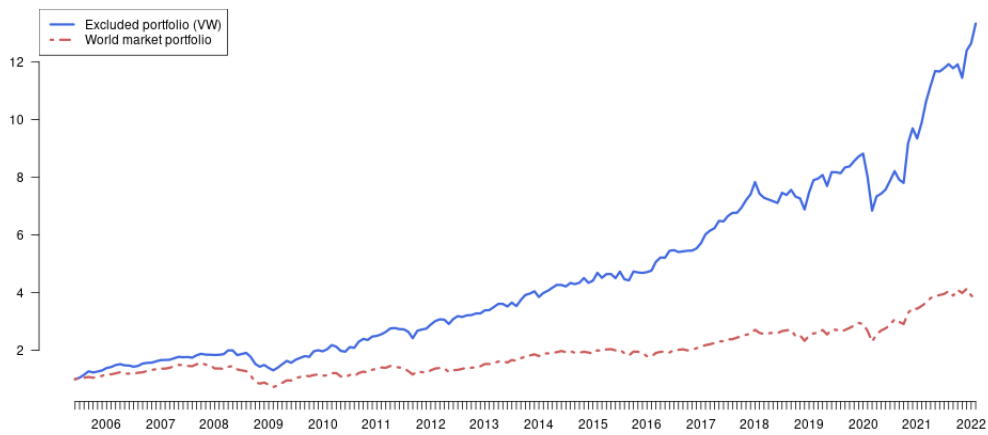
**Figure B.1: Cumulative returns of the exclusion portfolios**

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.2 The US exclusion portfolio**

This section provides some additional descriptives and results for the exclusion portfolio only using US shares. The paper provides a table with alpha estimation.

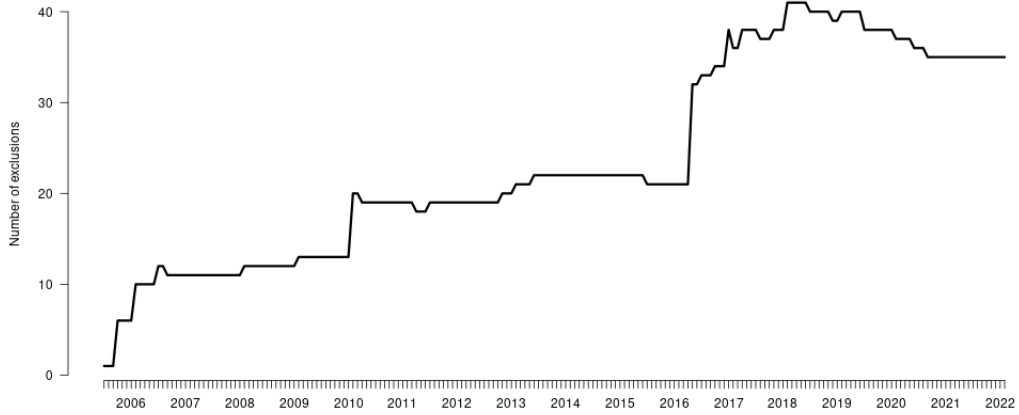
Figure B.2 gives some descriptives for the US exclusion portfolios. Panel A shows the time series evolution of the number of shares in the portfolio. In the period 2006-2013 the portfolio contained between 10 and 20 stocks, a number that jumped to almost 40 in 2016, with a large number of coal-related 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, however, 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.



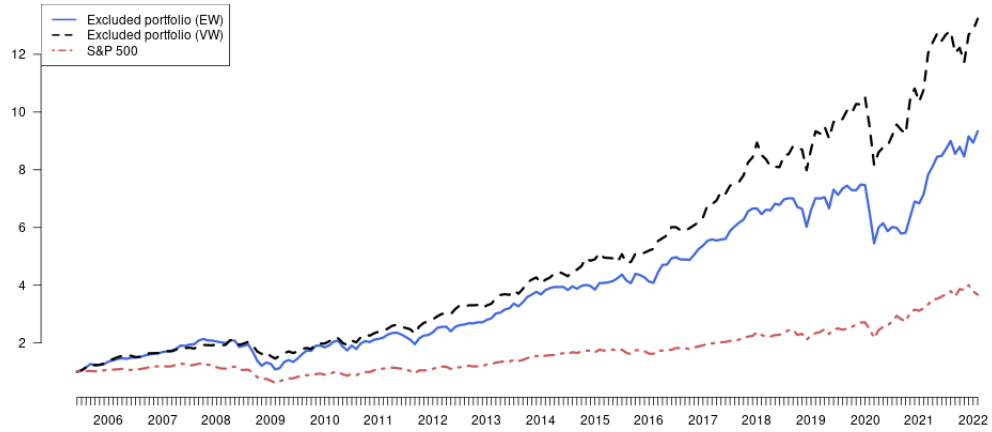
**Figure B.2: The US exclusion portfolios**

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, are 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**



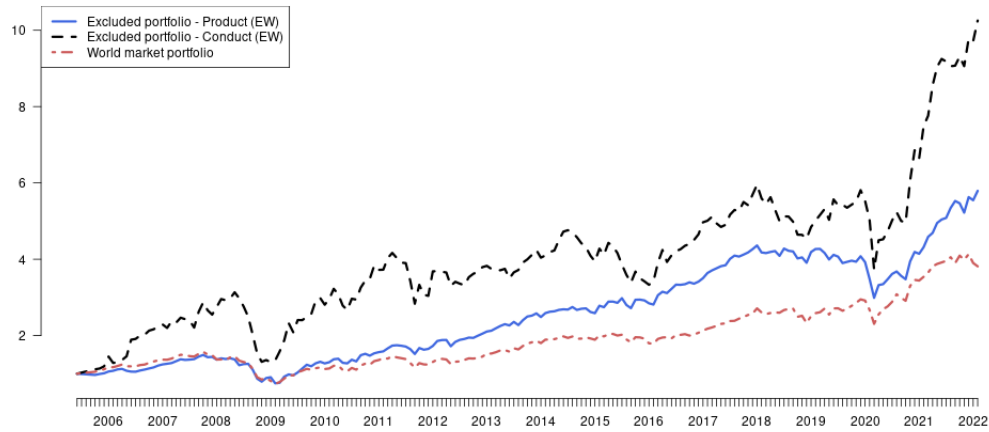
### **B.3 Additional performance analysis - sub-portfolios**

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

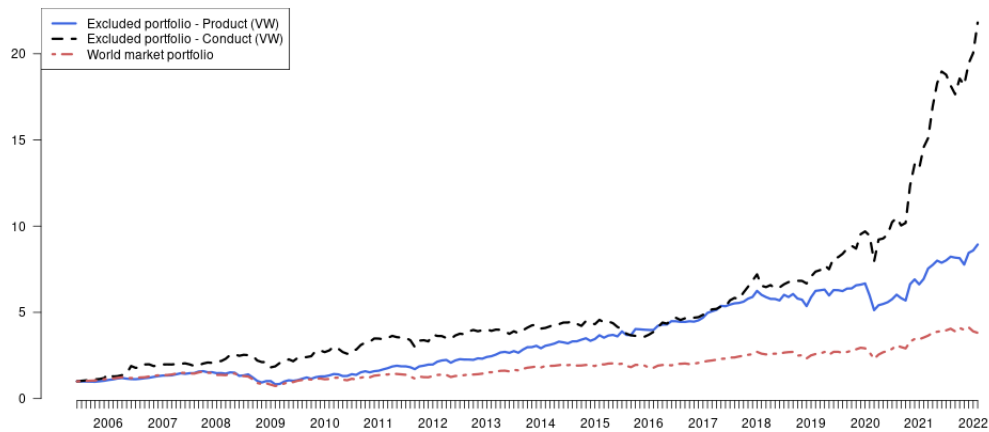
**Figure B.3: The cumulative return of conduct and product based exclusions**

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.4 The event study – further details

This section contains details of the event study used to generate the paper figure. Some care is necessary in setting this up, as these are events happening in a diverse set of equity markets, and it is necessary to make them comparable.<sup>1</sup> To that end our maintained asset pricing model is an international CAPM, denominated in dollars.

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

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 world market index. As market index we use Ken French's daily returns for his index of global developed markets. As risk free rate we use the Ken French estimate. These returns are denominated in USD.

The method of calculation is standard, we estimate the parameter  $\hat{\beta}_i$  in a three-year pre-period using daily returns translated to US 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):

$$CAR_{i,t} = \sum_{j=1}^t AR_{i,j}$$

The event date is the announcement of the exclusion. We start estimation one calendar month before the event date and end it two calendar months after.

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<sup>1</sup>If one runs these as separate event studies in each market, the estimated excess returns would be in different currencies.

## **B.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. 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)
<b>Annualized Alphas(percent)</b>	<b>7.860</b>	<b>3.320</b>
Adj. R <sup>2</sup>	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)
<b>Annualized Alphas(percent)</b>	<b>8.440</b>	<b>5.010</b>
Adj. R <sup>2</sup>	0.782	0.825
Num. obs.	126	73

## B.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 portfolio 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)
<b>Annualized Alphas(percent)</b>	<b>5.119</b>	<b>7.031</b>	<b>5.558</b>	<b>8.345</b>
Adj. R <sup>2</sup>	0.828	0.767	0.563	0.503
Num. obs.	200	200	70	70

## B.7 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.

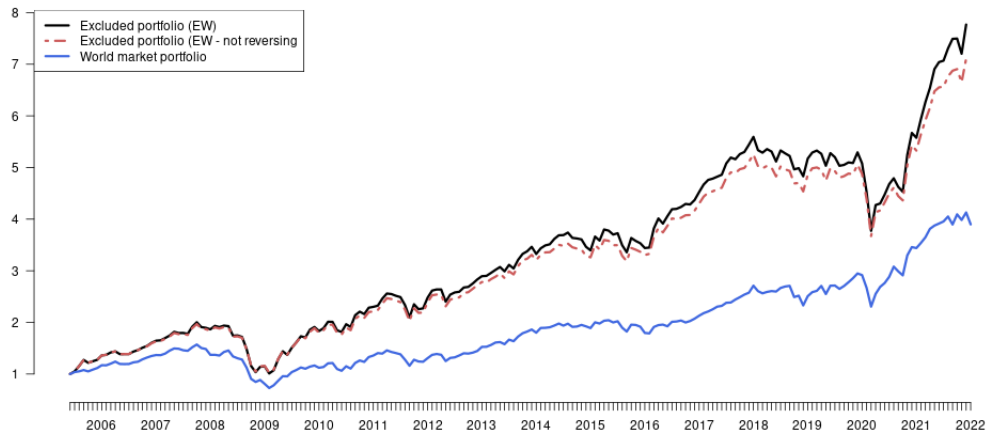
Figure B.4 shows the results, where the interesting comparison is between the two exclusion portfolios. The returns of exclusion portfolio where we do not remove the stocks when the exclusion is revoked *are* lower than the portfolio used in the paper (where stocks are removed), but the difference is trivial. This is true for both the equally weighted and value weighted versions of the portfolios.



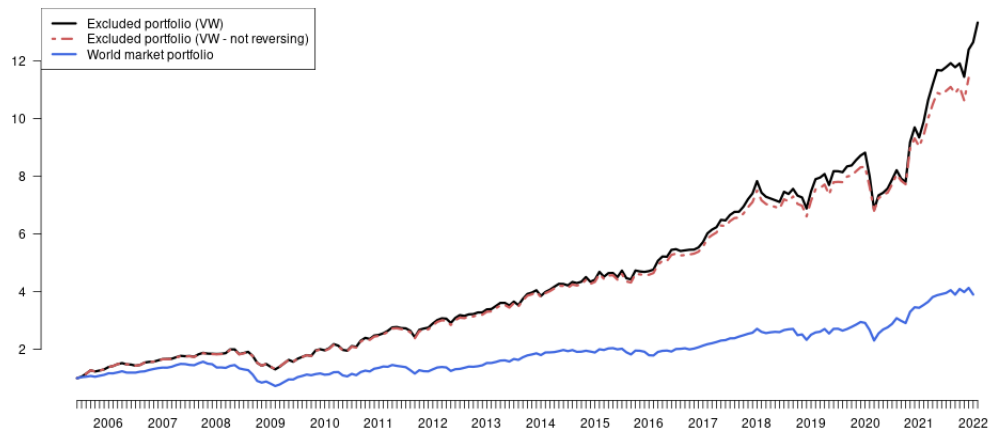
**Figure B.4: Portfolio evolution, portfolio keeping stocks whose exclusion is revoked**

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.8 Constructing a portfolio before the firms are excluded.**

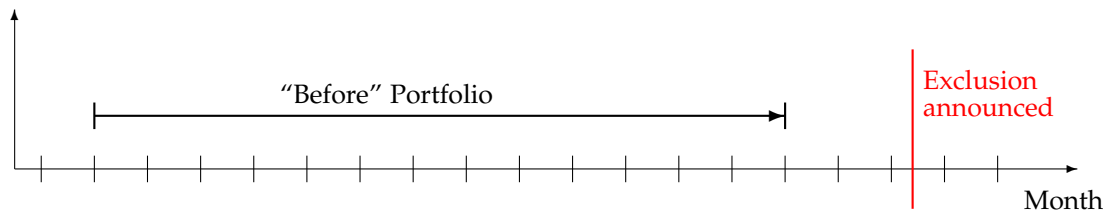
As a robustness investigation we look at the excluded companies in the period *before* the announcement by the GPF. If the estimated green premium reflect properties of the companies in question, and the low ESG/bad ethics is observable, other investors may be excluding the firm even if the GPF has not yet announced its divestment. It is therefore of interest to do 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. Panel A of Table B.4 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.

The alpha estimates for this Pre-Exclusion Portfolio are shown in Panel B, columns (1) and (2) of Table B.4. 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 “Before” portfolio.

**Table B.4: Exclusion portfolio before exclusion**

Panel A illustrates the creation of a portfolio a in a period before the GPFG announce their exclusion. This is the Pre-Exclusion Portfolio. Panel B 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  $\alpha_i$  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: Illustrating the Pre-Exclusion Portfolio**



**Panel B: Performance regressions for the Pre-Exclusion Portfolio**

	"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)
<b>Annualized Alphas(percent)</b>	<b>5.073</b>	<b>5.412</b>
Adj. R <sup>2</sup>	0.524	0.392
Num. obs.	222	196

## C Additional results for section 4

### C.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 C.1 provides a corresponding survival regression, using a Weibull probability distribution.

**Table C.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

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

## C.2 Additional results on “Post Exclusion Portfolio”?

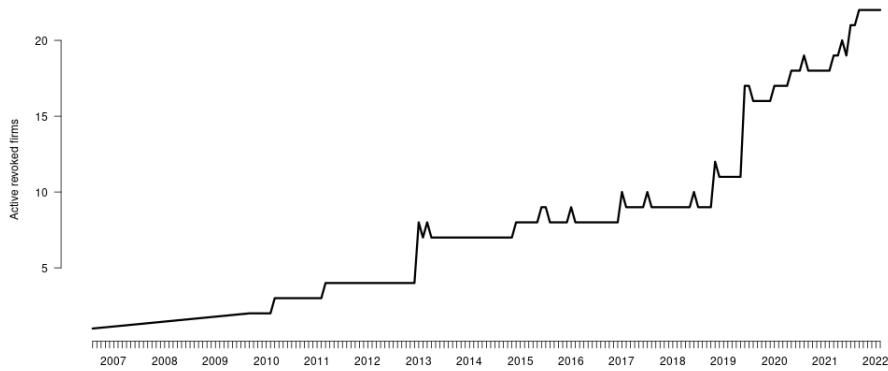
This subsection provided additional detail on the “Post Exclusion Portfolio” containing stocks which were previously excluded, but have now been let back in.

**Figure C.1: The Post-Exclusion Portfolio**

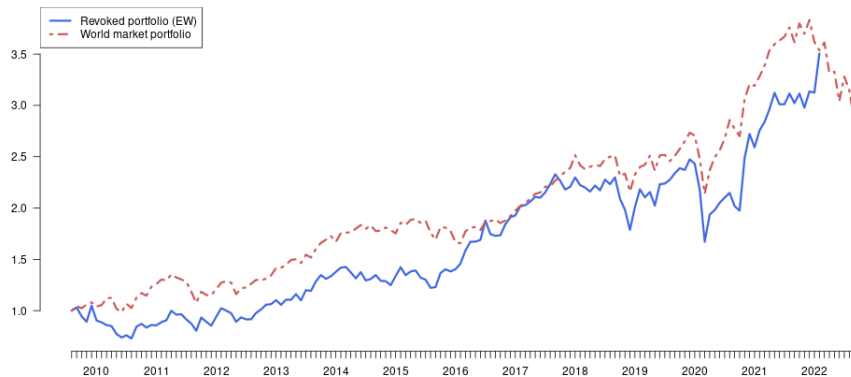
The figure in panel A shows the number of firms which have had their exclusion revoked, and remain listed. The post-exclusion portfolio is constructed as an equally weighted portfolio of all firms which have had their exclusions revoked and remain listed, starting the month after the exclusion is rescinded.

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



**Panel B: Cumulative returns for the Post-Exclusion Portfolio**



## D List of Exclusions

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

**Table D.1: 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 D.1 – 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&amp;A</i> <i>Change in product mix</i>

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**Table D.1 – 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&amp;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 D.1 – 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&amp;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&amp;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&amp;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 D.1 – 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&amp;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&amp;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&amp;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>
San Leon Energy Plc.	UK	2016	Violations of ethical norms
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
Sercu Group Plc.	UK	2008	Weapons

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Company name	Country	Excluded <i>Revoked</i>	Reason for exclusion <i>Reason for revoke</i>
Shanghai Industrial Holdings Ltd.	Hong Kong	2011	Tobacco
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&amp;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

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**Table D.1 – Continued from previous page**

Company name	Country	Excluded Revoked	Reason for exclusion Reason for revoke
Yankuang Energy Group Co. Ltd.	China	2016	Coal or coal-based energy
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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