

# The expected returns of ESG excluded stocks. Shocks to firms costs of capital? Evidence from the Worlds' largest fund

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# Research issue

- ESG - Environmental, Social and Governance aspects of corporate decisions.
- Institutional investors unwilling to invest in “bad” ESG firms.
- Of interest: Consequences of ESG-based portfolio exclusions on the expected returns of firms subject to exclusions?
- Theory: Tradeoff ESG/Cost of Capital
- Use: exclusions by the worlds largest fund.
  - What are the returns of the portfolio of excluded firms?  
What are the implications for cost of capital?
  - Are firms reacting to their exclusions?  
With consequences for cost of capital?

# Exclusions in asset allocation

- Institutional investors
  - Need an opinion on the ESG characteristics of potential entrants to their portfolio
  - Dealing with low ESG ranking firms:
    - Dialogue – the most common.  
Arguably a better way of achieving change
    - Exclusion: a reaction of last resort

# Literature

- Equilibrium models – tradeoff ESG/Cost of Capital – Pástor et al. (2021) Pedersen et al. (2021)
- Uncertainty of ESG ranking : Muddle the tradeoff – (Avramov et al., 2022)
- Empirically, cost of equity capital decreases with ESG quality – Chava (2014), Ng and Rezaee (2015), Breuer et al. (2018)
- Institutional portfolios – are returns decreasing in quality of the funds ESG (Signing on to UN's Principles for Responsible Investment (PRI))?  
Hedge funds → yes (Liang et al., 2022)  
Mutual funds → Yes (Renneboog, Ter Horst, and Zhang, 2008)  
→ Green-washing (Kim and Yoon, 2020)  
Problem: Institutional portfolios additional layer
- Question magnitude of effect of exclusion (Berk and van Binsbergen, 2024)

# Literature - ctd

- “Sin stocks”
  - Booze, Guns, Tobacco → outperform (Hong and Kacperczyk, 2009).
  - Environment (Chava, 2014)
  - Carbon (Bolton and Kacperczyk, 2021)
- Analysis of the oil fund’s exclusions
  - Event studies. (Atta-Darkua, 2022), (Eriksen et al., 2020)
  - Long term performance of excluded portfolio. (Hoepner and Schopohl, 2018)

# Our Analysis – Preview

Construct portfolio of excluded firms.

- Does the portfolio have “too high” returns (alpha)?  
→ **Yes**
- Is this due to short-term overreactions, or changes to long term cost of capital  
→ **It is the long term cost of capital**

After firms get on the exclusion list

- Are firms happy with their high cost of capital?  
→ **No, they try get their exclusions revoked to get back to a lower cost of capital.**
- If a firm's exclusion is revoked, what happens to cost of capital?  
→ **It Falls**

# Norway's GPF (The Oil Fund)

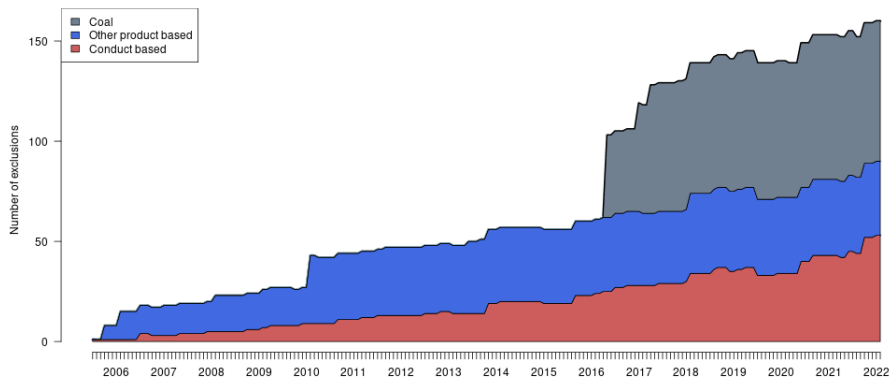
- World's largest SWF. Market value of equity 1 trillion USD at the end of 2021.
- "Near index fund".
- Exclusions handled by external "Council of Ethics", established 2004.
  - 2004–2021: 189 firms in total excluded, shorter or longer time periods.
  - At yearend 2021, fund invested in  $\approx$  10 thousand companies
  - $\rightarrow$  exclusions are truly exceptional



# The reasons for exclusions

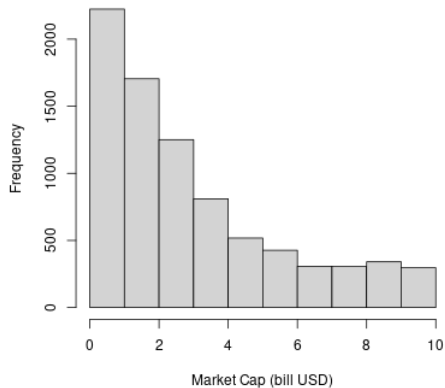
Exclusion reasons	Events
Conduct	67
Environmental damage	28
Individuals' rights in war or conflict	12
Violation of human rights	12
Environmental damage / Violation of human rights	4
Violation of ethical norms	5
Greenhouse gas emissions	4
Gross corruption	2
Product	122
Coal or coal-based energy	75
Weapons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

# The number of exclusions

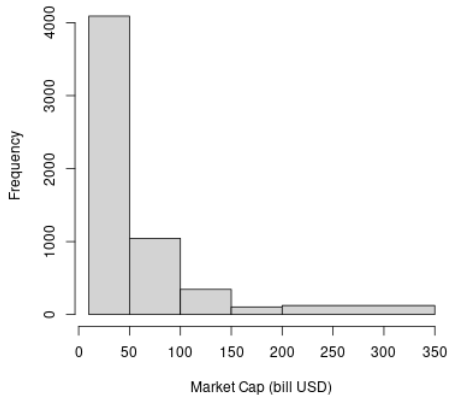


# Equity data - Size distribution

## B.1: Mkt Cap $\leq$ 10 bill USD

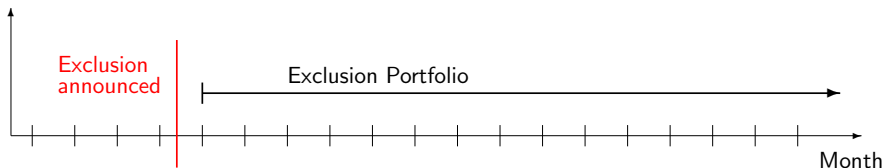


## B.2: Mkt Cap $>$ 10 bill USD

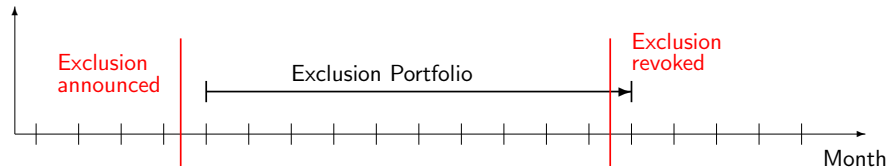


# Construction Exclusion Portfolio

- Firms enter portfolio month after exclusion

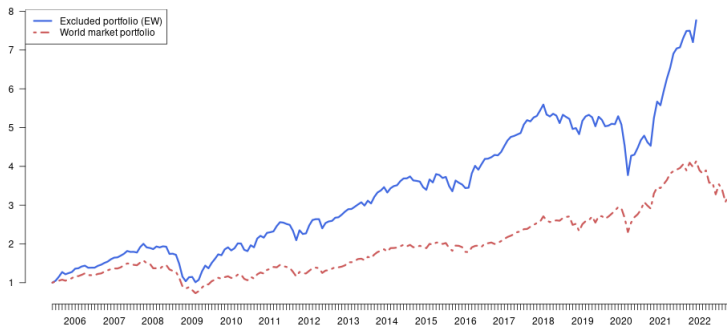


- If exclusion revoked, firms leave exclusion portfolio next month.



# Value evolution – exclusion portfolio vs market

- Exclusion portfolio perform better
- However, exclusion portfolio seem more exposed to crises ('08 and '20 covid)



Cumulative returns of equally weighted exclusion and global market portfolios

# Testing for performance

- Investigate whether the exclusion portfolio has higher/lower returns than it “should have”.
- → Estimate the alpha, the risk-adjusted excess return. (Return that can not be explained by an asset pricing model).
- Asset pricing model: Fama-French international five factor model (but do check alternatives)

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

# Estimates of alpha for (EW) Exclusion Portfolio

	(1)	(2)	(3)	(4)
Alpha	0.004*** (0.002)	0.004** (0.002)	0.004*** (0.002)	0.005*** (0.002)
Rm-Rf	0.961*** (0.040)	1.021*** (0.049)	0.993*** (0.042)	0.962*** (0.049)
SMB	0.173 (0.115)		0.178 (0.115)	0.177 (0.123)
HML	0.467*** (0.115)		0.310*** (0.074)	0.224*** (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 <sup>2</sup>	0.809	0.788	0.808	0.813

# Estimates of alpha for Exclusion Portfolio

- Alpha:  $> 5\%$  in annual terms — economically and statistically significant
- The exclusion portfolio substantial higher returns than it “should have”
- Finding robust to
  - asset pricing model
  - weighting scheme (equal, value weighted)
  - subportfolios: reason for exclusion, country (US).

## Conclude:

The Excluded firms have a return premium.



## Concern: Short term announcement effect

Potential Explanations of the high alpha (5%)

- Short term price pressure from exclusion?
- Changes to long term cost of capital?

Various estimates to show this is not only a short term effect

- Wait longer before enter exclusion portfolio
- Look at exclusion portfolio *before* oil funds exclusion
- Event study estimates  $\approx 1.5\%$  (one time event).

Argue  $\rightarrow$  The alpha too high to be explained by short term price corrections

**Conclude:**

Cost of capital has a substantial (bad) ESG premium.

# Firm's reactions

How do firms react when they are excluded?

- Do nothing?
- Reputational issue, some action in the press, but no real changes to firm's operations?
- Firms act to reverse the exclusion?

# Revoking exclusions

## Exclusions revoked due to:

Cause	no
Change of product mix	11
Cease of activity	7
Sale of subsidiary	4
Other reasons	6
Total	28

# Revoking exclusions – analysis

Actions to improve ESG leading to exclusion revoked

→ Endogenous action by firms

Trading off

- Cost of improving ESG (Cause of exclusion)
- Benefits from a lower cost of capital (cheaper to raise capital)

Motivate empirical investigations – proxies

- Cost – ESG score when excluded.
- Benefits
  - Capital needs  
(Revenue increase → Need for scale investments)
  - Actual capital raising

# Duration (survival) analysis of exit from Exclusion Portfolio

## Contributions to survival of exclusion

	(1)	(2)	(3)	(4)
ESG Score	-0.03*** (0.01)	-0.03*** (0.01)	-0.02** (0.01)	-0.03** (0.01)
Ind(Conduct)		0.85** (0.39)		0.98*** (0.44)
ln(Mkt Cap)			-0.05 (0.09)	-0.11 (0.10)
AIC	219.27	217.21	221.05	218.16
R <sup>2</sup>	0.03	0.06	0.04	0.07
Max. R <sup>2</sup>	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

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

# Duration (survival) analysis of exit from Exclusion Portfolio

Interpreting survival analysis

Explanatory variables:

Of interest:

- ESG score when excluded – (negative coefficient)  
→ Low ESG score when entering exclusion portfolio → lower time till exit.  
Possible interpretation: Cost of improving ESG low when starting from a low base.

Controls:

- Conduct based exclusion dummy (easier to fix conduct based than product based reasons for exclusion)
- Firm Market Capitalization

# Benefits from cheaper cost of capital

Higher likelihood of raising capital – increased benefits?

Higher Revenue – Higher investment needs

To investigate:

Probit - Model probability of having exclusions revoked as a function of

- Revenue growth – negative relation:  
High revenue growth → higher probability of exclusion revoked.
- Earnings growth – no relation

# Revoking exclusions

Actual equity deals – raising new equity capital

- High probability of raising capital after exclusion revoked (albeit on a small sample).

	Firms raising capital	
	Number	Percent
Firms still excluded	56	37.1
Firms with exclusion revoked	11	57.9



# Estimates of alpha for the post-exclusion portfolio

	(1)	(2)	(3)	(4)
Alpha	-0.002 (0.003)	-0.002 (0.003)	-0.001 (0.003)	0.000 (0.003)
Rm-Rf	1.080*** (0.077)	1.085*** (0.073)	1.061*** (0.073)	1.033*** (0.076)
SMB	0.335 (0.221)		0.250 (0.209)	0.245 (0.208)
HML	0.271 (0.215)		0.235* (0.123)	0.128 (0.144)
RMW	0.326 (0.292)			
CMA	0.107 (0.345)			
WML				-0.192 (0.136)
Annualized Alphas(percent)	-2.230	-1.970	-0.860	0.300
Adj. R <sup>2</sup>	0.604	0.596	0.606	0.609

# Key takeaways

- ① *Magnitude* of the return difference linked to ESG.
- ② *Dynamics* of corporate reactions to exclusion.  
More likely to see exclusion revoked if
  - ESG “really bad” at exclusion (cheaper to rectify?)
  - Revenue growth high (investment needs?)

# Extra tables and results

# Exclusions over time

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

# Exclusions by industry

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	
<b>Total</b>		<b>189</b>	<b>26</b>

# Exclusions by country

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	
Ci	1	

# Sample of stocks

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

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

# Equity 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



# Descriptives, exclusion portfolio returns

## Panel A: Equally weighted exclusion portfolio

	gmn					
	Market	All	EW Exclusion Portfolios			
	Market	All	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

	VW Exclusion Portfolios					
	Market	All	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

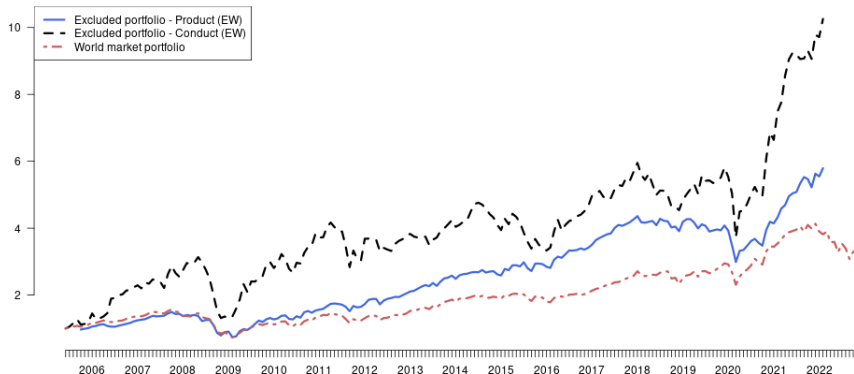
Describing portfolio returns for the various exclusion portfolios. All returns in USD. Returns and

# Estimates of alpha for (VW) Exclusion Portfolio

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

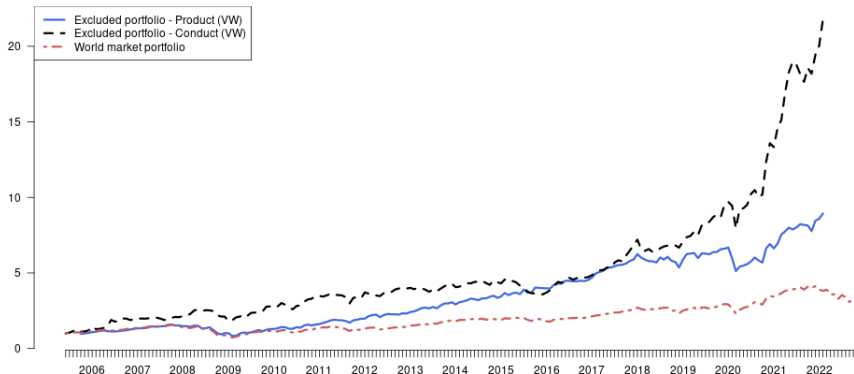
# Conduct and product based value evolution (EW)

## Panel A: Equally weighted exclusion portfolio



# Conduct and product based value evolution (VW)

## Panel B: Value weighted exclusion portfolio

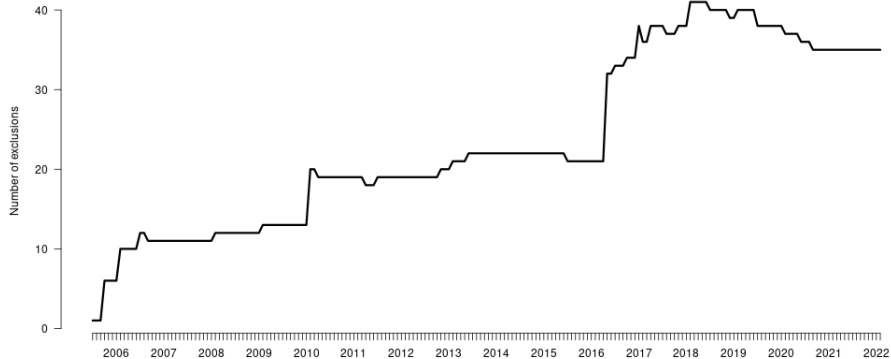


# Conduct and product based exclusion

	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)
<b>Annualized Alphas(percent)</b>	<b>8.540</b>	<b>11.310</b>	<b>3.370</b>	<b>4.680</b>
Adj. R <sup>2</sup>	0.579	0.371	0.766	0.731
Num. obs.	199	199	196	196

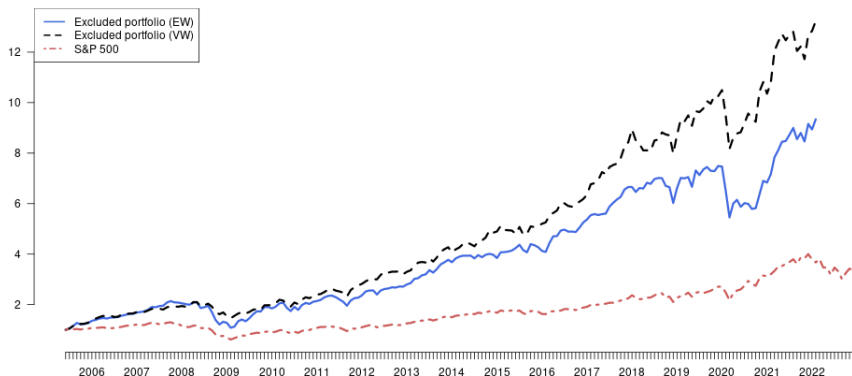
# US Exclusion Portfolio

## Panel A: Number of exclusions



# US Exclusion Portfolio

## Panel B: Cumulative returns



# US Exclusion Portfolio

	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)
<b>Annualized Alphas(percent)</b>	<b>4.870</b>	<b>7.200</b>
Adj. R <sup>2</sup>	0.710	0.644
Num. obs.	200	200



# Alpha estimation for Subperiods

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

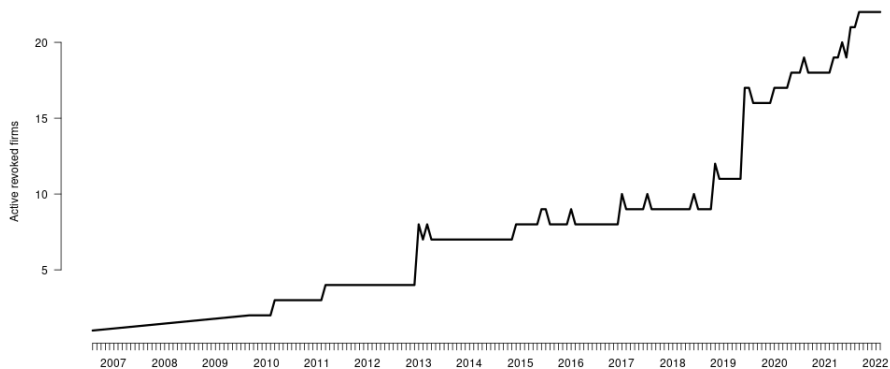
# Alpha estimation for Subperiods

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

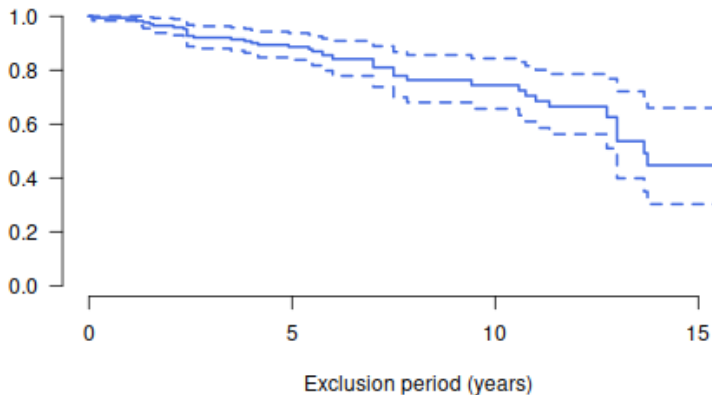
# Post-Exclusion portfolio

## Panel A: Number of stocks with exclusions revoked and still listed



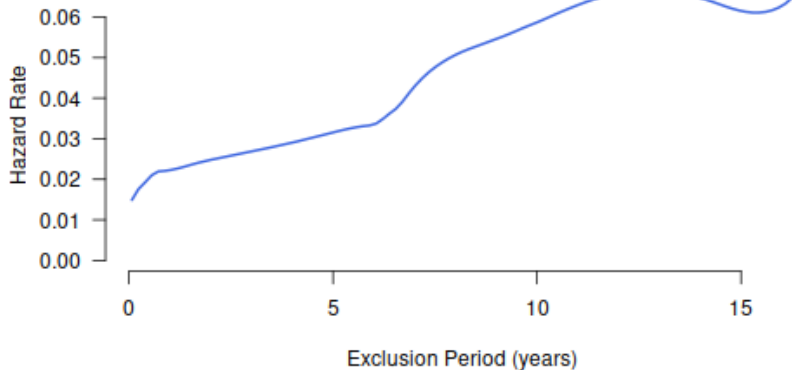
# Duration (survival) analysis of exit from Exclusion Portfolio

## Panel A. Survival curve

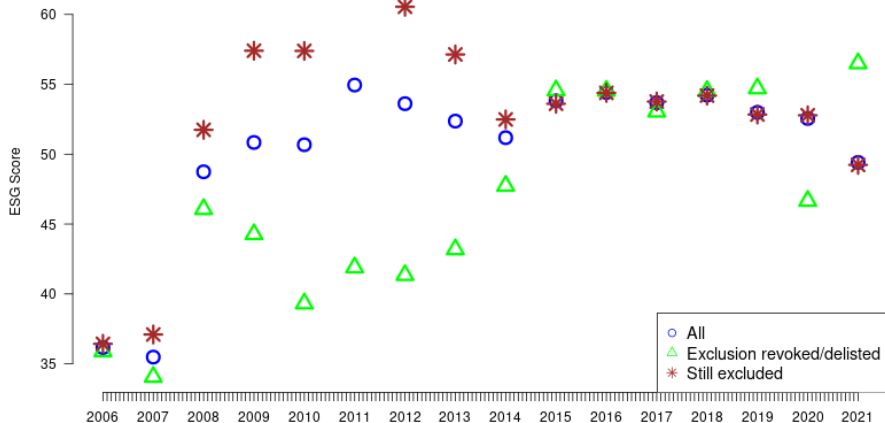


# Duration (survival) analysis of exit from Exclusion Portfolio

## Panel B. Instantaneous hazard curve (smoothed)



# ESG Scores for firms with/without exclusion revoked

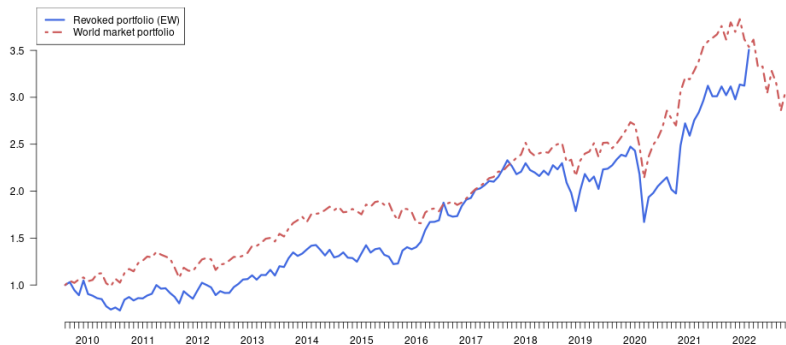


# Probit estimation of determinants of discontinuation of exclusion

	(1)	(2)	(3)	(4)
(Intercept)	-3.53*** (1.12)	-2.26*** (0.13)	-2.24*** (0.13)	-3.38*** (1.13)
Growth EPS	-0.02 (0.02)	-0.02 (0.02)		
Ind(Conduct)	0.69*** (0.19)	0.66*** (0.19)	0.52*** (0.19)	0.54*** (0.19)
ln(Mkt Cap)	0.06 (0.05)			0.05 (0.05)
Growth Revenue			0.46* (0.26)	0.45* (0.26)
Log Likelihood	-97.86	-98.51	-99.08	-98.55
Num. obs.	981	981	969	969

## Extra material - The Post-Exclusion portfolio

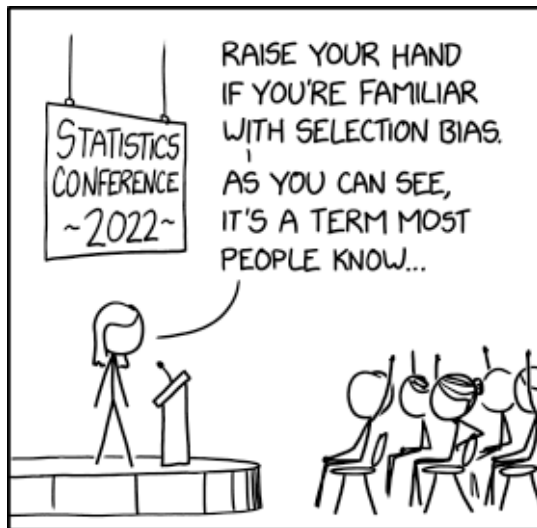
Firms enter the post-exclusion portfolio month after exclusion is revoked.



### Cumulative returns for the Post-Exclusion Portfolio



# Exclusion revoked → Selection problem?

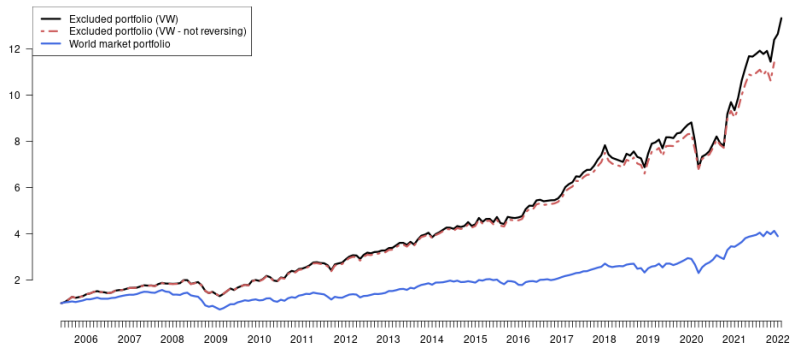


# Exclusion revoked → Selection problem?

- The Exclusion portfolio – firms only in portfolio *while* excluded.
- Remove firms *post* exclusion. Selection problem?
  - What is the return on the portfolio of post-excluded firms?
  - What if we keep firms in the portfolio even if the exclusion is revoked?

## Keeping the firms with exclusion revoked

Compare Exclusion Portfolio with corresponding portfolio where firms whose exclusion is revoked is kept



### Cumulative returns, Value Weighted portfolio

- Vaska Atta-Darkua. Corporate ethical behaviours and firm equity value and ownership: Evidence from the GPF's ethical exclusions. Available at SSRN, November 2022.
- Doron Avramov, Si Cheng, Abraham Lioui, and Andrea Tarelli. Sustainable investing with ESG rating uncertainty. *Journal of Financial Economics*, 145(2, Part B): 642–664, 2022. doi: 10.1016/j.jfineco.2021.09.009.
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