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

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Overview

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 $\rightarrow$ YES (Liang et al., 2022)
  Mutual funds $\rightarrow$ Green-washing (Kim and Yoon, 2020)
  Problem: Institutional portfolios additional layer
- "Sin stocks"
  - Booze, Guns, Tobacco $\rightarrow$ outperform (Hong and Kacperczyk, 2009).
  - Environment (Chava, 2014)
  - Carbon (Bolton and Kacperczyk, 2021)

Literature - ctd

- Analysis of the oil fund's exclusions
  - Event studies. (Atta-Darkua, 2020), (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)?
  $\rightarrow$ **Yes**
- Is this due to short-term overreactions, or changes to long term cost of capital
  $\rightarrow$ **It is the long term cost of capital**

After firms get on the exclusion list

- Are firms happy with their high cost of capital?
  $\rightarrow$ **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?
  $\rightarrow$ **It Falls**

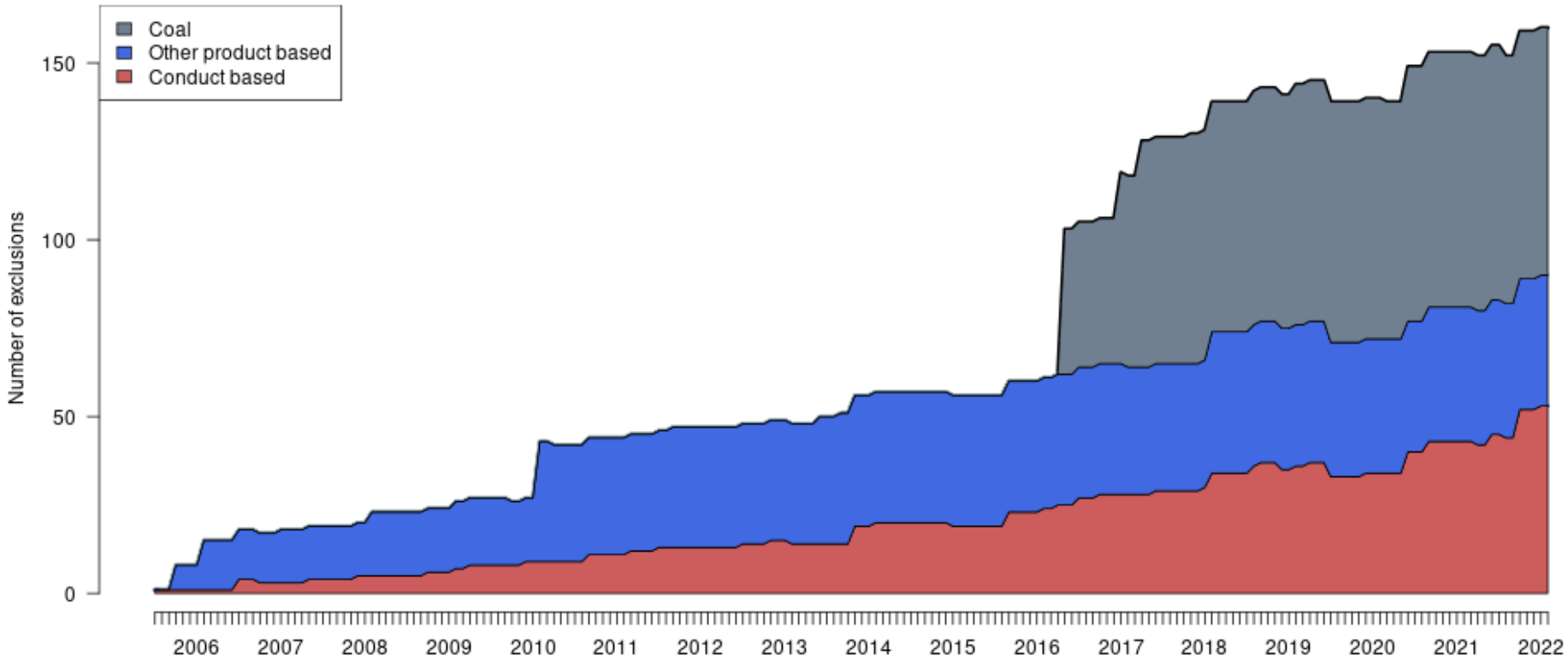
Norway's GPFG (The Oil Fund)

- 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

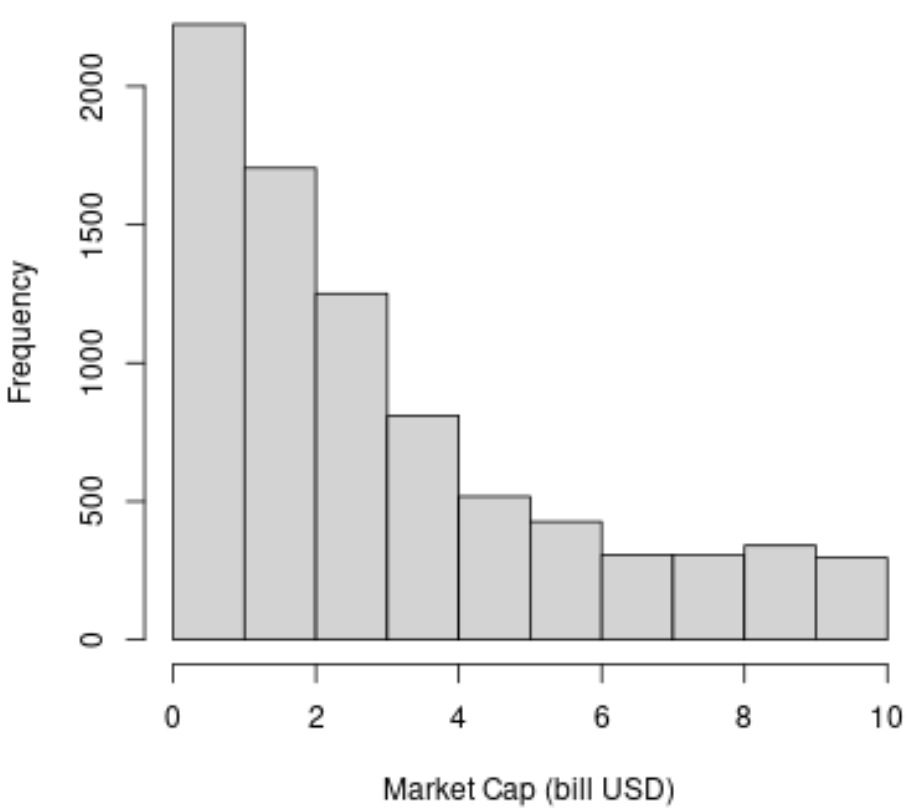
Exclusion reasons	Events
Conduct	67
Environmental damage	28
Individuals' rights in war or conflict	12
Violation of human rights	12
Environmental damage / Violation of human rights	4
Violation of ethical norms	5
Greenhouse gas emissions	4
Gross corruption	2
Product	122
Coal or coal-based energy	75
Weapons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

The number of exclusions

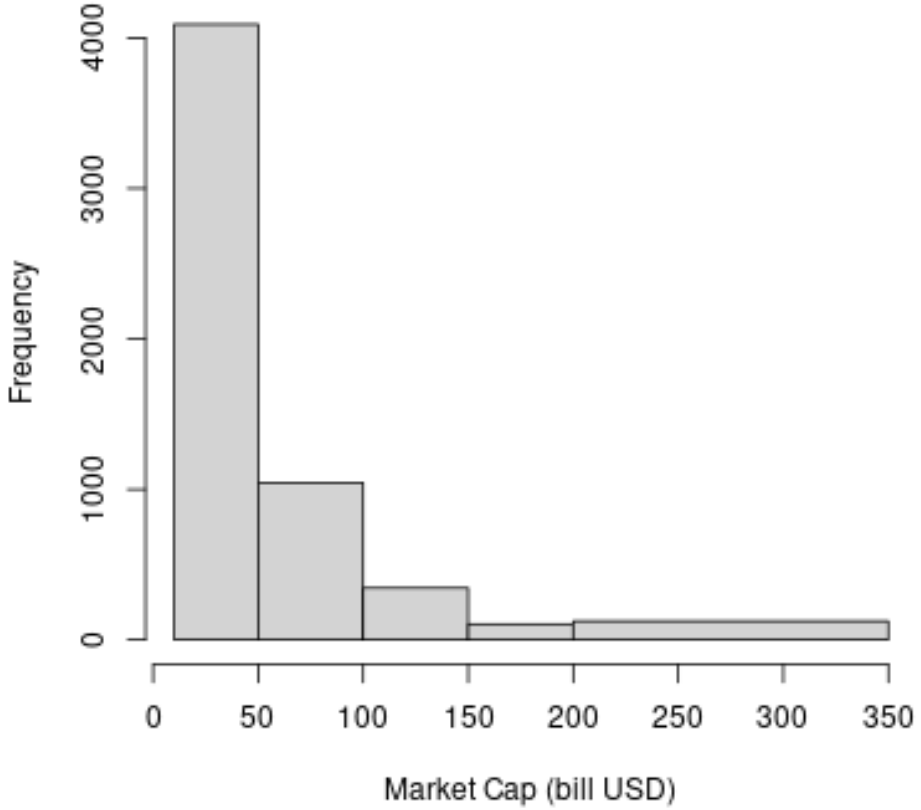


Equity data - Size distribution

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



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



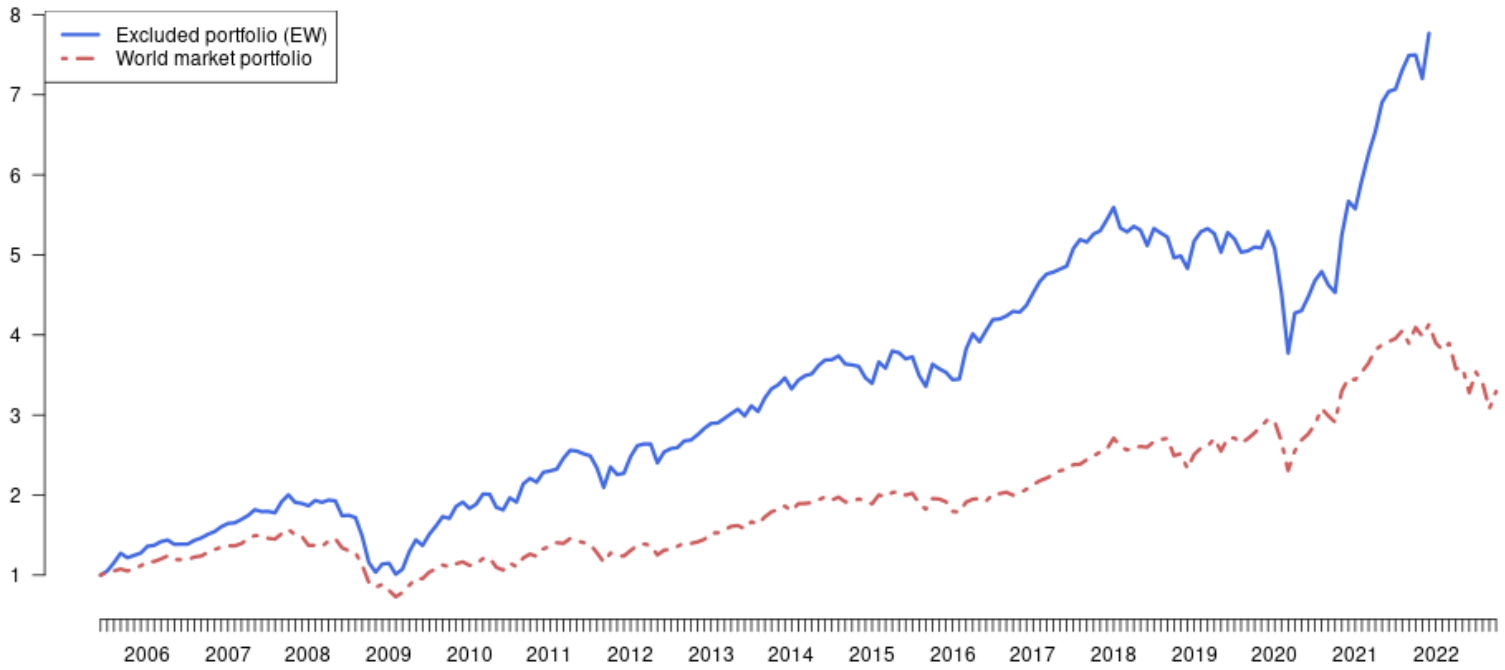
Construction Exclusion Portfolio

The exclusion portfolios represent the expected returns of stocks with low ESG rankings.

- Firms enter portfolio month after exclusion
- If exclusion revoked, firms leave exclusion portfolio.

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".
- $\rightarrow$ 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)

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

Estimates of alpha for (EW) Exclusion Portfolio

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

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.

Deconstructing alpha

Potential Explanations of the high alpha (5%)

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

Argue $\rightarrow$ The alpha too high to be explained by short term price corrections following an one-time price fall (event study return) in the region of 1.5 percent

Conclude:

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

Firm's reactions

How do firms react when they are excluded?

- No reaction.
- Reputational issue, some action in the press, but no real changes to firm's operations (green-washing).
- Firms act to reverse the exclusion.

Revoking exclusions

Firms remove cause of exclusions → Exclusions revoked

Exclusions revoked

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
$\rightarrow$ Endogenous action by firms
Trading off

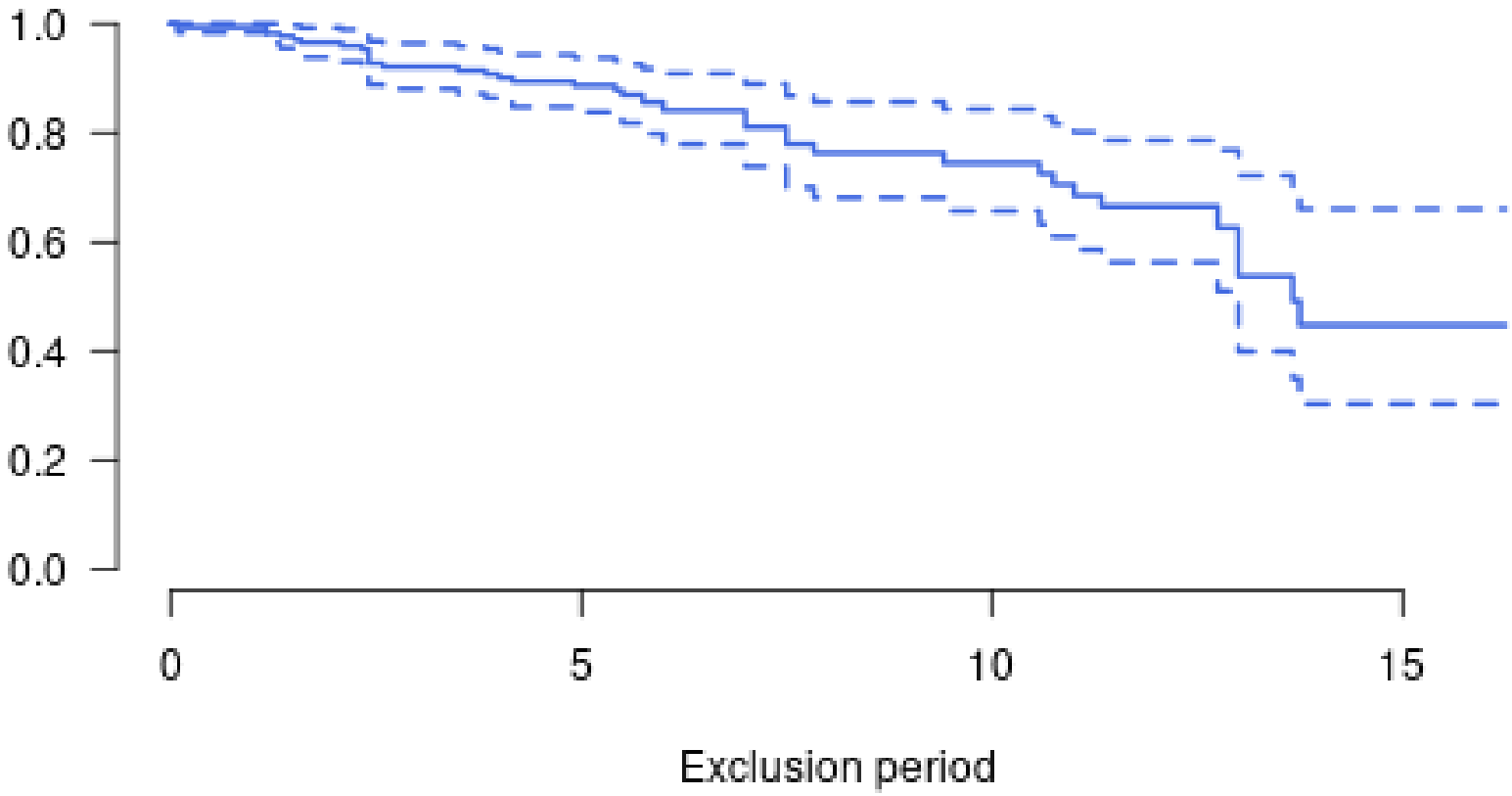
- Cost of improving ESG (Cause of exclusion)
- Benefits from a lower cost of capital (cheaper to raise capital)

Motivate empirical investigations – proxies

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

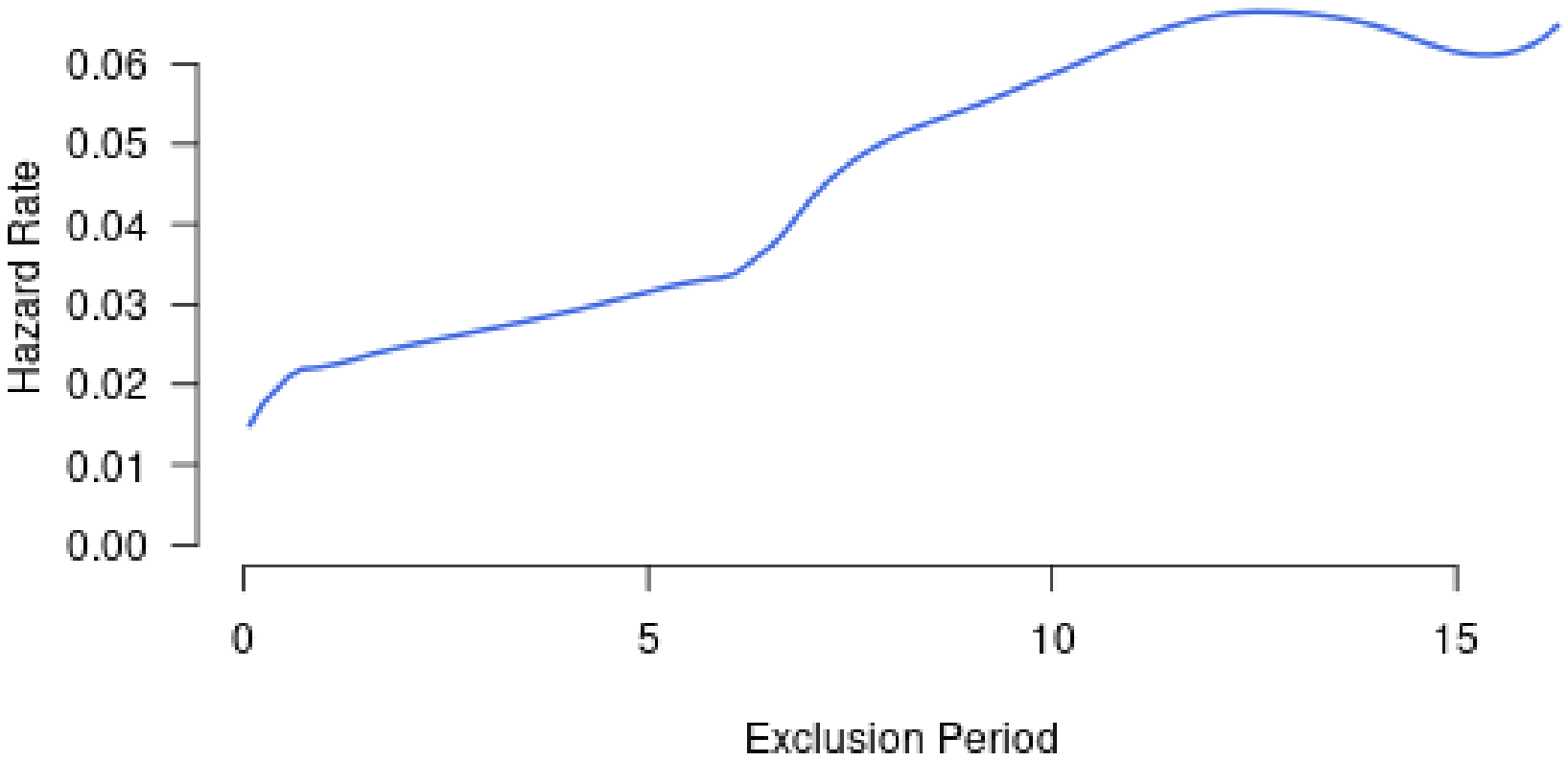
Duration (survival) analysis of exit from Exclusion Portfolio

Panel A. Survival curve



Duration (survival) analysis of exit from Exclusion Portfolio

Panel B. Instantaneous hazard curve (smoothed)



Duration (survival) analysis of exit from Exclusion Portfolio

Contributions to survival of exclusion

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

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

Duration (survival) analysis of exit from Exclusion Portfolio

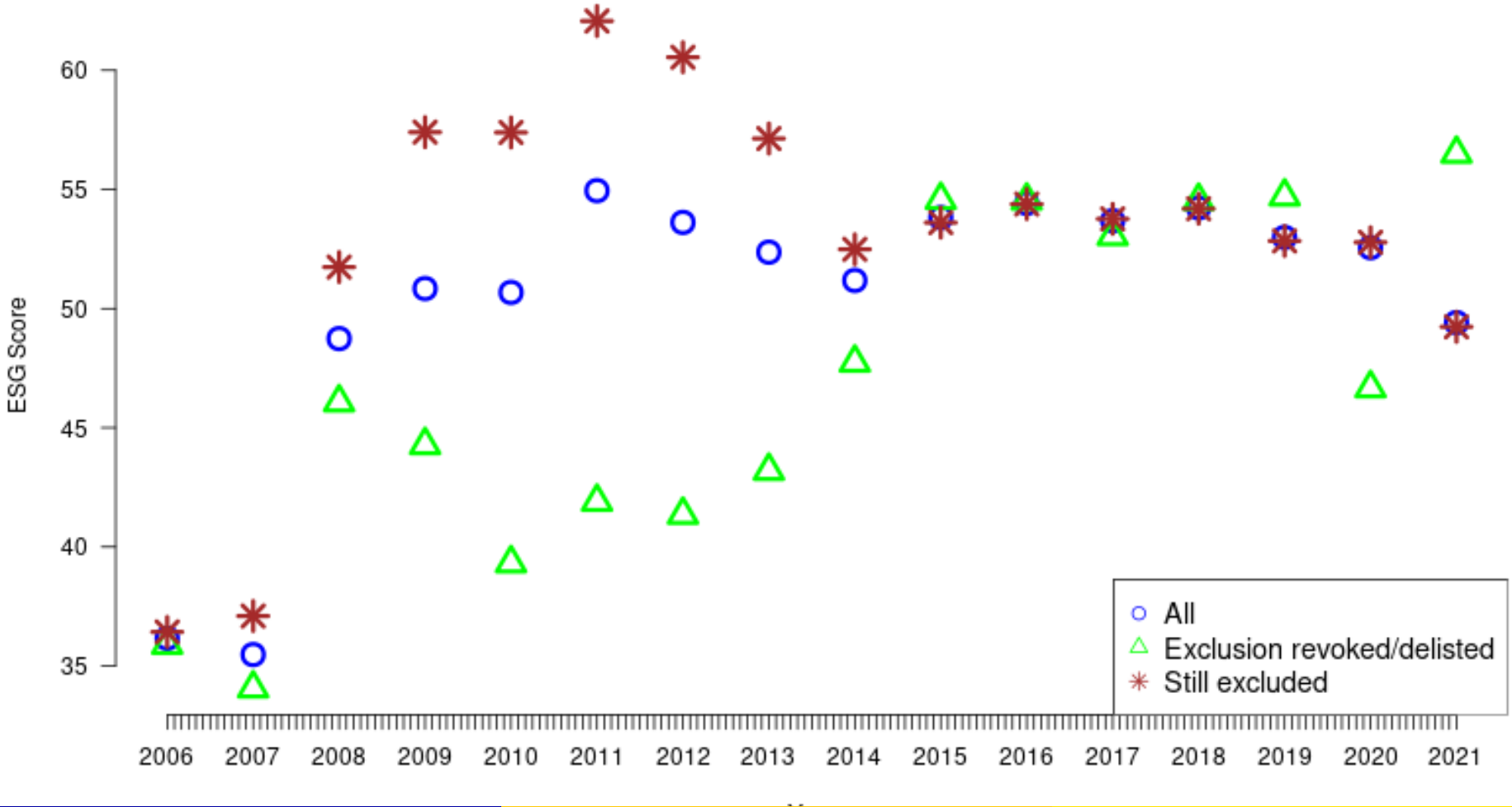
Interpreting survival analysis
Explanatory variables:
Of interest:

- ESG score when excluded – (negative coefficient)
  $\rightarrow$ Low ESG score when entering exclusion portfolio $\rightarrow$ 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

ESG Scores for firms with/without exclusion revoked



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 $\rightarrow$ higher probability of exclusion revoked.
- Earnings growth – no relation

Probit estimation of determinants of discontinuation of exclusion

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

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

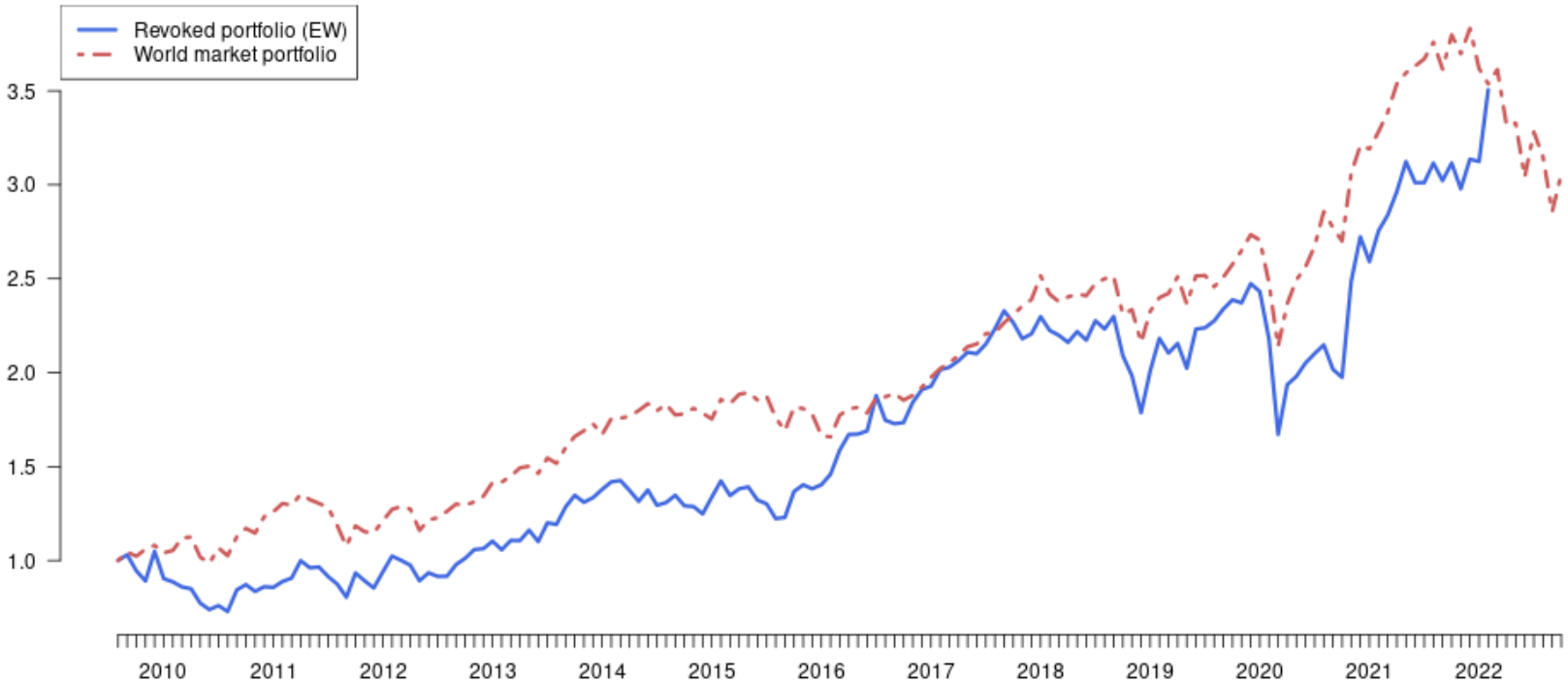
Exclusion revoked → Selection problem?

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?

The Post-Exclusion portfolio

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



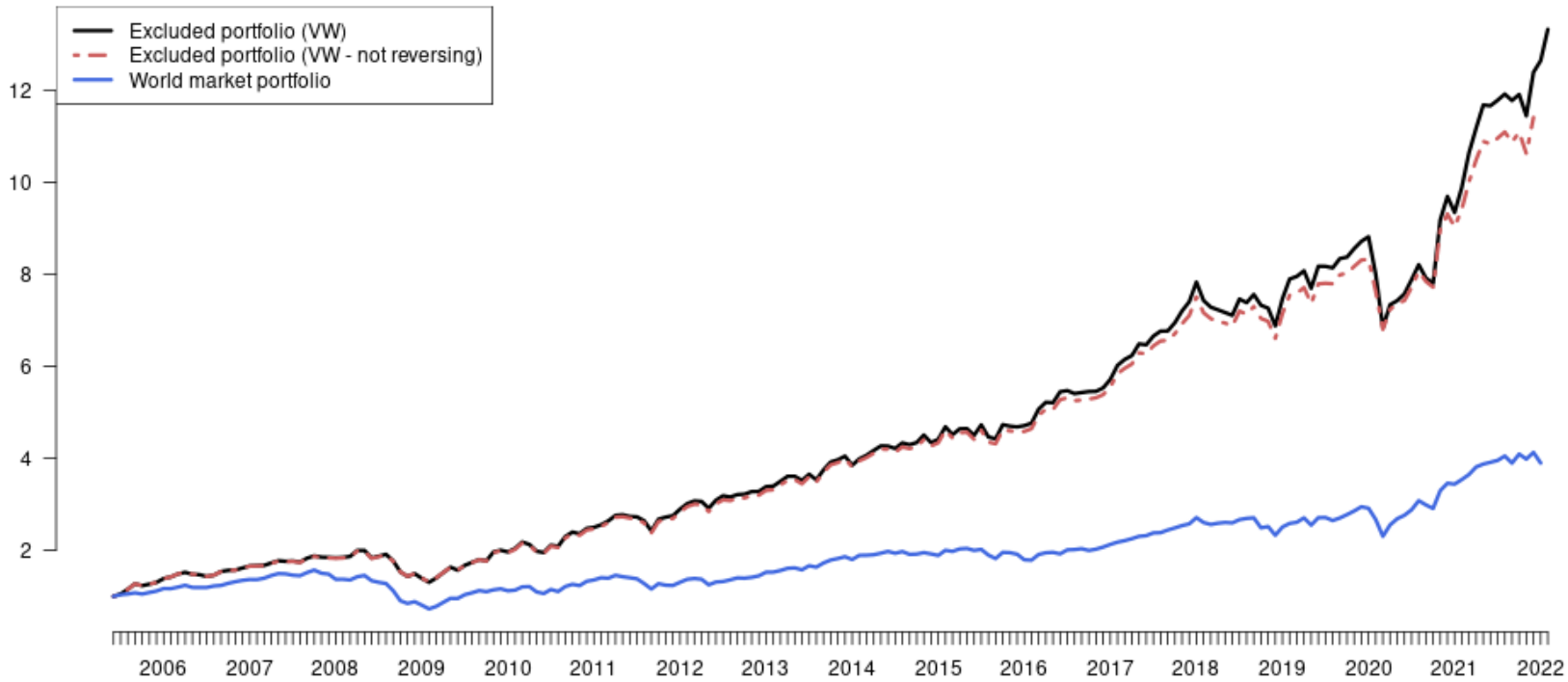
Cumulative returns for the Post-Exclusion Portfolio

Estimates of alpha for the post-exclusion portfolio

	(1)	(2)	(3)	(4)
Alpha	−0.002	−0.002	−0.001	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
Rm-Rf	1.080***	1.085***	1.061***	1.033***
	(0.077)	(0.073)	(0.073)	(0.076)
SMB	0.335		0.250	0.245
	(0.221)		(0.209)	(0.208)
HML	0.271		0.235*	0.128
	(0.215)		(0.123)	(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^2	0.604	0.596	0.606	0.609

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

Conclusion

Prime contributions:

1. Sheer *magnitude* of the return difference linked to ESG.
2. *Speed* by which the increased cost of capital affects returns.
3. *dynamics* of corporate reactions to exclusion.

Interpretation

- Low quality ESG firms provide exceptionally high returns
- $\rightarrow$ The cost of capital for new investments for low quality ESG firms also exceptionally high.
- $\rightarrow$ To survive most low quality ESG firms have to move towards better quality ESG ("greener investments") to lower their cost of capital
- From society's point of view:
  $\rightarrow$ This is the desired outcome.
- To ponder:
  - Would this have happened without the exclusions?
  - Have the owners of the GPFG lost out?

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	
Total		189	26

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	

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

		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

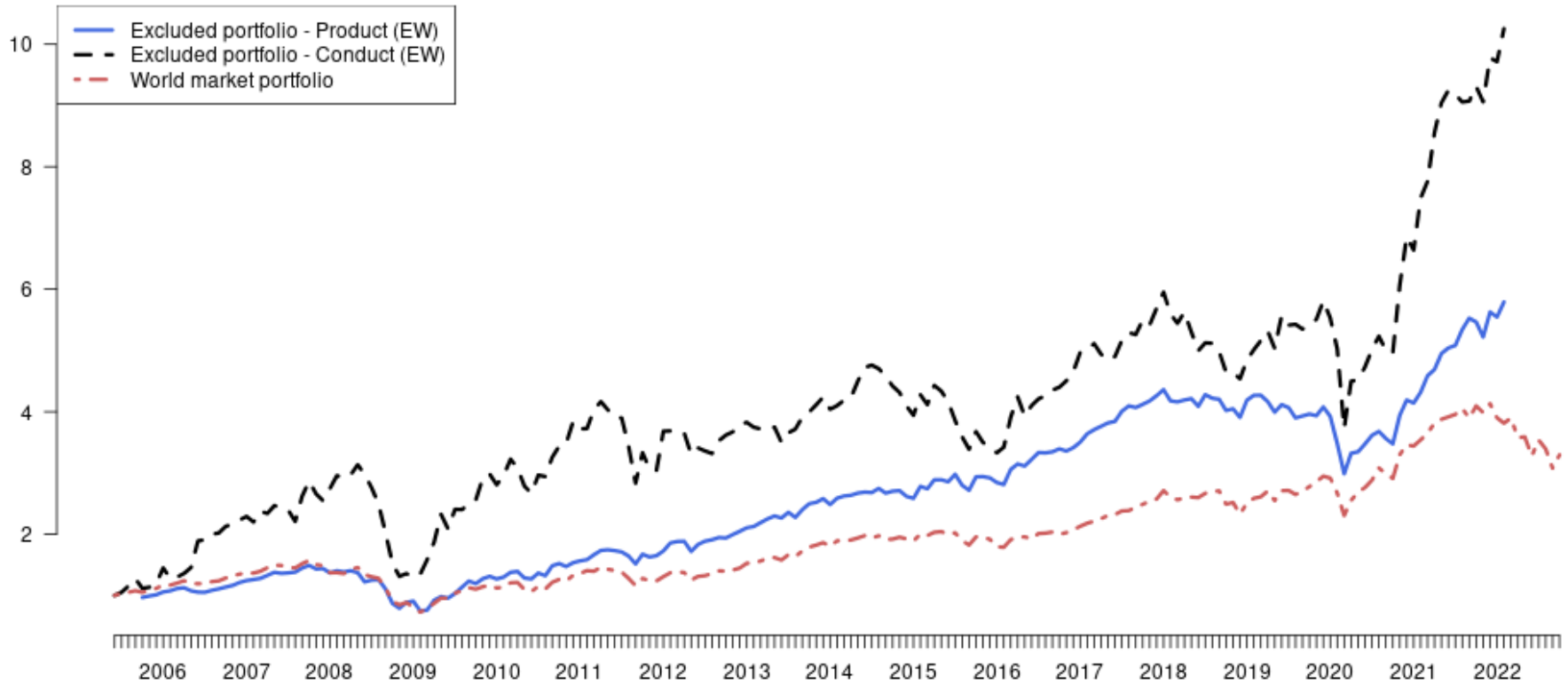
Describing portfolio returns for the various exclusion portfolios. All returns in USD. Returns and Excess returns in monthly percentage returns. Sharpe Ratio is $\text{avg}(r_i - r_f)/\text{sd}(r_i - r_f)$. The first column in each table describes the market portfolio, where the market is proxied by the Global

Estimates of alpha for (VW) Exclusion Portfolio

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

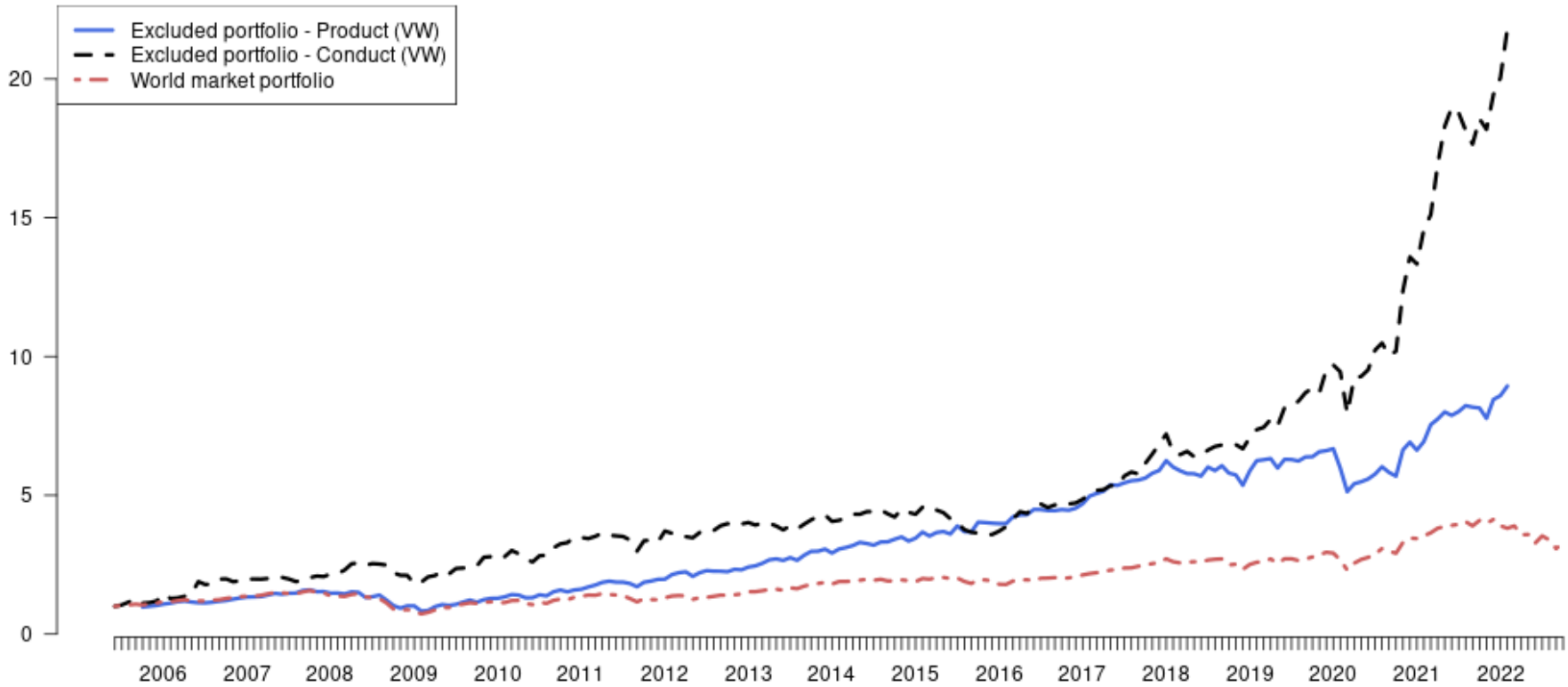
Conduct and product based value evolution (EW)

Panel A: Equally weighted exclusion portfolio



Conduct and product based value evolution (VW)

Panel B: Value weighted exclusion portfolio

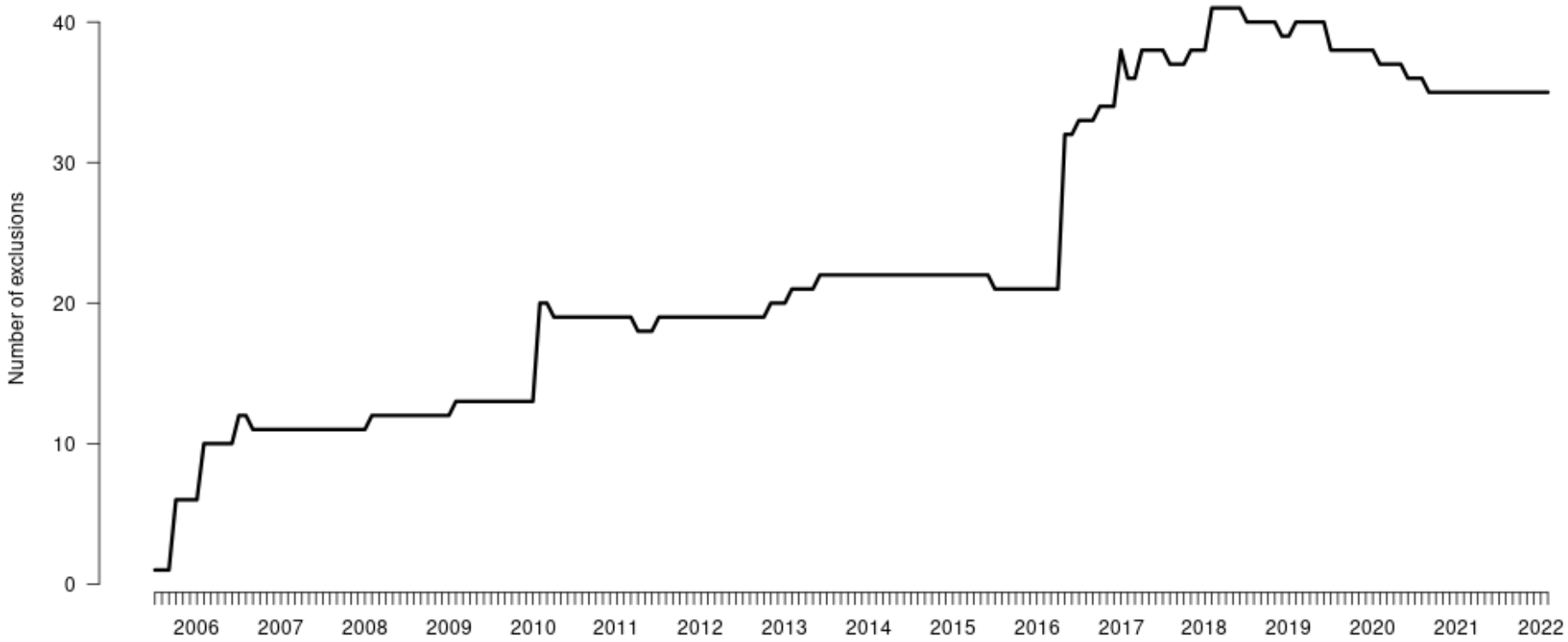


Conduct and product based exclusion

	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)
Annualized Alphas(percent)	8.540	11.310	3.370	4.680
Adj. R^2	0.579	0.371	0.766	0.731
Num. obs.	199	199	196	196

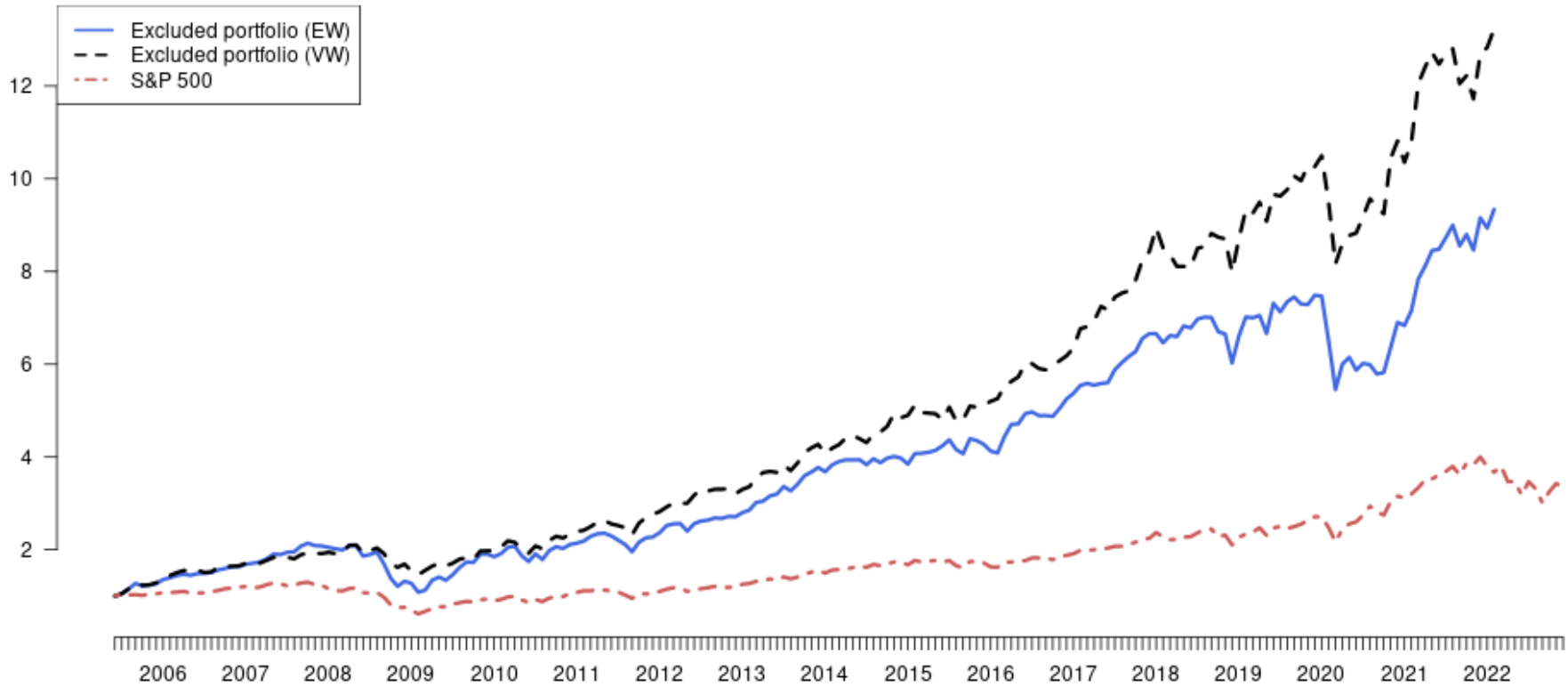
US Exclusion Portfolio

Panel A: Number of exclusions



US Exclusion Portfolio

Panel B: Cumulative returns



US Exclusion Portfolio

	Equally Weighted	Value Weighted
Alpha	0.004*	0.006***
	(0.002)	(0.002)
Rm-Rf	0.925***	0.783***
	(0.050)	(0.045)
SMB	0.012	−0.280***
	(0.089)	(0.080)
HML	0.239***	0.168***
	(0.081)	(0.073)
RMW	0.050	0.258***
	(0.117)	(0.106)
CMA	0.073	0.173
	(0.146)	(0.132)
Annualized Alphas(percent)	4.870	7.200
Adj. R^2	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***	0.003
	(0.002)	(0.002)
Rm-Rf	0.955***	0.930***
	(0.057)	(0.071)
SMB	0.070	0.372*
	(0.130)	(0.165)
HML	0.331**	0.231
	(0.188)	(0.145)
RMW	−0.027	0.197
	(0.297)	(0.176)
CMA	−0.623***	0.458*
	(0.154)	(0.252)
Annualized Alphas(percent)	7.860	3.320
Adj. R^2	0.833	0.800
Num. obs.	126	73

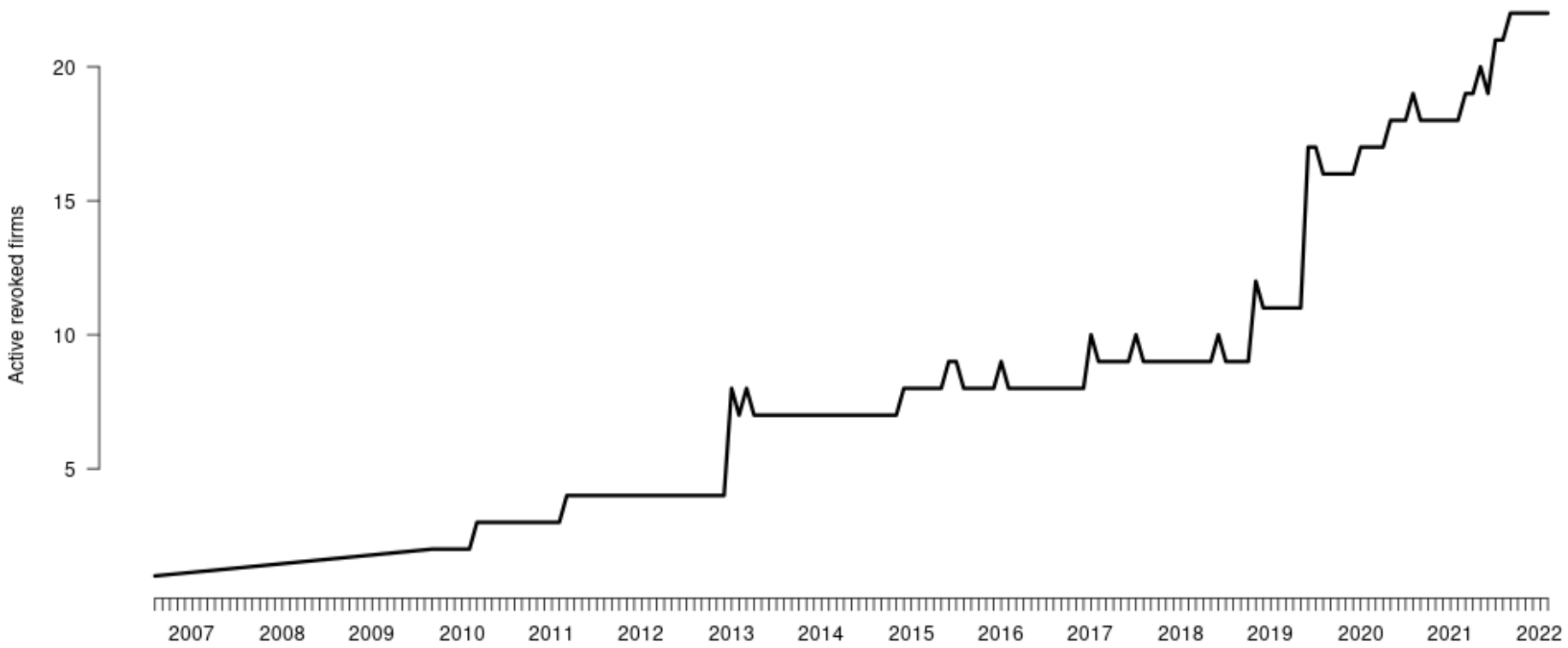
Alpha estimation for Subperiods

Panel B: Value weighted exclusion portfolio.

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

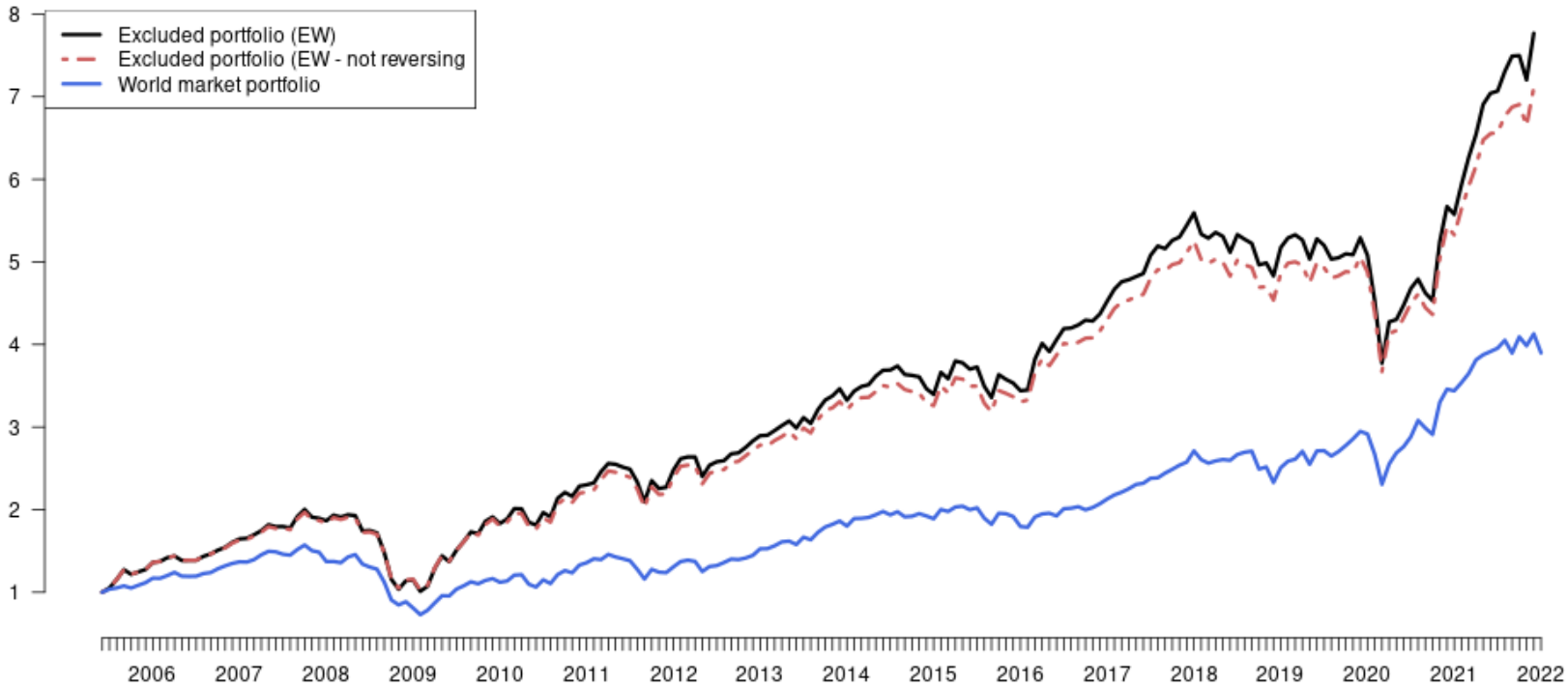
Post-Exclusion portfolio

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



Keeping the firms with exclusion revoked (EW)

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



Cumulative returns, Value Weighted portfolio

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