Virtual Seminar on Climate Economics

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Institutional Investors and the Fight against Climate Change

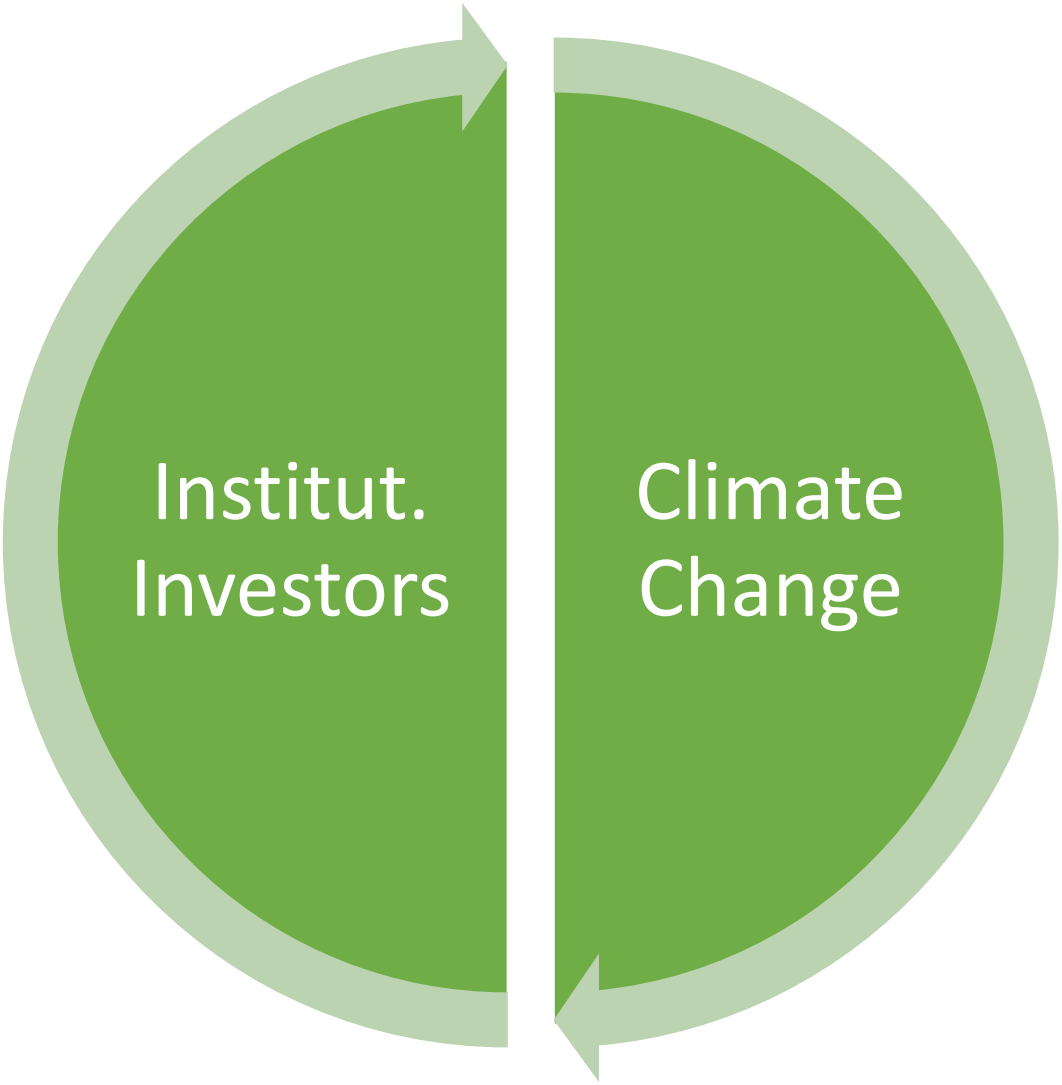
Virtual Seminar on Climate Economics

Zacharias Sautner

June 15, 2023

This Talk

- Mostly an overview talk
- Mostly informed by research findings, complemented with some speculation (where evidence is not out yet)
- Heavily biased by my own work



Climate change *will* have a major impact on institutional investors!

Institutional investors *can* (*will?*) have a major impact on climate change!

Agenda

1. The sky and the landscape

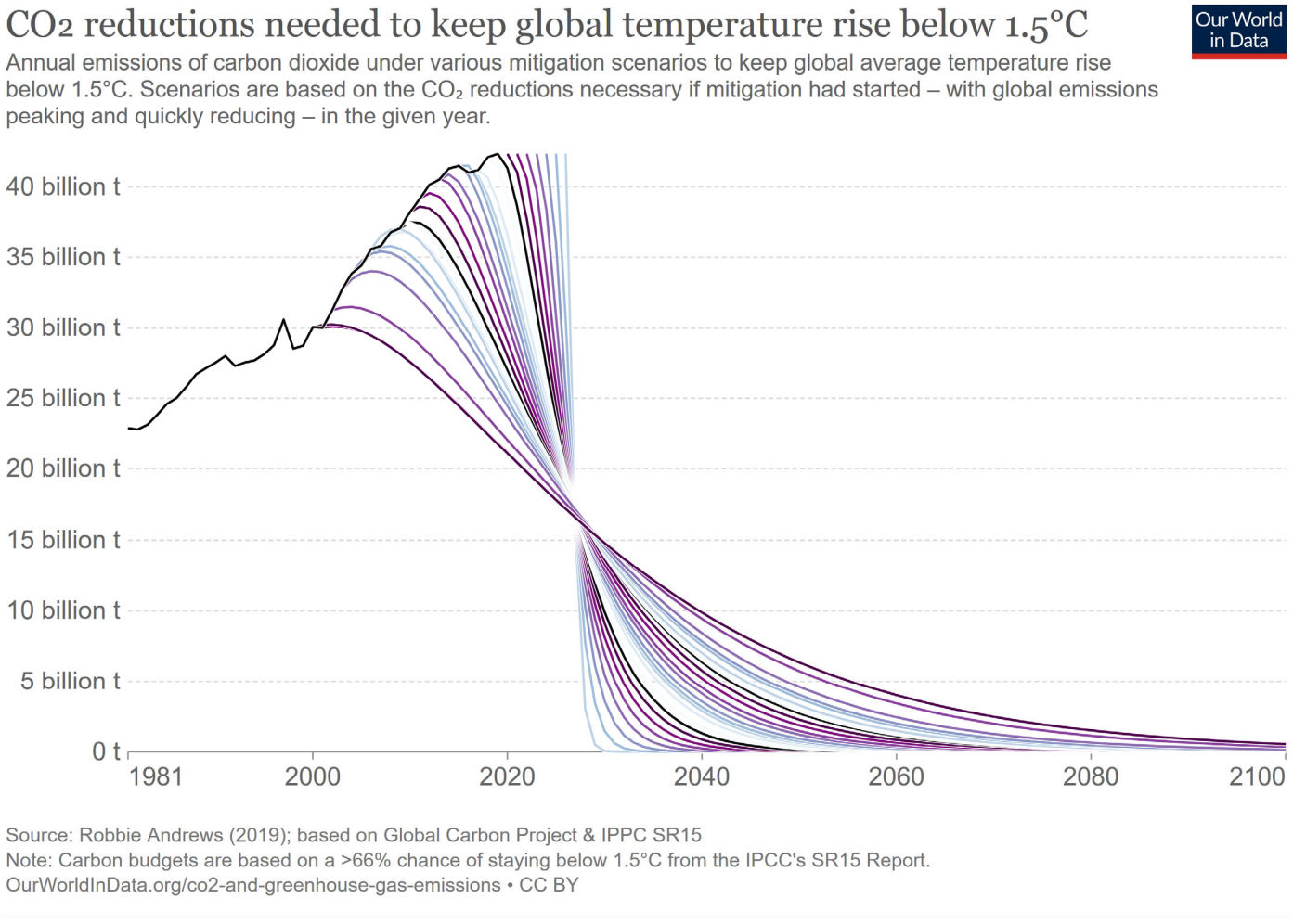
2. The good, the bad, and the ugly

Agenda

1. **The sky and the landscape**

2. The good, the bad, and the ugly

The Sky.

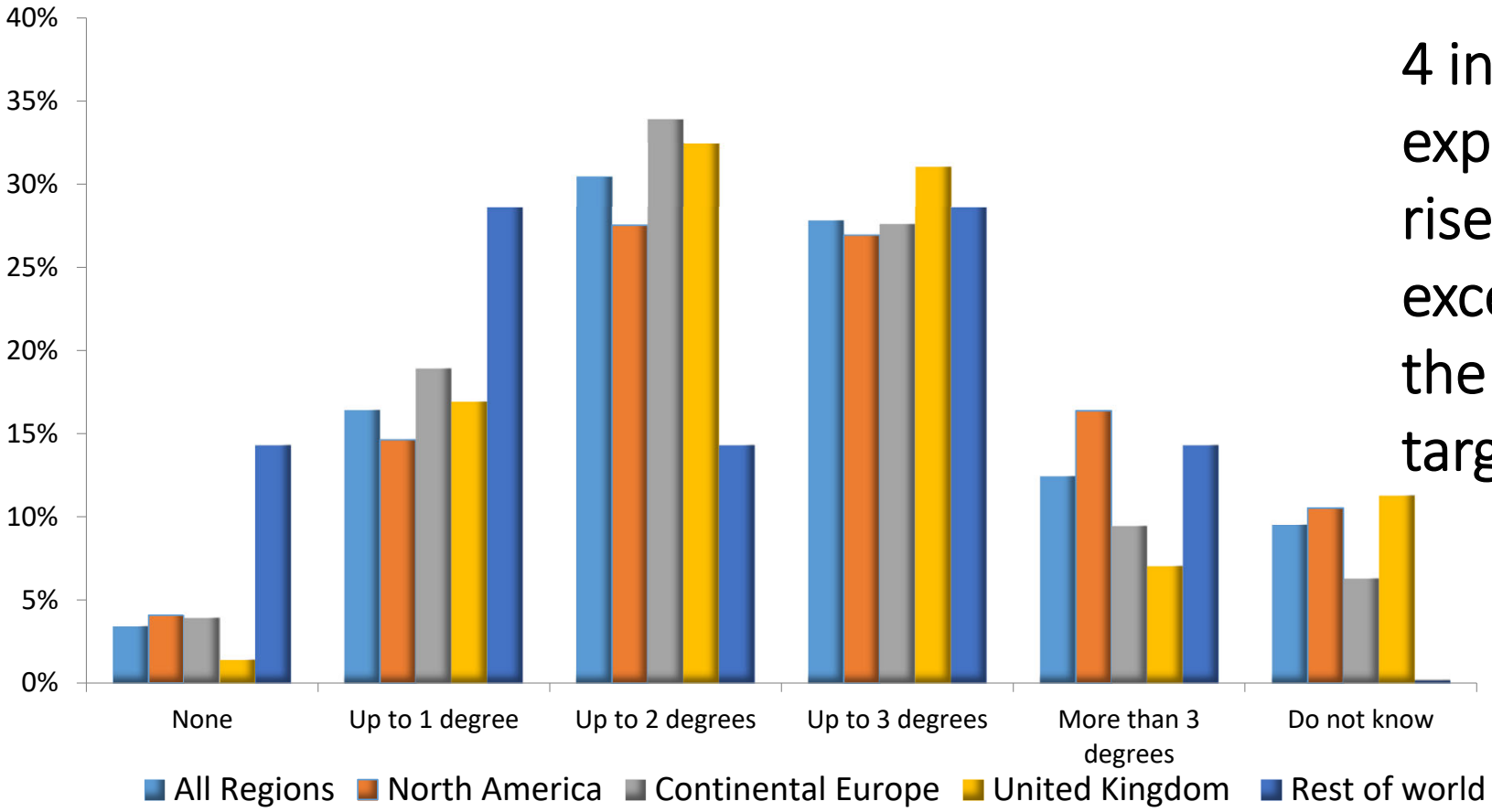


Potentially huge

REGULATORY (TRANSITION) & PHYSICAL RISKS

ahead

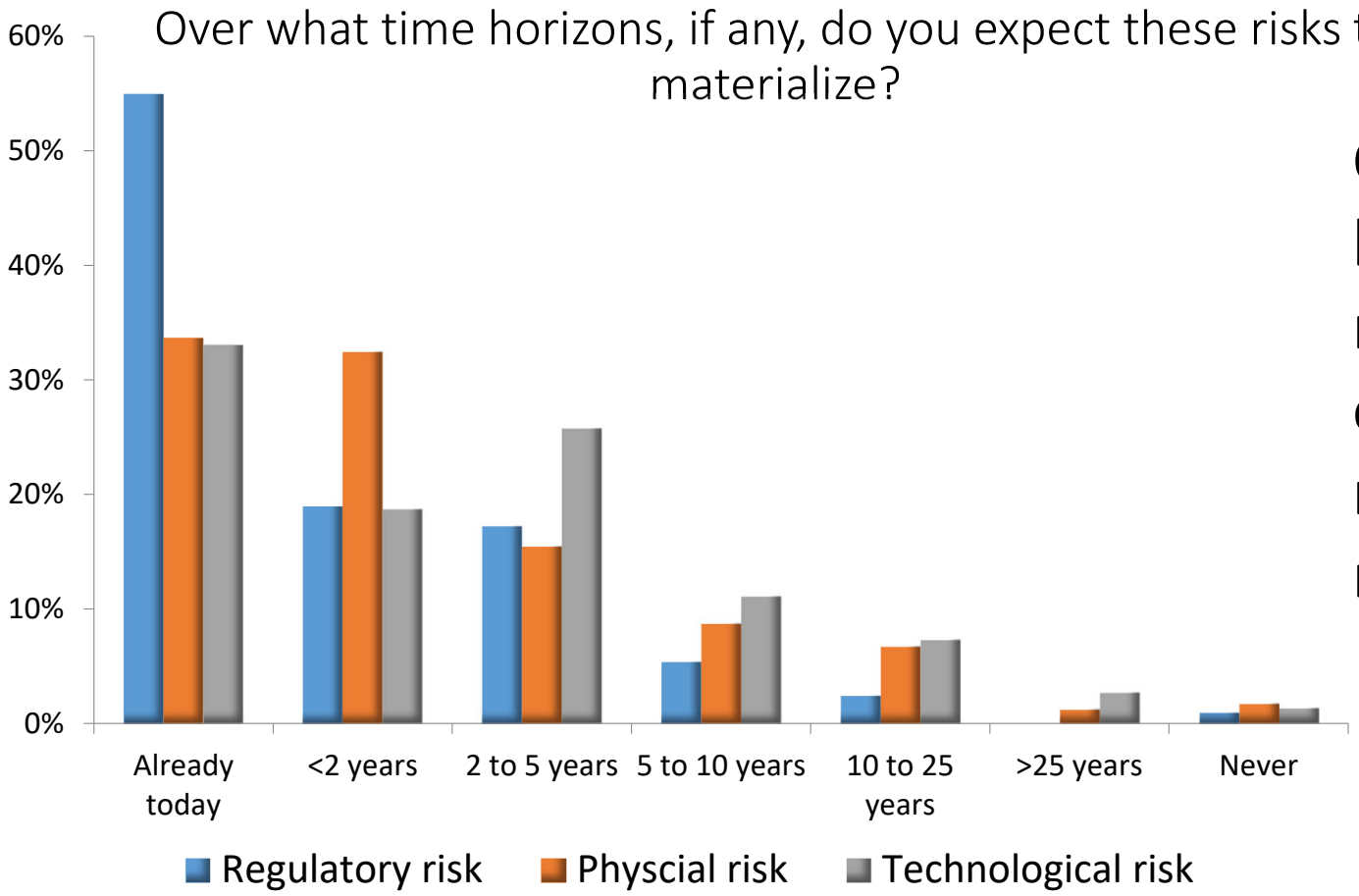
Temperature Expectations of Institutional Investors



4 in 10 expect a rise that exceeds the Paris target

Krueger, Sautner, and Starks (RFS, 2020)

Importance of Climate Risks for Institutional Investors



Climate risks have started materializing, especially regulatory risks

Krueger, Sautner, and Starks (RFS, 2020)

The Landscape.

Paris Agreement

Article 2

1. This Agreement, in enhancing the implementation of the Convention, including its objective, aims to strengthen the global response to the threat of climate change, in the context of sustainable development and efforts to eradicate poverty, including by:

(a) Holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change;

(b) Increasing the ability to adapt to the adverse impacts of climate change and foster climate resilience and low greenhouse gas emissions development, in a manner that does not threaten food production; and

(c) Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.

Investment Strategies

Positive screening

Negative screening

Source: Banking Hub

Table 8

Carbon emissions and stock returns. The sample period is 2005-2017. The dependent variable is *RET*. All variables are defined in Table 1. We report the results of the pooled regression with standard errors clustered at the firm and year level. All regressions include year-month fixed effects. In columns (4) through (6), we additionally include industry-fixed effects. Panel A reports the results for the natural logarithm of total firm-level emissions; Panel B reports the results for the percentage change in carbon total emissions; Panel C reports the results for carbon emission intensity. ***1% significance; **5% significance; *10% significance.

Panel A: Total emissions

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
LOG (SCOPE 1 TOT)	0.043**			0.164***		
	(0.023)			(0.036)		
LOG (SCOPE 2 TOT)		0.098**			0.167***	
		(0.042)			(0.048)	
LOG (SCOPE 3 TOT)			0.135**			0.312***
			(0.046)			(0.071)
LOGSIZE	-0.140	-0.184	-0.193	-0.302*	-0.327*	-0.410**
	(0.163)	(0.167)	(0.165)	(0.148)	(0.154)	(0.163)
B/M	0.460	0.469	0.444	0.656**	0.642**	0.562**
	(0.260)	(0.266)	(0.258)	(0.234)	(0.229)	(0.224)
....						
Year/month F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.	No	No	No	Yes	Yes	Yes
Observations	184,288	184,216	184,384	184,288	184,216	184,384
R-squared	0.203	0.204	0.204	0.206	0.206	0.206

1 STD increase in *SCOPE 1* -> 13-bps increase in returns, 1.5% annualized

Bolton and Kacperczyk (JFE 2021)

A. Firm-level regressions

Dependent variable:	*SlopeD* (1)	*MFIS* (2)	*VRP* (3)
log(Scope 1/MV industry)	0.006***	−0.002	0.001***
	(3.85)	(−0.70)	(3.79)
log(Assets)	−0.029***	−0.043***	−0.005***
	(−9.22)	(−8.04)	(−7.10)
Dividends/net income	0.009	−0.014	−0.000
	(1.54)	(−1.26)	(−0.00)
Debt/assets	0.038**	0.062**	0.003
	(2.28)	(2.00)	(0.71)
EBIT/assets	−0.187***	−0.078	−0.018
	(−4.59)	(−1.02)	(−1.60)
CapEx/assets	−0.374***	0.216*	−0.060**
	(−5.13)	(1.75)	(−2.35)
Book-to-market	0.077***	0.122***	0.016***
	(8.10)	(5.21)	(4.30)
Returns	−0.018**	−0.054***	−0.010*
	(−2.13)	(−2.95)	(−1.93)
Institutional ownership	−0.045*	−0.085	−0.008
	(−1.75)	(−1.59)	(−1.20)
CAPM beta	0.010	−0.033***	−0.001
	(1.42)	(−3.18)	(−0.44)
Volatility	−0.687***	1.926***	
	(−6.48)	(8.27)	
Oil beta	−0.008	−0.003	−0.020***
	(−0.50)	(−0.10)	(−2.73)
Time trend	−0.000	0.033***	−0.001*
	(−0.29)	(9.93)	(−1.67)
Model	Heckman	Heckman	Heckman
Year-by-quarter fixed effects	Yes	Yes	Yes
Level	Firm	Firm	Firm
Frequency	Monthly	Monthly	Monthly
Obs.	18,664	18,664	18,664
Adj. R^2	n/a	n/a	n/a

1 STD increase in a firm's log industry carbon intensity (2.28)
-> increases *SlopeD* by 0.014 or 10% of its SD

Ilhan, Sautner, and Vilkov (RFS 2021)

Investor Coalitions

- ICCR
- PRI
- CDP
- TCFD
- IIGCC
- Investor Network on Climate Risks
- Climate Action 100+
- Ceres
- Global Investor Coalition on Climate Change
- Investor Group on Climate Change

Climate Action 100+

- Investor-led initiative
- Focus on the world's largest carbon emitters
  - 167 firms in 2020, responsible for about 80% of industrial emissions
- Supported by 500+ investors, USD 50+ trillion in assets, including Blackrock and StateStreet
- Investors commit to engagement with companies, in seeking to ensure they:
  - Take action to reduce greenhouse gas emissions in line with the Paris Agreement;
  - Implement a strong governance framework -> board accountability and oversight of climate change risks
  - Enhanced corporate disclosure in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)

CDP

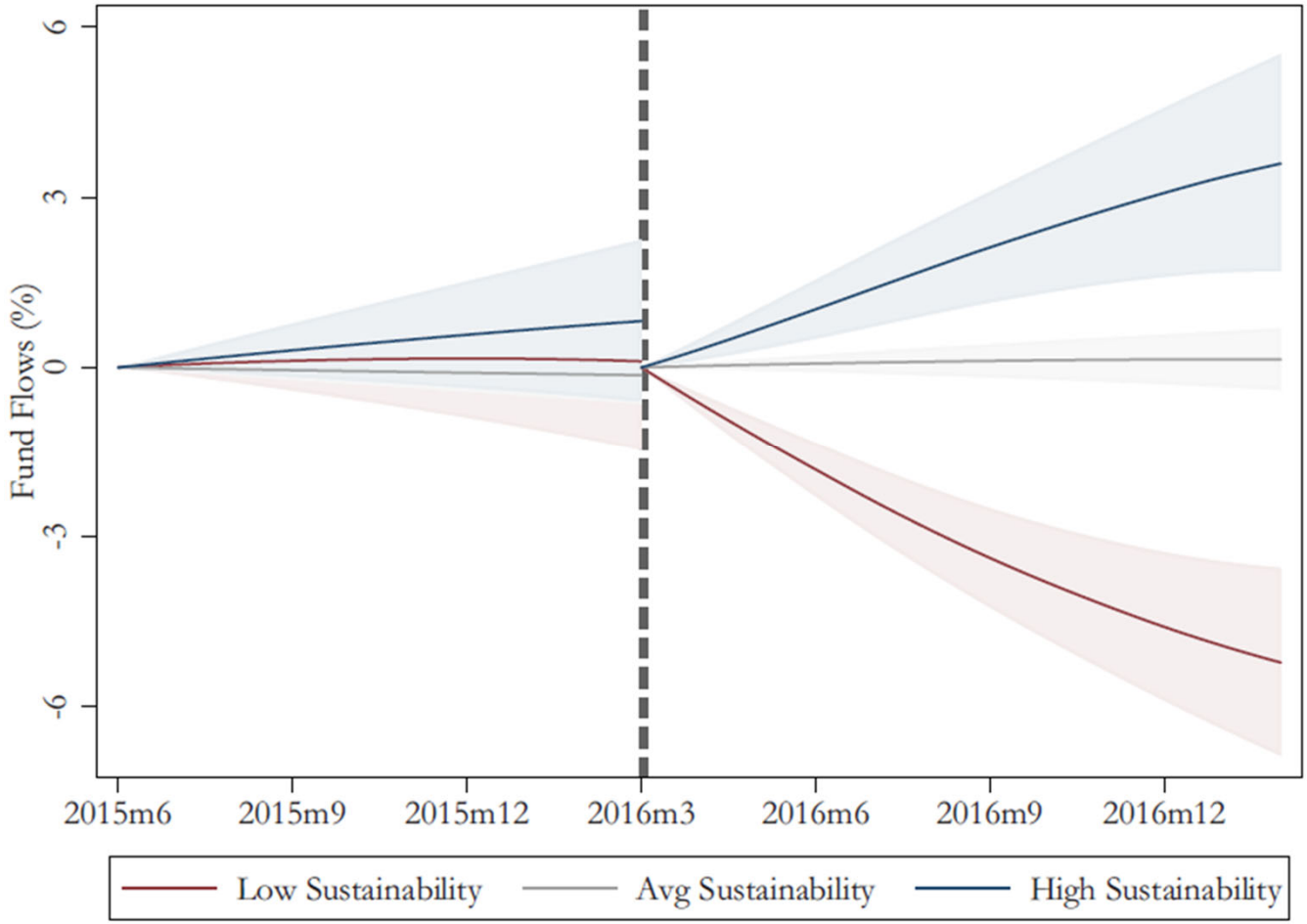
- Founded in 2000, CDP (formerly Carbon Disclosure Project) collects on behalf of investors representing $100+ trillion in AuM climate-related information through a questionnaire
  - Carbon emissions, climate risk management, governance, risks and opportunities
- Carbon emissions data used as input for many ESG ratings
- Recently also surveys on water security and forests
- ~10,000 companies reported through CDP on climate change, water security and forests

Agenda

1. The sky and the landscape

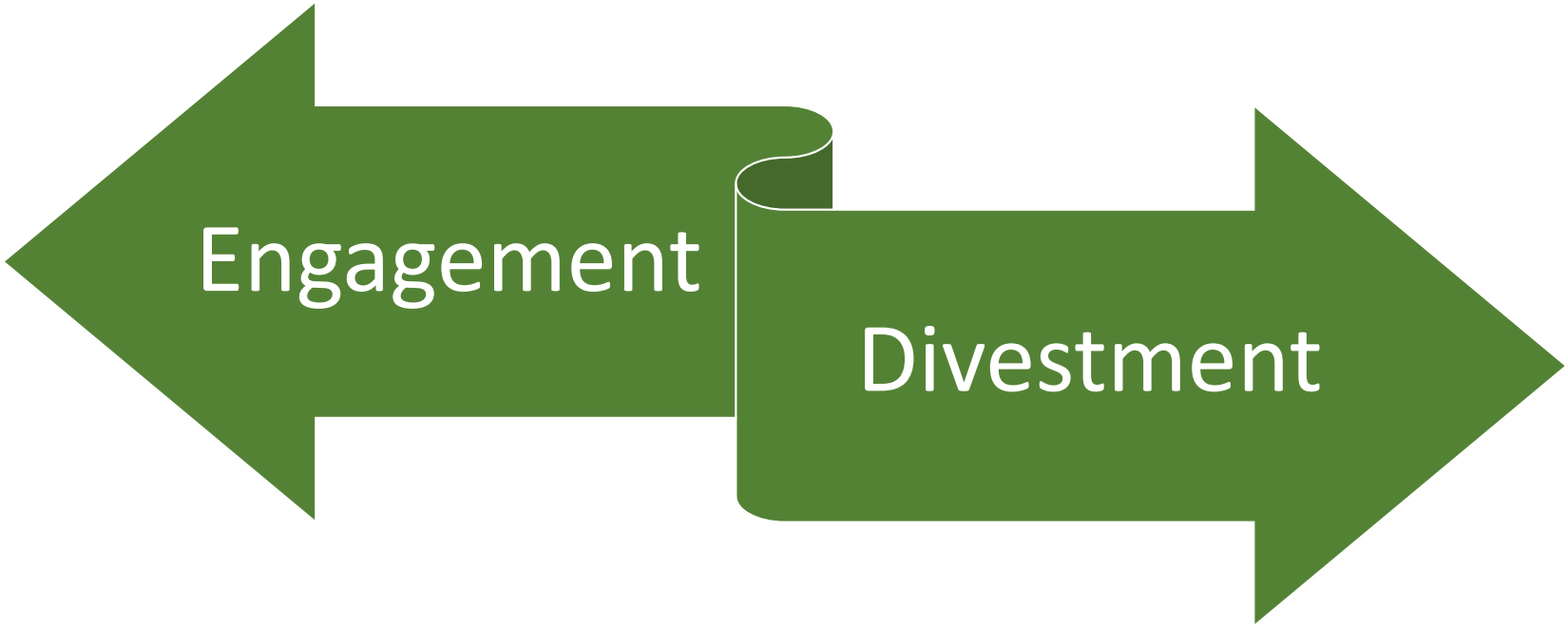
2. **The good, the bad, and the ugly**

The Good.

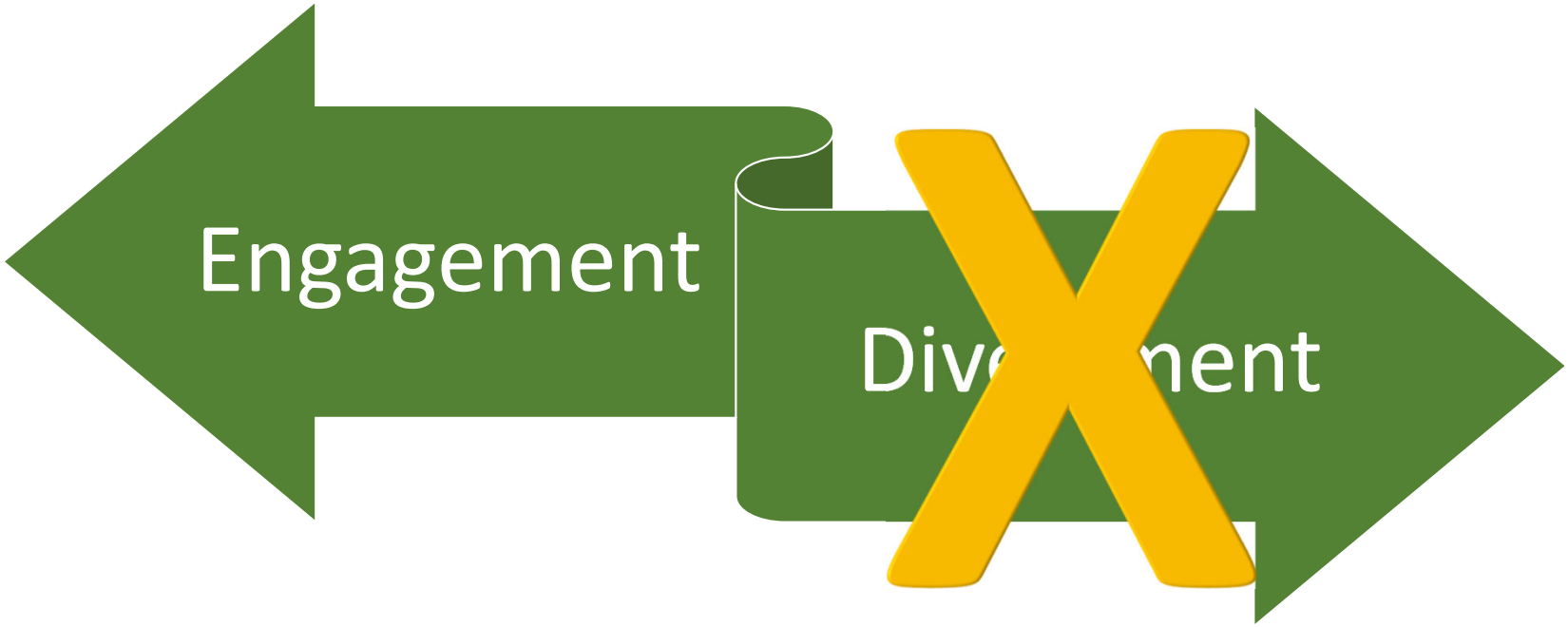


Hartzmark and Sussman (JF, 2019); effects also for Monringstar's Low Carbon Designation, see Ceccarelli, Ramelli, Wagner (2021)

How to Fight Climate Change?



How to Fight Climate Change?



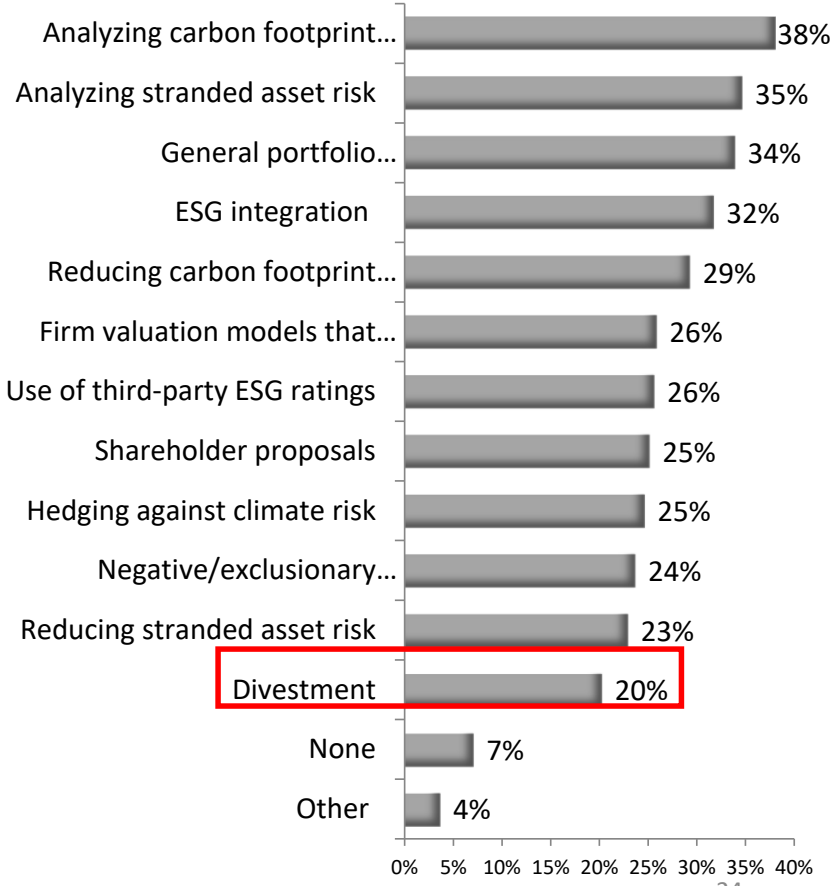
Effects of Divestment: Rare and small

	(1) 4Good
I_{it}	-0.0010
	(-0.64)
$I_{it}^{4G(Select)}$	0.0004
	(0.27)
ΔI_{it}	0.0131
	(1.55)
$\Delta I_{it}^{4G(Select)}$	0.0021
	(0.38)
Constant	0.0098***
	(2.60)
Observations	1376792
R^2	0.00

t-statistics in parentheses

Price change of FTSE 4Good inclusion/exclusion is 0.21% only
-> Effect of divestment by ESG investors on the cost of capital is only 40 bps

Berk and van Binsbergen (WP 2022)

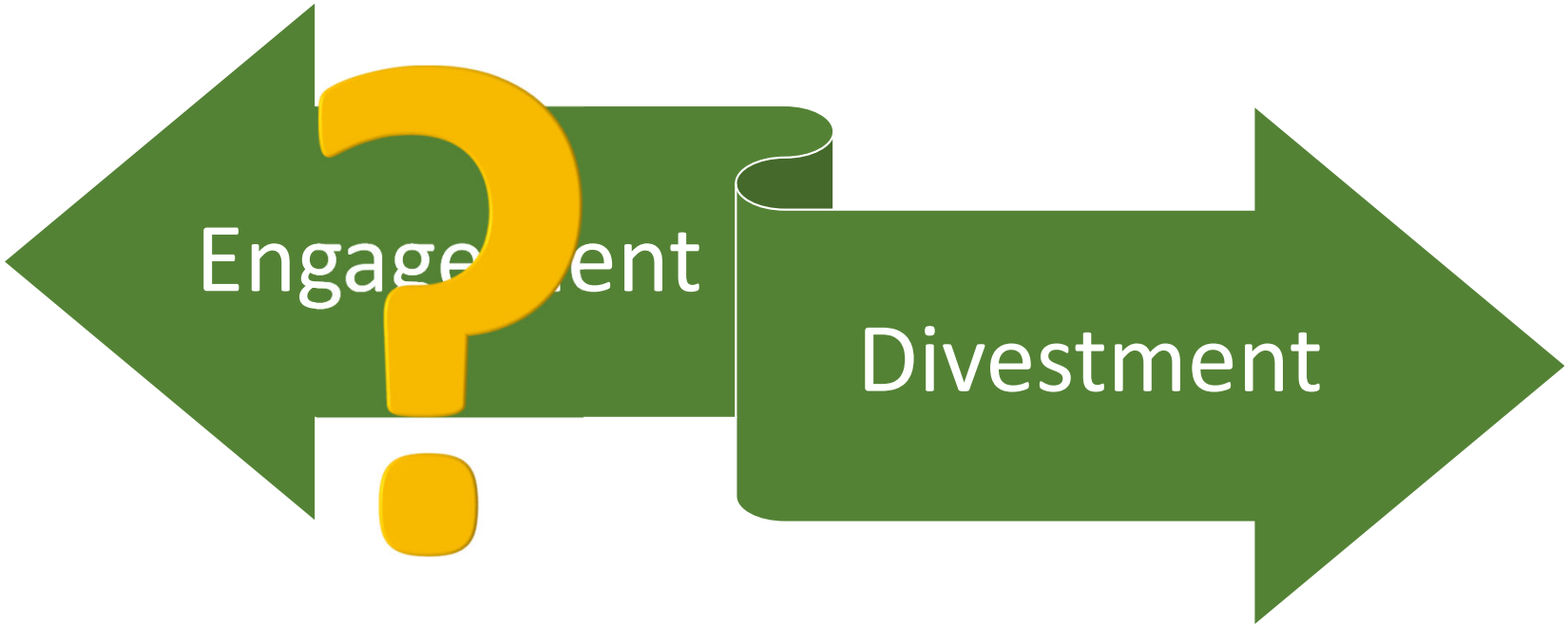


Krueger, Sautner, and Starks (RFS 2020)

But more evidence is needed…

- Maybe need to look beyond divested/excluded firms
- Some promising evidence by Becht, Pajuste, and Toniolo (2023)
  - Divestment pledges that went viral have depressed share prices of all high carbon emitters, including those with no significant divestment
  - Divestment induces investors to decarbonize their portfolios

How to Fight Climate Change?



The Good: Engagement

- Improves disclosure
- Reduces ESG / climate risk
- Reduces emissions

- … and more evidence exists

Climate Risk Disclosure: Climate-Conscious IO

1 STD increase in *Stewardship code IO* -> 3pp increase in the propensity to disclose emissions (12% of mean)

	Scope 1 disclosure			*Climate risk disclosure*			*Log(Climate disclosure score)*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Stewardship code IO	0.17**			0.64**			1.17**		
	(0.08)			(0.28)			(0.51)		
High-norms IO		0.30**			0.63**			1.00**	
		(0.13)			(0.29)			(0.45)	
Universal owner IO			0.41***			0.67***			1.28***
			(0.08)			(0.20)			(0.26)
Non-stewardship code IO	0.04			-0.21			-0.38		
	(0.08)			(0.30)			(0.44)		
Low-norms IO		0.01			-0.10			-0.18	
		(0.11)			(0.35)			(0.51)	
Non-universal owner IO			-0.15			-0.27			-0.62
			(0.10)			(0.31)			(0.50)
Sample	All Firms			All Firms			All Firms		
Years	2010-2019			2011-2016			2010-2015		
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	35350	35350	31059	21312	21312	20716	21168	21168	20584
Adj. R-sq.	0.291	0.291	0.290	0.252	0.251	0.249	0.304	0.303	0.301

Ilhan, Krueger, Sautner, and Starks (RFS 2023)

Climate Risk Disclosure: French Article 173

	Scope 1 disclosure				*Climate risk disclosure*
	(1)	(2)	(3)	(4)	(5)
Post Article 173 x High French IO	0.020**	0.021**	0.032**		0.078**
	(0.009)	(0.010)	(0.014)		(0.037)
Post Article 173 x French IO				1.379**	
				(0.540)	
High French IO	0.059***	0.059***	-0.007		0.074
	(0.012)	(0.012)	(0.012)		(0.052)
French IO				0.621	
				(0.445)	
Sample	All Firms	All Non-French Firms	All Firms, Balanced Panel	All Firms with French IO >3%	All Firms
Years	2013-2017	2013-2017	2013-2017	2013-2017	2013-2016
Controls	Yes	Yes	No	Yes	Yes
Industry x Year Fixed Effects	Yes	Yes	No	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	No	No	Yes	No	No
Firm Fixed Effects	No	No	Yes	No	No
N	17878	16835	13126	1113	14294
Adj. R-sq.	0.302	0.295	0.784	0.485	0.257

Ilhan, Krueger, Sautner, and Starks (RFS 2023)

ESG Engagement and Downside Risk

Dependent variable:	*VaR*				*LPM*			
Engagement success:	All	M2 and above	M3 and above	Below M2	All	M2 and above	M3 and above	Below M2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Target x Post	-0.090	-0.241**	-0.793**	-0.002	-0.051	-0.113**	-0.433**	-0.016
	(-1.22)	(-2.07)	(-2.58)	(-0.02)	(-1.51)	(-2.02)	(-2.61)	(-0.44)
Target	0.491***	0.628***	1.341***	0.436***	0.249***	0.297***	0.670***	0.237***
	(5.43)	(4.51)	(3.17)	(4.11)	(5.61)	(4.37)	(3.17)	(4.45)
Post	0.196***	0.270***	-0.186	0.170**	0.108***	0.148***	-0.014	0.088**
	(3.04)	(2.78)	(-0.81)	(2.13)	(3.53)	(3.06)	(-0.10)	(2.48)
Model	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry x Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Obs.	26,082	10,263	1,852	15,819	26,082	10,263	1,852	15,819
Adj. R-sq.	0.291	0.362	0.405	0.266	0.324	0.381	0.408	0.309

Results mostly originate from engagement over climate topics

Hoepner, Oikonomou, Sautner, Starks, and Zhou (WP 2022)

Climate Engagement Topics

Climate Change Subtopics	#	%
Carbon strategy & risk management	51	28
Carbon disclosure/reporting	48	27
Carbon intensity reduction	45	25
Stranded assets	10	6
Others (methane, gas flaring)	25	14
Total	179	100

Hoepner, Oikonomou, Sautner, Starks, and Zhou (WP 2022)

Effect of Engagement on Incidents

Dependent variable:	*# E incidents*				
Downside risk measure:		*VaR*		*LPM*	
Δ Downside Risk$_{Pre\ vs\ Post}$:	All	Large	Small	Large	Small
	(1)	(2)	(3)	(4)	(5)
Post	-0.223*	-0.329***	0.134	-0.308***	-0.029
	(-1.87)	(-2.77)	(0.88)	(-2.59)	(-0.21)
Model	Poisson	Poisson	Poisson	Poisson	Poisson
Controls	Yes	Yes	Yes	Yes	Yes
Country fixed effects	Yes	Yes	Yes	Yes	Yes
Industry x Year fixed effects	Yes	Yes	Yes	Yes	Yes
Obs.	4,439	2,222	2,217	2,272	2,167
Ps. R-sq.	0.312	0.432	0.279	0.410	0.315

Hoepner, Oikonomou, Sautner, Starks, and Zhou (WP 2022)

Big 3 Engagment and Emissions

	Dependent Variable: *Log(CO_2)*					
	MSCI			Non-MSCI		
	(1)	(2)	(3)	(4)	(5)	(6)
Big3_Hldg	−3.44***	−1.69**	−1.00***	−0.76	0.66	0.46
	(−5.76)	(−2.27)	(−2.83)	(−1.09)	(1.41)	(1.60)
NonBig3_Hldg	−0.04	−0.12	−0.07	0.36***	0.26**	0.18**
	(−0.25)	(−0.74)	(−0.75)	(3.43)	(2.50)	(2.47)
Controls:						
Size	0.79***	0.80***	0.55***	0.81***	0.79***	0.56***
	(42.88)	(42.21)	(13.77)	(50.85)	(54.50)	(14.96)
Log(BM)	0.01	0.01	−0.02**	−0.06***	−0.06***	−0.05***
	(0.55)	(0.30)	(−2.29)	(−3.25)	(−3.16)	(−4.36)
ROA	1.52***	1.53***	0.89***	2.95***	2.83***	0.57***
	(4.55)	(4.65)	(5.39)	(14.26)	(12.89)	(6.30)
Leverage	0.03	0.02	0.05	0.38***	0.41***	0.17**
	(0.23)	(0.15)	(0.69)	(3.03)	(3.29)	(2.22)
PPE	1.27***	1.27***	−0.01	1.19***	1.15***	0.51***
	(8.32)	(8.24)	(−0.08)	(12.01)	(11.54)	(4.38)
Country FE	YES	YES	NO	YES	YES	NO
Industry FE	YES	YES	NO	YES	YES	NO
Year FE	NO	YES	YES	NO	YES	YES
Firm FE	NO	NO	YES	NO	NO	YES
R^2	0.75	0.75	0.98	0.73	0.74	0.98
# Obs.	19,224	19,224	19,134	22,969	22,969	22,468

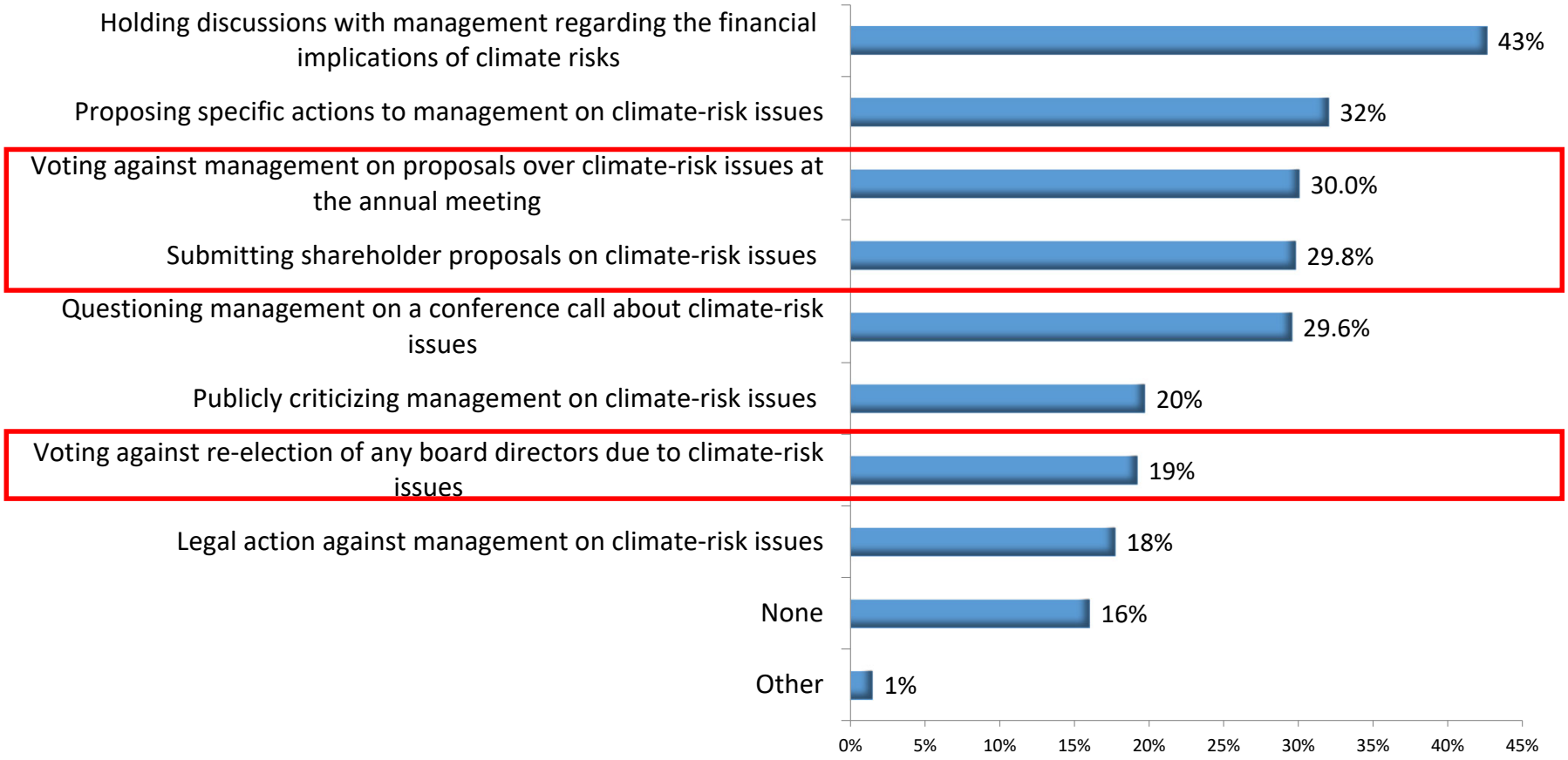
Azar, Duro, Kadach, and Ormazabal (JFE 2022)

The Bad.

The Bad

- Not enough investors engage
- There is too little action

Addressing Climate Risks



Krueger, Sautner, and Starks (RFS 2020)

Too Little Action – Achieving Net-Zero Targets

69% of focus companies have now committed to achieve net zero emissions by 2050 across all or some of their emissions

An absence of medium-term emissions reductions targets aligned with 1.5°C.
Only 17% of focus companies have set medium-term targets which are aligned with the IEA's 1.5°C scenario and cover all material emissions.
Continued absence of Scope 3 emissions.
Just 42% of focus companies have comprehensive net zero by 2050 or sooner commitments that cover all material GHG emissions, including material Scope 3 emissions.
Alignment of capex strategies with net zero transition goals remains almost non-existent.
Only 5% of focus companies explicitly commit to align their capex plans with their long-term GHG reduction targets.
Companies are setting emissions reduction targets but don't have the strategies to deliver them.
Only 17% of focus companies have robust quantified decarbonisation strategies in place to reduce their GHG emissions.

The Ugly.

The Ugly

- Greenwashing
- Fees
- ESG Ratings

MARKETS

SEC Fines BNY Mellon Over ESG Claims

Regulator is boosting its scrutiny of funds as market grows

ESG's legal showdown: 'There's nothing to suggest DWS is a one off'

The boom in ESG investing is drawing regulatory scrutiny on both sides of the Atlantic

"The amount of "ESG assets" reported in its latest annual report, released in March, were 75 per cent below the €459bn it had said were "ESG integrated" a year earlier."

"former BlackRock sustainability executive Tariq Fancy said ESG investing was little more than "marketing hype""

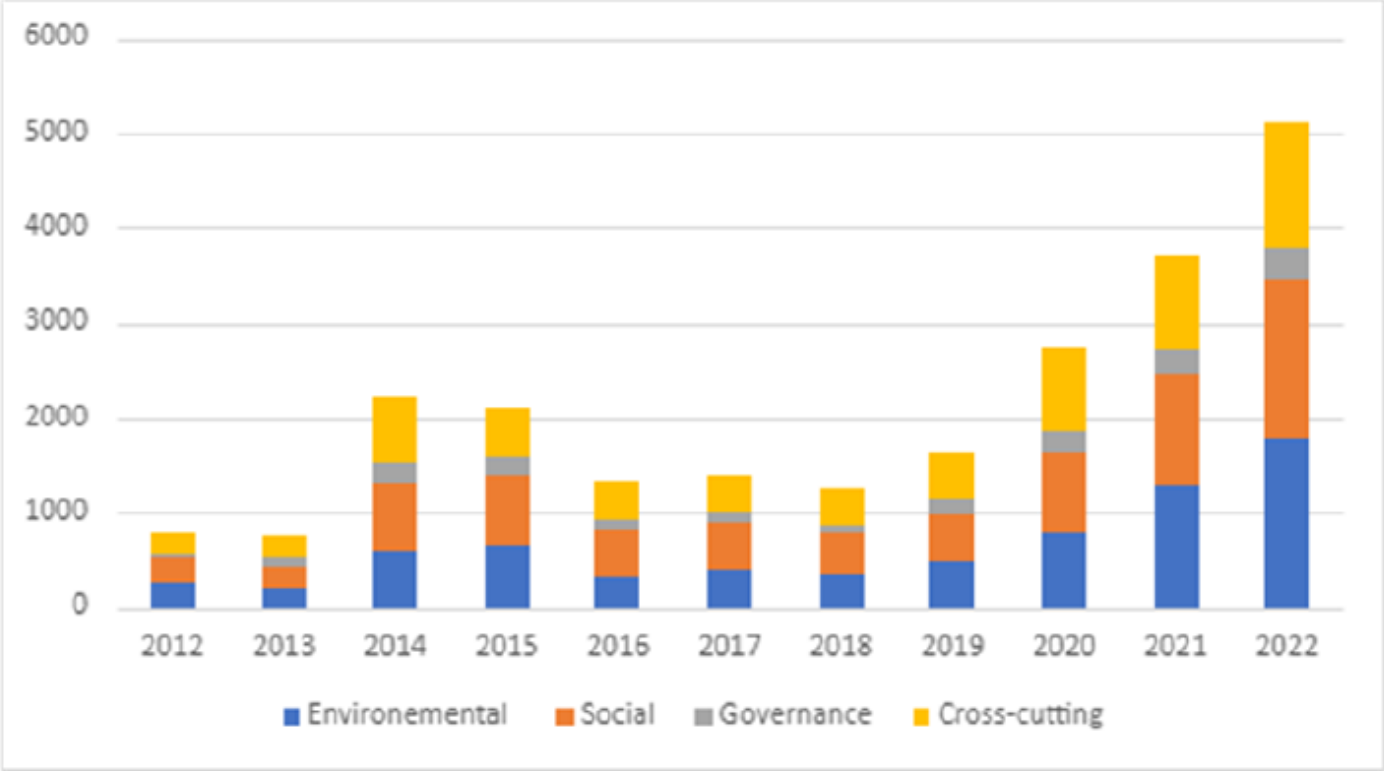
More systematic evidence needed

- The European Supervisory Authorities (EBA, EIOPA and ESMA) published reports on greenwashing in the financial sector
- Evidence of widespread greenwashing across the financial system
- Most prone to greenwashing: Pledges about ESG targets (56% of respondents: (very) relevant, 4% irrelevant), net-zero commitments, transition plans
- Channels: Marketing material, followed by product information and ESG ratings

EU regulators flag rising greenwashing practices by banks

European Banking Authority says there is a 'clear increase' in financial institutions overstating their climate credentials

Figure 3. Total alleged incidents of misleading communication on ESG related topics



Source: RepRisk ESG Data Science, wwww.reprisk.com

Elon Musk 
@elonmusk

Exxon is rated top ten best in world for environment, social & governance (ESG) by S&P 500, while Tesla didn't make the list!

ESG is a scam. It has been weaponized by phony social justice warriors.

5:09 pm · 18 May 2022 · Twitter for iPhone

Tesla kicked out of the S&P 500 ESG Index

Quiz: Which one is the ESG Fund?

Fund 1 - Top 10 Holdings	
AAPL	Apple, Inc
AXP	American Express
BLK	Blackrock
FB	Facebook
GOOG	Alphabet, Inc.
HD	Home Depot
MMM	3M
MSFT	Microsoft Corp.
NVDA	Nvidia, Inc.
TSLA	Tesla, Inc.

Fund 2 - Top 10 Holdings	
AAPL	Apple, Inc.
AMZN	Amazon.com
BRK.B	Berkshire Hathaway
FB	Facebook
GOOG	Alphabet, Inc.
JNJ	Johnson & Johnson
JPM	JP Morgan
MSFT	Microsoft Corp.
NVDA	Nvidia, Inc.
TSLA	Tesla, Inc.

Source: Lance Roberts, 2021

SUSA - Blackrock Ishares USA ESG Select **SPY - SPDR S&P 500 ETF Trust**

ESG Fund

Standard Fund

Fund 1 - Top 10 Holdings		Fund 2 - Top 10 Holdings	
AAPL	*Apple, Inc*	*AAPL*	*Apple, Inc.*
AXP	*American Express*	*AMZN*	*Amazon.com*
BLK	*Blackrock*	*BRK.B*	*Berkshire Hathaway*
FB	*Facebook*	*FB*	*Facebook*
GOOG	*Alphabet, Inc.*	*GOOG*	*Alphabet, Inc.*
HD	*Home Depot*	*JNJ*	*Johnson & Johnson*
MMM	*3M*	*JPM*	*JP Morgan*
MSFT	*Microsoft Corp.*	*MSFT*	*Microsoft Corp.*
NVDA	*Nvidia, Inc.*	*NVDA*	*Nvidia, Inc.*
TSLA	*Tesla, Inc.*	*TSLA*	*Tesla, Inc.*

Source: Lance Roberts, 2021

SUSA - Blackrock Ishares USA ESG Select

Expense Ratio: 0.25%

Fund 1 - Top 10 Holdings	
AAPL	Apple, Inc
AXP	American Express
BLK	Blackrock
FB	Facebook
GOOG	Alphabet, Inc.
HD	Home Depot
MMM	3M
MSFT	Microsoft Corp.
NVDA	Nvidia, Inc.
TSLA	Tesla, Inc.

ESG Fund

SPY - SPDR S&P 500 ETF Trust

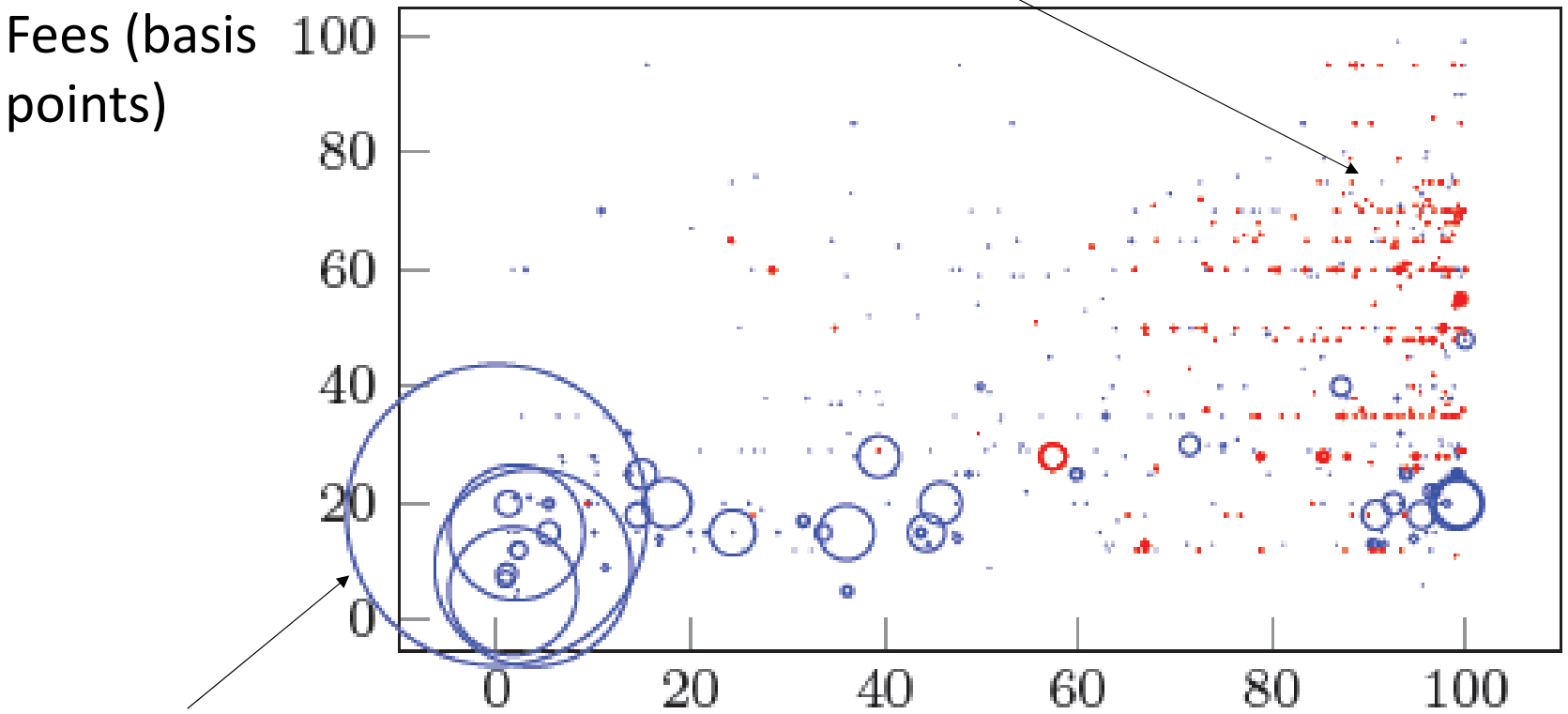
Expense Ratio: 0.09%

Fund 2 - Top 10 Holdings	
AAPL	Apple, Inc.
AMZN	Amazon.com
BRK.B	Berkshire Hathaway
FB	Facebook
GOOG	Alphabet, Inc.
JNJ	Johnson & Johnson
JPM	JP Morgan
MSFT	Microsoft Corp.
NVDA	Nvidia, Inc.
TSLA	Tesla, Inc.

Standard Fund

Abbildung: Lance Roberts, 2021

Red: Specialized ETS (e.g., ESG)



Blue: Broad ETFs (e.g., S&P1500)

Ben-David, Itzhak, Franzoni, Kim, and Moussawi (RFS 2022)

Quiz: Is this maybe the “Ideal” ESG Fund?

Top 5 holdings

Top 5 holdings as a per cent of portfolio

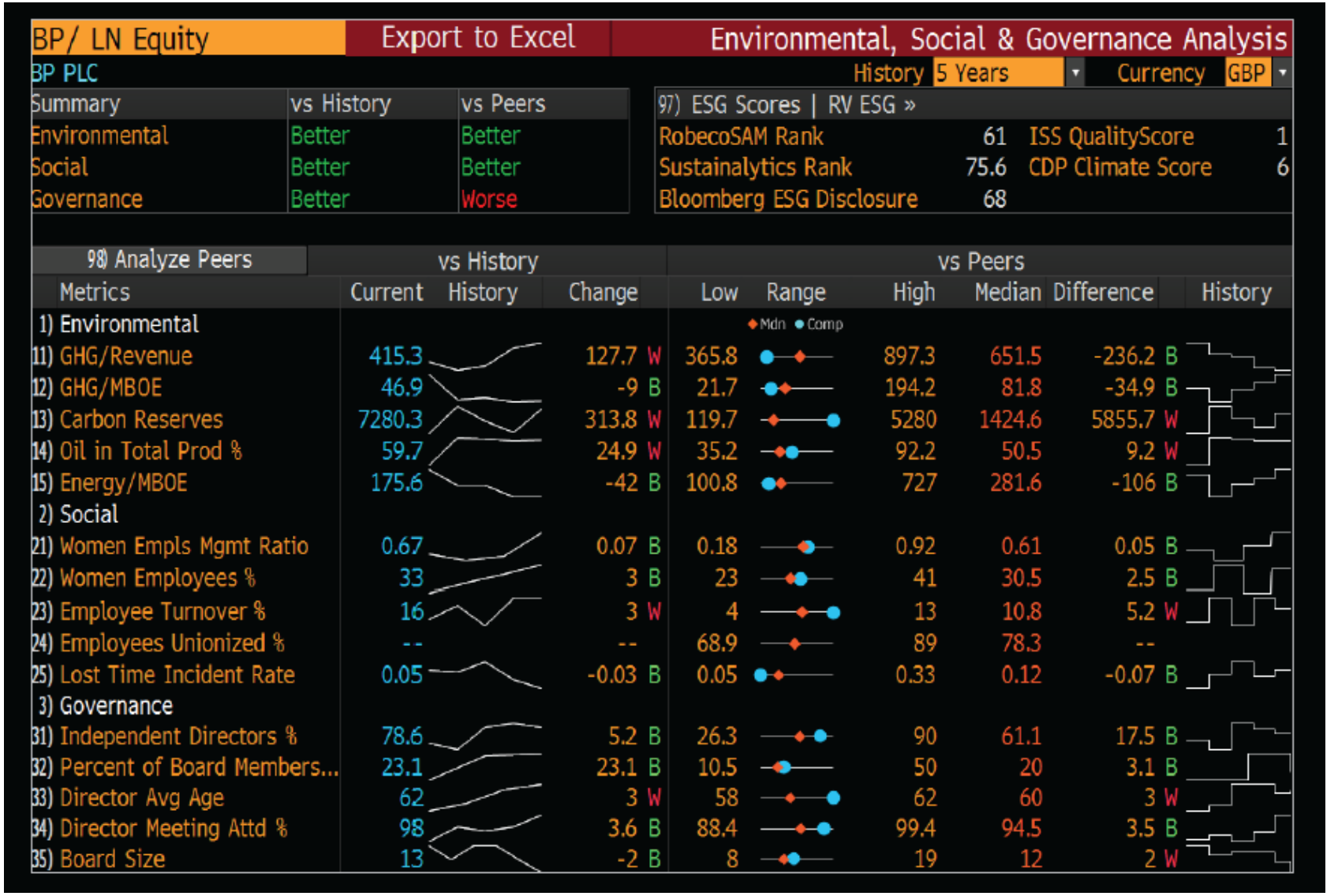
42.79%	27.64%	0.00%	27.64%
Category average	% Net assets	% Short	% Long

Company	1 year change	Portfolio weight	Long allocation
Conocophillips COP:NYQ	+89.19%	7.41%	
Marathon Petroleum Corp MPC:NYQ	+67.26%	5.71%	
Shell PLC	+60.04%	5.61%	
Pioneer Natural Resources Co PXD:NYQ	+64.34%	5.19%	
Shell PLC SHEL:NYQ	+35.83%	3.72%	

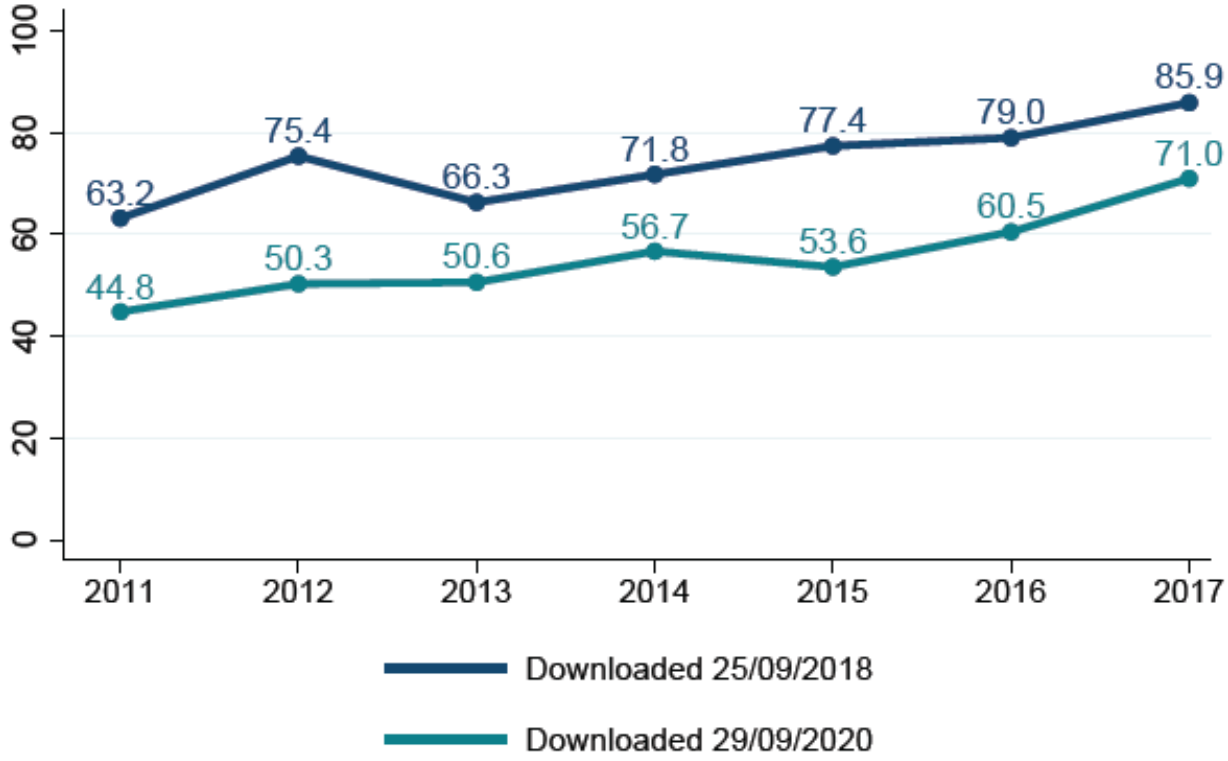
Per cent of portfolio in top 5 holdings: **27.64%**

Data delayed at least 15 minutes, as of Jun 14 2022 14:31 BST.

Vanguard Energy Fund Investor Shares


BP/ LN Equity
Export to Excel
Environmental, Social & Governance Analysis
BP PLC
History 5 Years
Currency GBP
Summary | vs History | vs Peers
Environmental | Better | Better
Social | Better | Better
Governance | Better | Worse
97) ESG Scores | RV ESG »
RobecoSAM Rank 61
Sustainalytics Rank 75.6
Bloomberg ESG Disclosure 68
ISS QualityScore 1
CDP Climate Score 6
98) Analyze Peers
vs History
vs Peers
Metrics | Current | History | Change | Low | Range | High | Median | Difference | History
Mdn Comp
1) Environmental
11) GHG/Revenue 415.3 127.7 W 365.8 897.3 651.5 -236.2 B
12) GHG/MBOE 46.9 -9 B 21.7 194.2 81.8 -34.9 B
13) Carbon Reserves 7280.3 313.8 W 119.7 5280 1424.6 5855.7 W
14) Oil in Total Prod % 59.7 24.9 W 35.2 92.2 50.5 9.2 W
15) Energy/MBOE 175.6 -42 B 100.8 727 281.6 -106 B
2) Social
21) Women Empls Mgmt Ratio 0.67 0.07 B 0.18 0.92 0.61 0.05 B
22) Women Employees % 33 3 B 23 41 30.5 2.5 B
23) Employee Turnover % 16 3 W 4 13 10.8 5.2 W
24) Employees Unionized % -- -- 68.9 89 78.3 --
25) Lost Time Incident Rate 0.05 -0.03 B 0.05 0.33 0.12 -0.07 B
3) Governance
31) Independent Directors % 78.6 5.2 B 26.3 90 61.1 17.5 B
32) Percent of Board Members... 23.1 23.1 B 10.5 50 20 3.1 B
33) Director Avg Age 62 3 W 58 62 60 3 W
34) Director Meeting Attd % 98 3.6 B 88.4 99.4 94.5 3.5 B
35) Board Size 13 -2 B 8 19 12 2 W

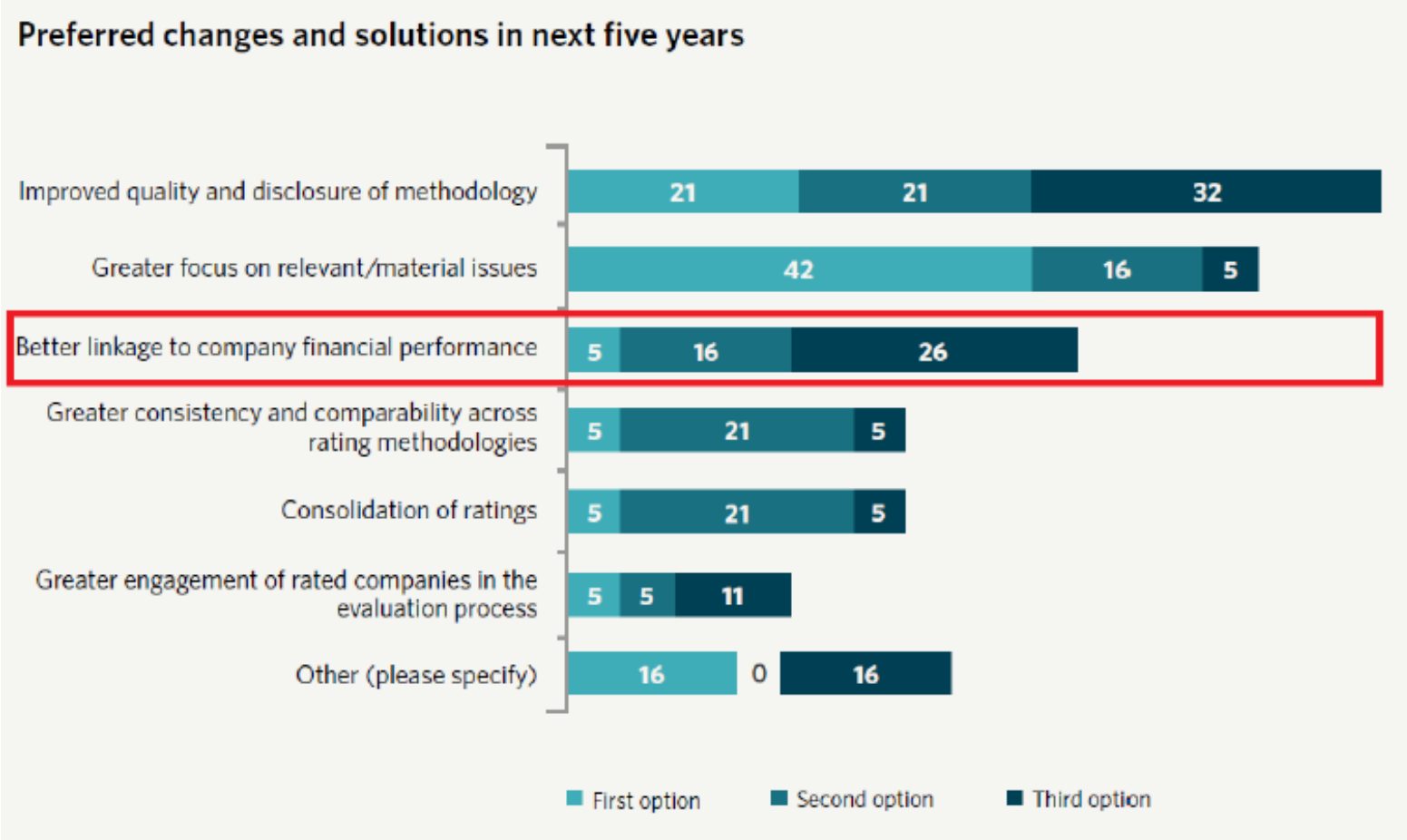
ESG Ratings – Data Rewriting by Refinitiv



ESG Ratings - Rewriting and Stock Returns

Data version	09/2018	09/2020	03/2021	09/2018	09/2020	03/2021
Dependent variable	*Future Ret.*	*Future Ret.*	*Future Ret.*	*Future Ret.*	*Future Ret.*	*Future Ret.*
	(1)	(2)	(3)	(4)	(5)	(6)
E&S Score	0.001	**0.031****	**0.030****			
	(0.06)	**(2.43)**	**(2.31)**			
E&S Score Top 25%				0.892	**1.170****	**1.332****
				(1.56)	**(2.09)**	**(2.33)**
Observations	20,874	20,874	20,874	20,874	20,874	20,874
Control variables	Yes	Yes	Yes	Yes	Yes	Yes
Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Country Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R-squared	0.12	0.12	0.12	0.12	0.12	0.12

ESG Data Providers - Incentives



What‘s the problem?

May undermine trust in the financial system (again)

Distrust in ESG products may lead to large ESG fund outflows, which can have large real effects on green firms

=> Capital reallocation required for the green transition will be impeded

Many important issues to address

- Measuring greenwashing
- Understanding the incentive structure of the ESG industry
- Understanding firm adaption policies (physical, insurance)
- Climate risks in the insurance sector (both sides of the balance sheet)
- Climate change mitigation and the housing sector

Danke