



Sustainability
Initiative

Aggregate Confusion and the Challenge of ESG Measurement

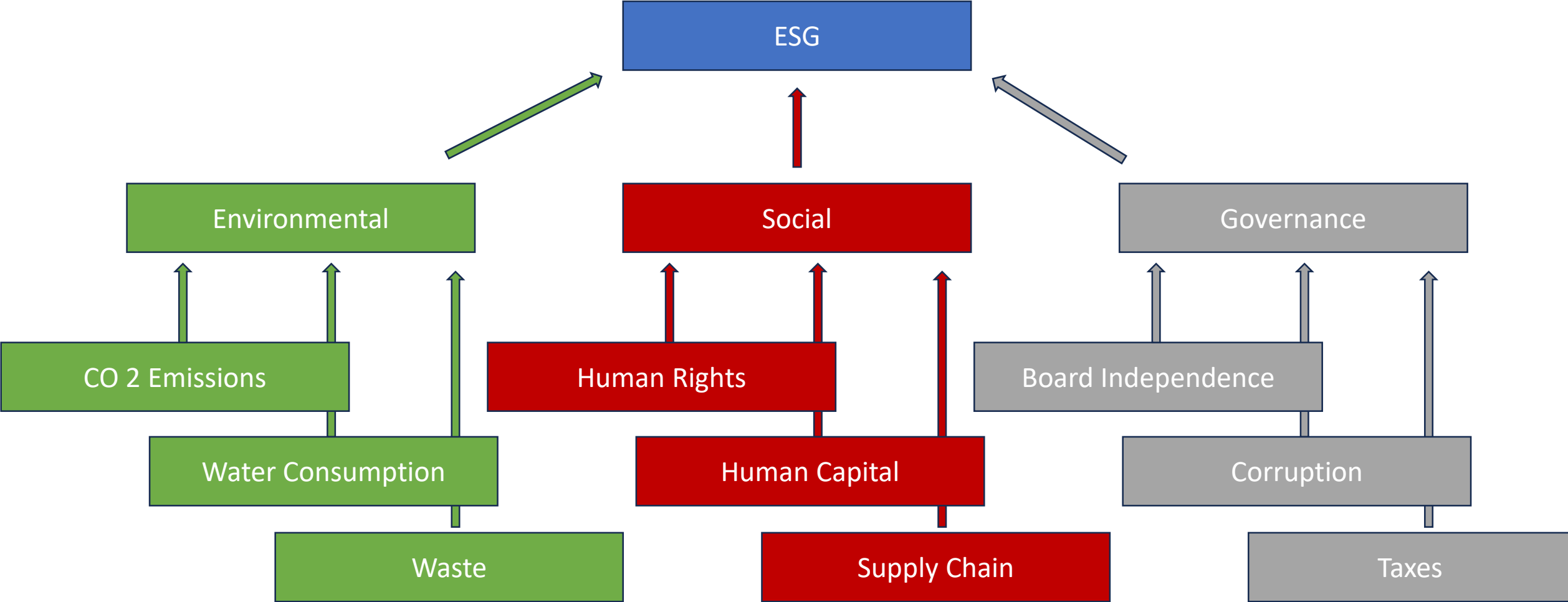
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How do ESG investors assess companies?



What are ESG ratings?

- ESG ratings are an **opinion** about the environmental, social and governance of a firm
 - Financial Materiality: Risks and Opportunities
 - Double Materiality: Risks and Opportunities + Impact

The Big Players in the ESG Space

Bloomberg

S&P Global

MSCI 

ISS ESG 

MORNINGSTAR | **SUSTAINALYTICS**

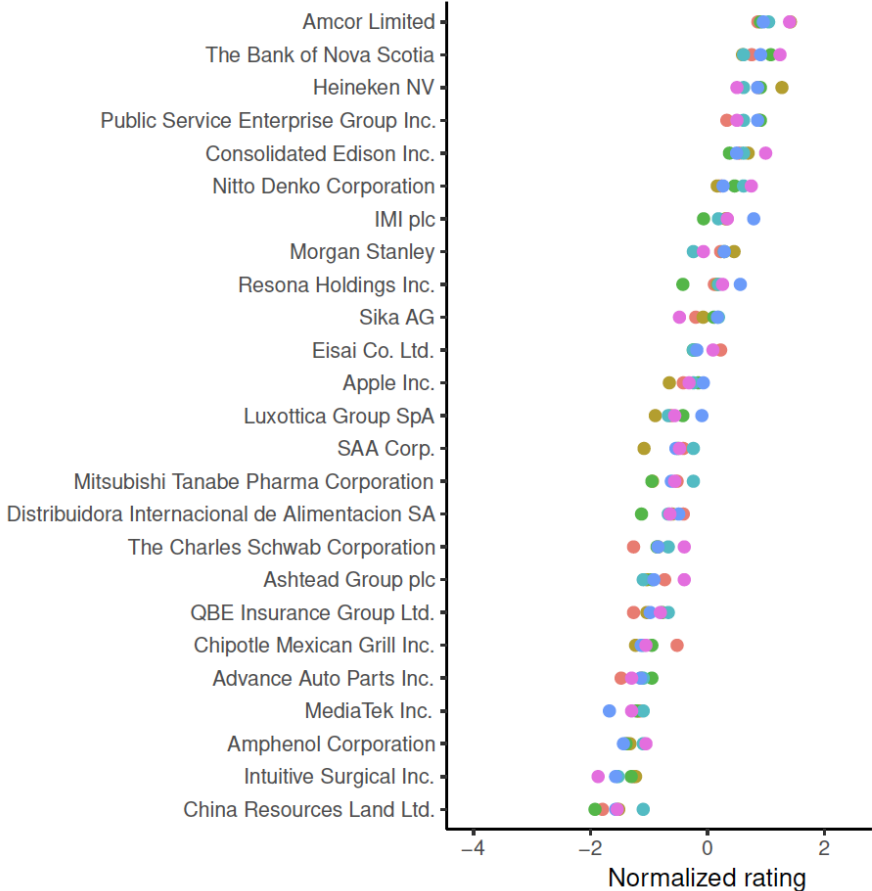
REFINITIV® 

MOODY'S | **ESG Solutions**

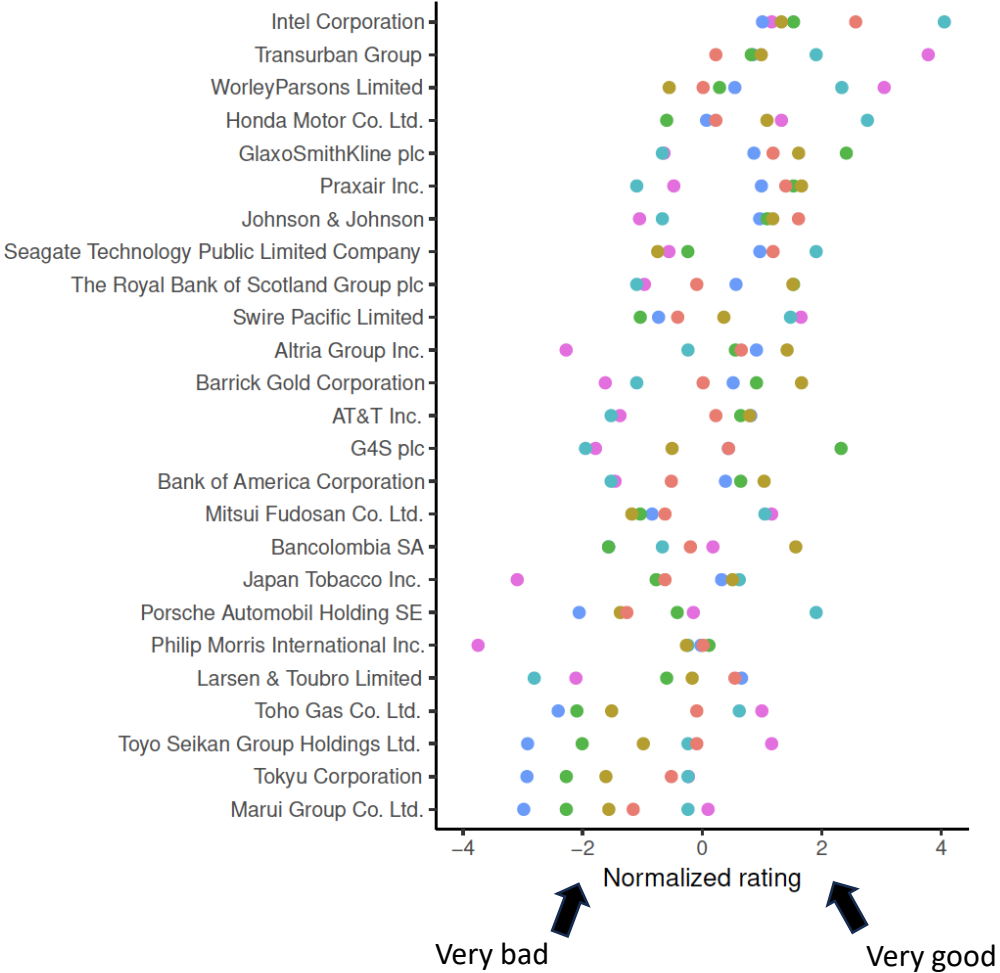
All big financial data providers are present!

Aggregate Confusion: The Divergence of ESG Ratings

Highest agreement



Highest disagreement



The disagreement is not higher for different industries or different market capitalizations.

Different Materiality Approaches

Example: Water Stress of a Nestlé bottling plant

Financial Materiality

Impact of ESG on the firm's profit or shareholder value.

Double Materiality

Impact of ESG on the firm's profit or shareholder value and impact of the firm on the world.

Potentially correlated yet very different!

Financial Materiality



Double Materiality



Different Measurement Approaches

Different data inputs

- Firm disclosure :
 - Unstructured: Sustainability reports
 - Structured: Disclosure frameworks (GRI, SASB)
- Government data
- SEC filings
- Modeled data
- Media controversies

Different measurement assumptions and algorithms

- Intentionality
 - Example: CO2 emissions
- Contextuality
 - Example: Sexual harassment

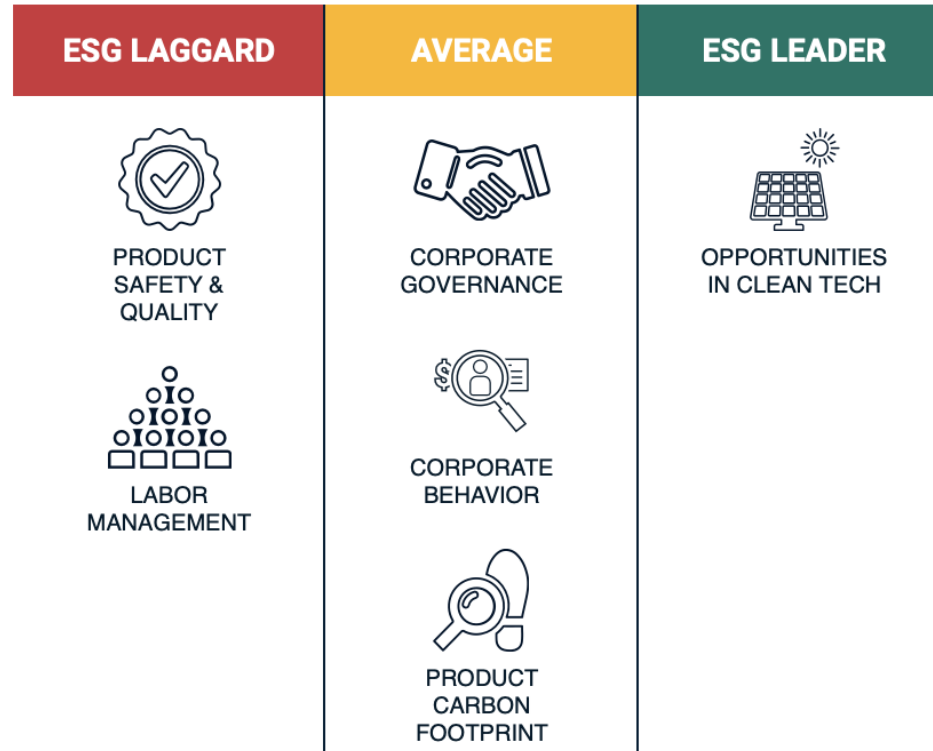
Choice and Relative Importance of Indicators

- Financial Materiality vs Double Materiality
- Personal Preferences
 - Example: Moody's ESG Solutions (Vigeo) was founded by the president of a labor union
- Cultural differences
 - Example: Indian ESG Rater legislation: rural development
- Data availability and trust in the data

Example: Official SEC Filing 10-K by Tesla

- ***If we are unable to attract, hire and retain key employees and qualified personnel, our ability to compete may be harmed.***
- The loss of the services of any of our key employees or any significant portion of our workforce could disrupt our operations or delay the development, introduction and ramp of our products and services. In particular, we are highly dependent on the services of Elon Musk, Technoking of Tesla and our Chief Executive Officer.

Linear Trade-Offs make a bad risk measure: Tesla



Overall Rating for Tesla: A

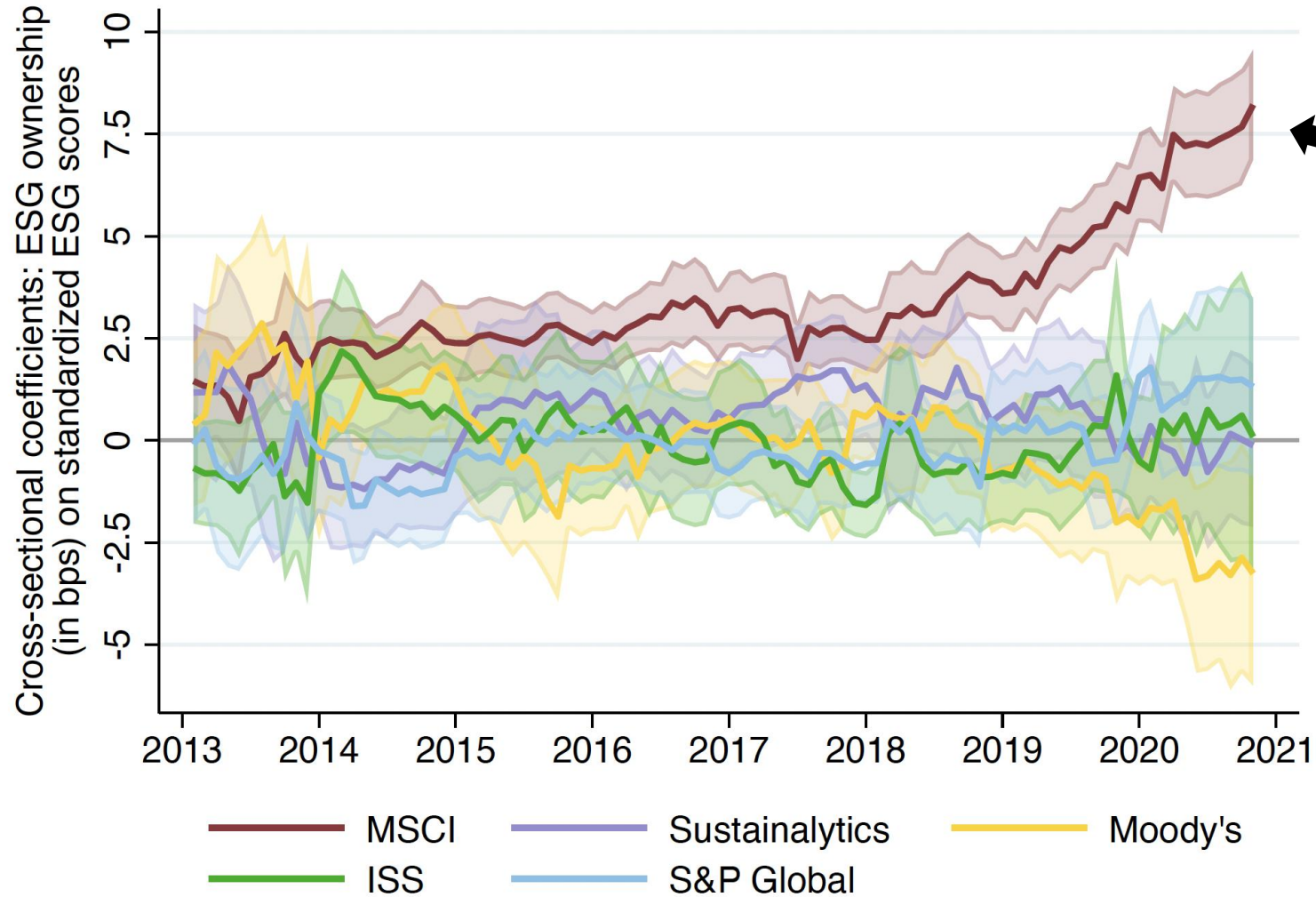
Case Study: Tesla

Elon Musk announces to buy Twitter



Acquisition of Twitter

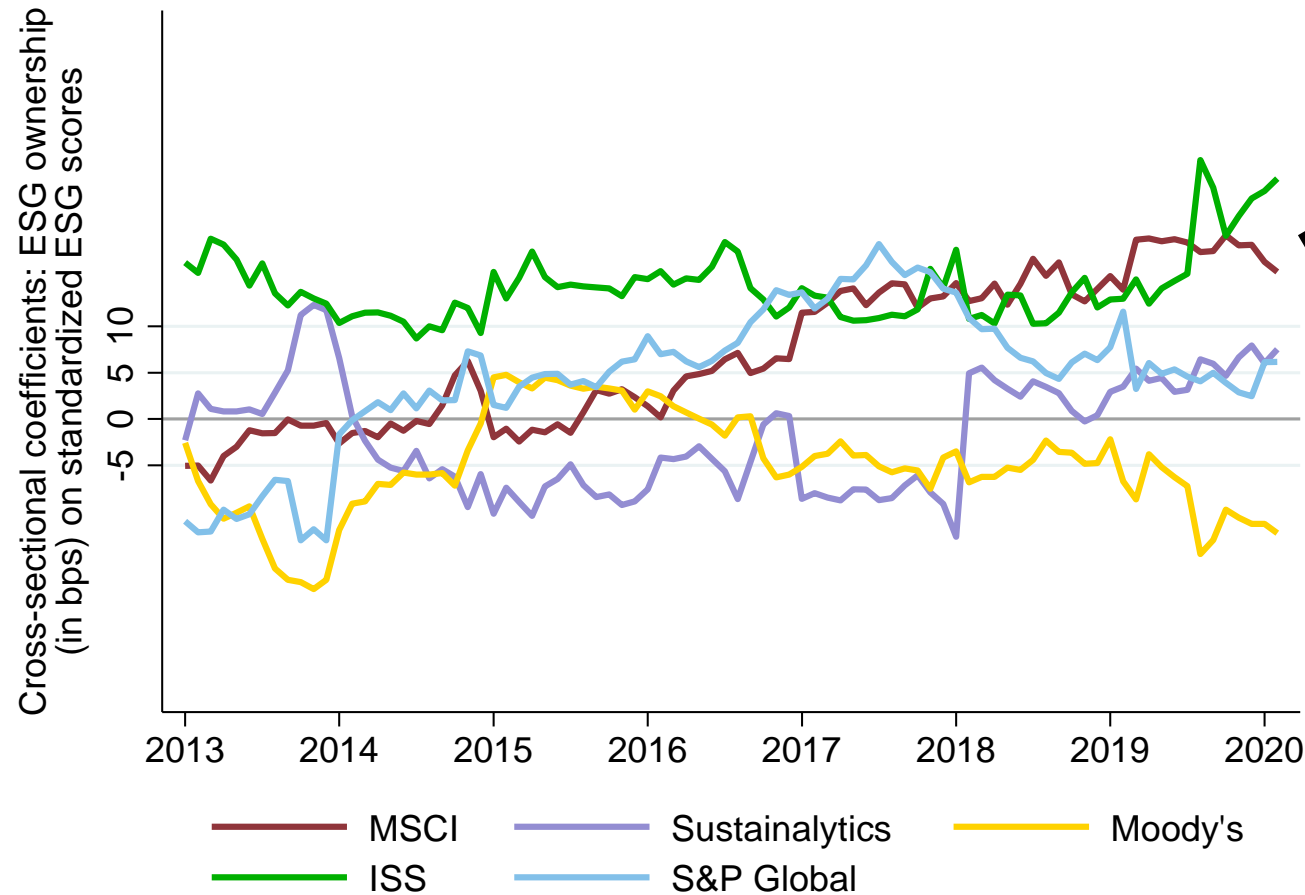
Which ESG rater matters in the US?



MSCI IVA is the only rating that correlates with mutual fund holdings

90% confidence intervals displayed.

Which ESG rater matters in Europe?

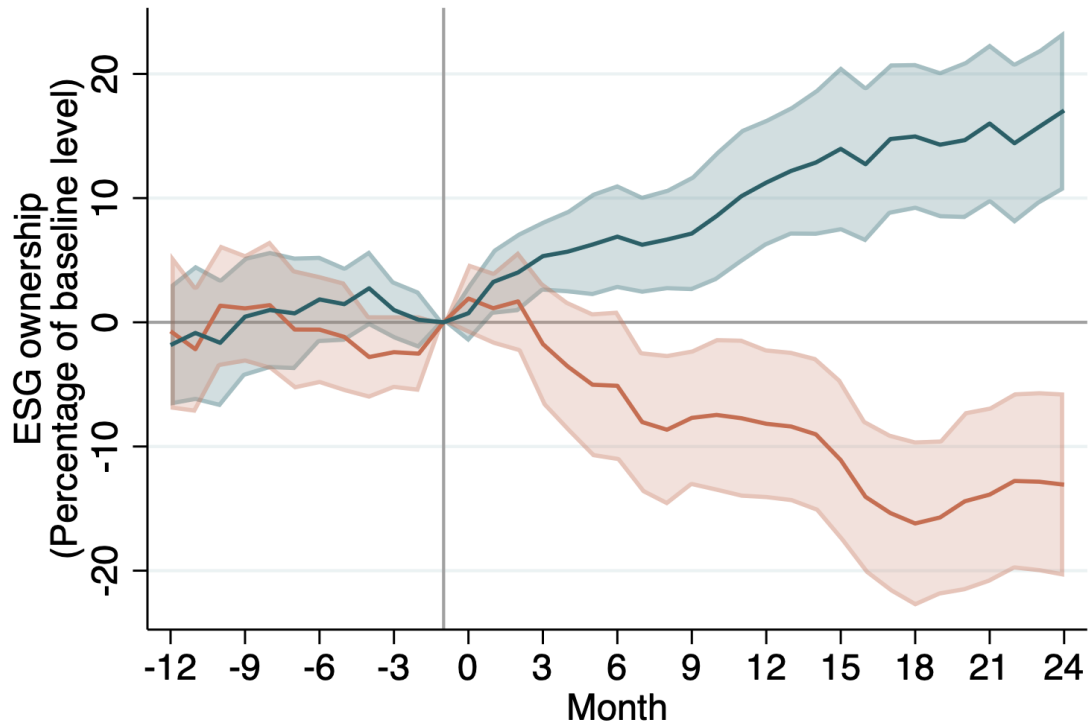


90% confidence intervals displayed.

MSCI IVA and ISS correlate with mutual fund holdings

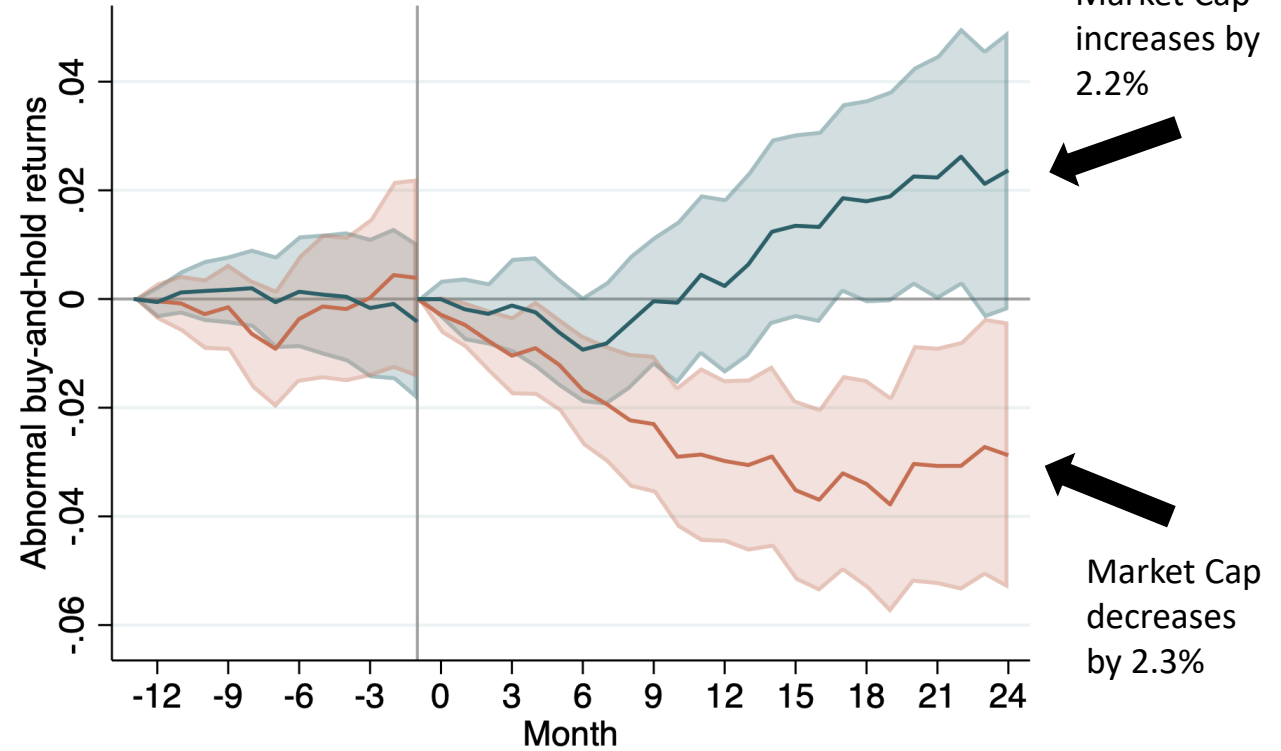
Investors Rely on ESG Ratings

Fund Flows



Upgrades Downgrades

Returns



Upgrades Downgrades

Companies benefit from an increase in their ratings

Policy Implications

Should we standardize ESG ratings? No! We need more competition!

Assessing ESG performance is conceptually challenging
contextuality
intentionality

Should we standardize firm level disclosure? Yes!

we need to agree on how to count CO2 emissions

What we need is **transparency** and **accountability** to
spur competition around measurement!

Appendix

Differences in Measurement: Correlations Between Indicators

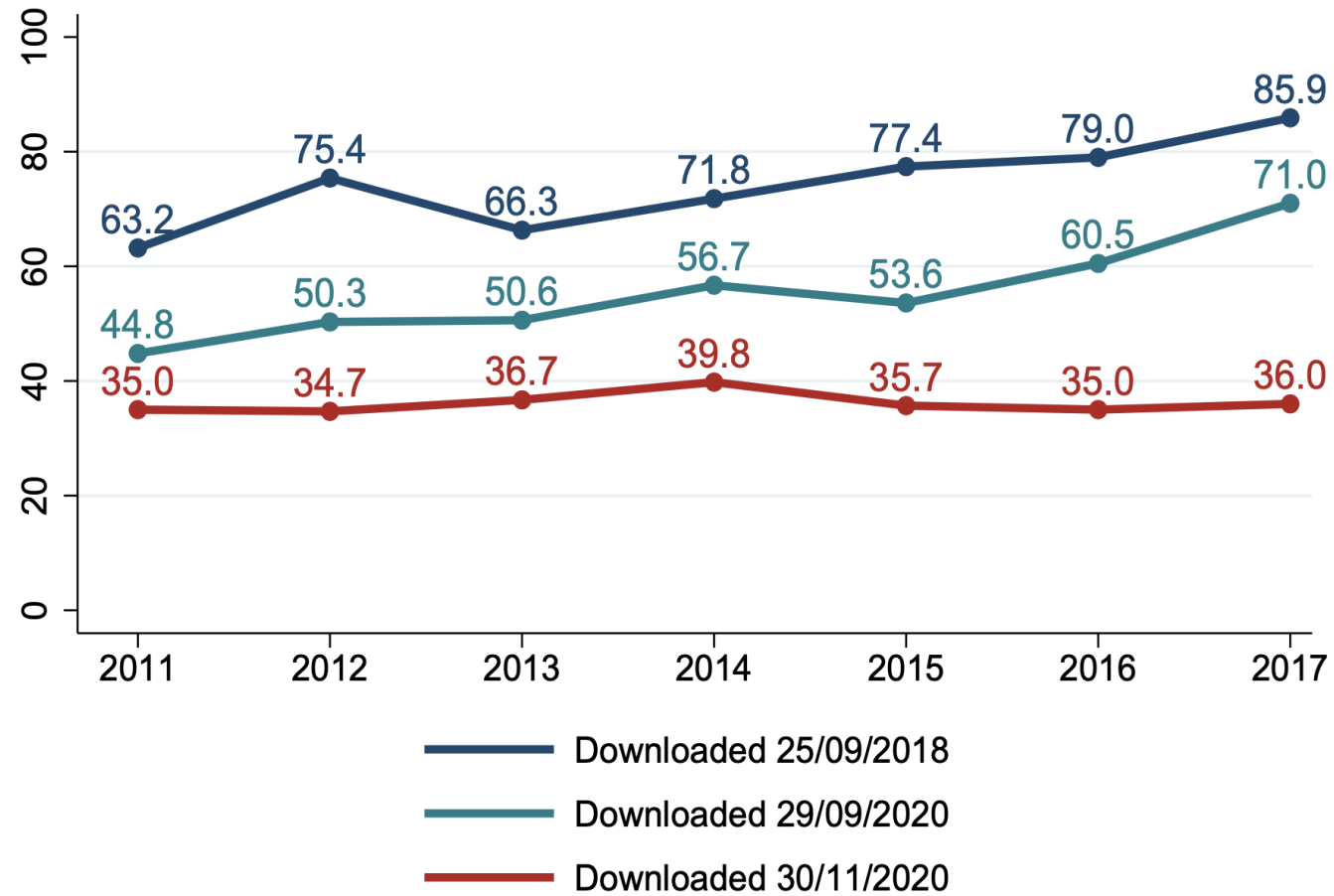
	KL SA	KL MO	KL SP	KL RE	KL MS	SA MO	SA SP	SA RE	SA MS	MO SP	MO RE	MO MS	SP RE	SP MS	RE MS	Average
Access & Affordability	0.41		0.57	0.25	0.78		0.67	0.47	0.56				0.55	0.71	0.43	0.54
Air Quality								0.27								0.27
Business Ethics	0.1	0.05	0.05	0.09	0.35	0.68	0.43	0.73	0.08	0.43	0.69	0.05	0.25	0.17	0.01	0.28
Competitive Behavior		-0.06		0.56	0.76						0	-0.05			0.56	0.30
Critical Incident Risk Mgmt.				0.21												0.21
Customer Privacy	0.48		0.27		0.75		0.17		0.45					0.42		0.42
Customer Welfare	0.31	-0.08	-0.06	0.02	0.67	-0.03	-0.11	-0.04	-0.07	0.48	0.47		0.42	0.4	0.38	0.20
Ecological Impacts	0.48	0.4	0.41	0.39	0.65	0.67	0.7	0.65	0.29	0.71	0.58	0.48	0.69	0.21	0.26	0.50
Employee Engagement, Diversity & Inclusion	0.17	0.2	0.15	0.2	0.72	0.57	0.4	0.54	0.45	0.51	0.55	0.42	0.58	0.45	0.55	0.43
Employee Health & Safety	0.01	0.27	0.27	0.34	0.73	-0.11	-0.16	-0.14	-0.06	0.63	0.66	0.5	0.55	0.44	0.59	0.30
Energy Mgmt.	0.22	0.13	0.49	0.25	0.8	0.4	0.27	0.27	0.4	0.32	0.41	0.59	0.2	0.4	0.48	0.38
GHG Emissions	0	-0.03		-0.06		0.32	0.63	0.59			0.56		0.36			0.30
Human Rights & Community Relations	-0.13	0.25	0.15	0.11		-0.03	-0.14	-0.09		0.54	0.49		0.64			0.18
Labor Practices	0.26	0.28	0.11	0.2	0.34	0.59	0.45	0.42	0.41	0.56	0.48	0.43	0.38	0.34	0.4	0.38
Mgmt. of the Legal & Regulatory Environment							0.05	-0.05					0.01			0.00
Materials Sourcing & Efficiency							0.35	0.42					0.57			0.45
Physical Impacts of Climate Change			0.44	0.42	0.8								0.54	0.54	0.5	0.54
Product Design & Lifecycle Mgmt.	0.29	0.07	0.31	0.29	0.78	0.31	0.47	0.35	0.42	0.35	0.3	-0.05	0.56	0.48	0.48	0.36
Product Quality & Safety	-0.05	0.06	0.16	0	0.63	-0.14		-0.03	0.07	0.46	0.21	0.11	0.38	-0.03	0.1	0.14
Selling Practices & Product Labeling	-0.5	-0.06	-0.38	0.24		0.38	0.68	0		0.49	0.05		-0.1			0.08
Supply Chain Mgmt.	0.15	0.17	0.13	0.16	0.62	0.57	0.53	0.56	0.61	0.66	0.62	0.6	0.53	0.34	0.48	0.45
Systemic Risk Mgmt.			0.24		0.65									0.24		0.38
Waste & Hazardous Materials Mgmt.	0.25	0.34	0.22	0.23	0.78	0.43	0.22	0.36	0.33	0.48	0.32	0.39	0.12	0.23	0.3	0.33
Water & Wastewater Mgmt.	0.36	0.36	0.23	0.23	0.67	0.47	0.29	0.31	0.45	0.48	0.32	0.5	-0.02	0.24	0.44	0.36
Average	0.17	0.15	0.21	0.22	0.68	0.34	0.33	0.29	0.31	0.51	0.42	0.33	0.38	0.35	0.40	

The differences in measurement can be extreme!

Should Firms just Simply Increase their MSCI Rating?

- Short Answer: No!
- Long answer:
 - There are multiple rating agencies
 - Most investors construct their own ESG ratings
 - Methodology change over time
 - Light greenwashing can result in controversies
 - No real risk management, hence no decrease in future controversies

Retroactive Rewritings in the Refinitiv Database



The same firm has three different trajectories in three different downloads

Refinitiv: Downloads and Returns

09/2018	09/2020	03/2021
<i>Future Return</i>	<i>Future Return</i>	<i>Future Return</i>
(4)	(5)	(6)
0.892 (1.56)	1.170** (2.09)	1.332** (2.33)
20,874	20,874	20,874

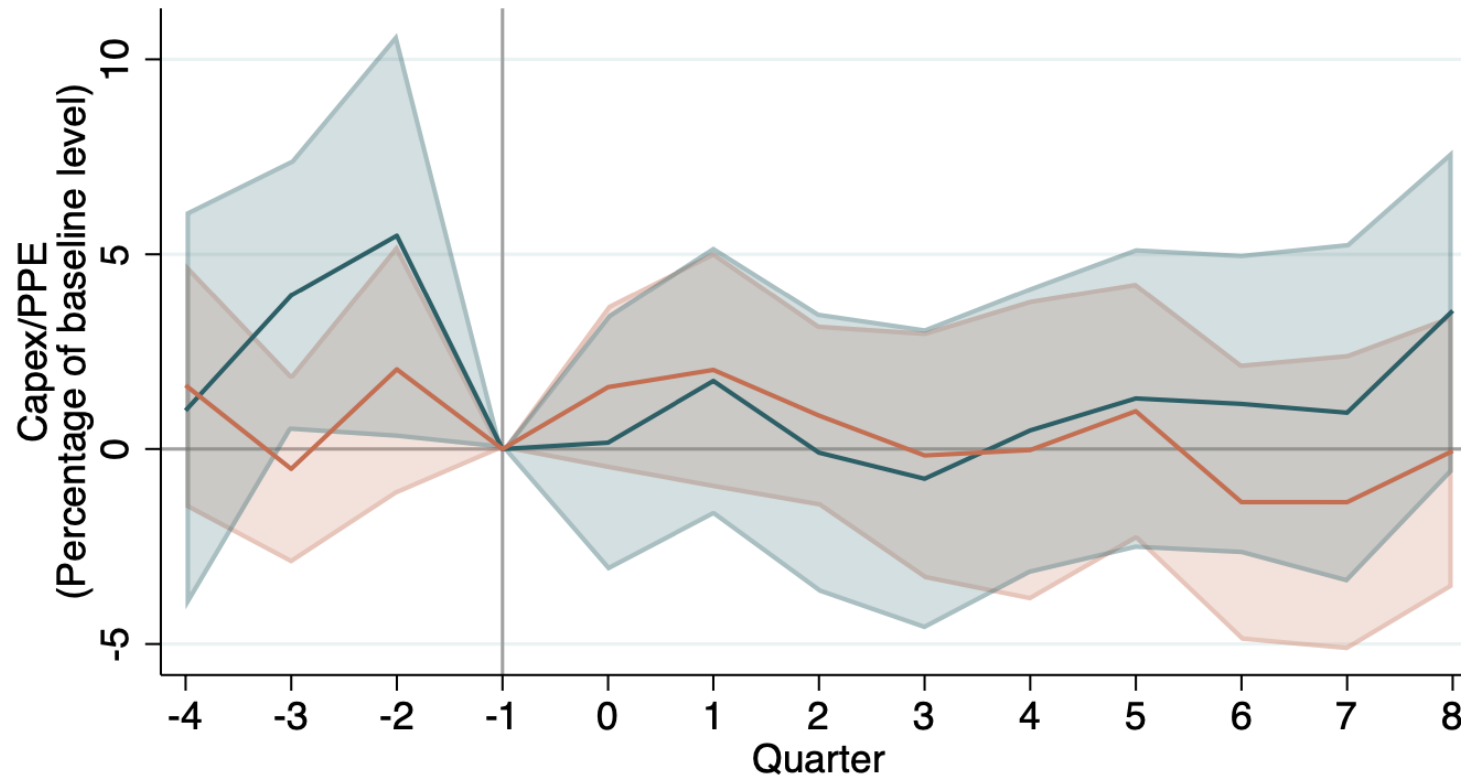
The newer the download the higher the correlation with stock returns!

Refinitiv: Changes Between Downloads

	2011	2012	2013	2014	2015	2016	2017	Full Sample
Panel A: Firm-Years with Changes in Total ESG Score								
<i>ESG Score</i>	80%	80%	80%	80%	88%	92%	94%	86%
Panel B: Firm-Years with Changes in Pillar Scores								
<i>E Score</i>	51%	54%	50%	48%	53%	46%	50%	50%
<i>S Score</i>	58%	59%	59%	55%	68%	74%	73%	65%
<i>G Score</i>	43%	44%	45%	49%	54%	62%	66%	54%
Panel B: Firm-Years with Changes in Raw Data Items								
Raw Data Items	4%	4%	4%	4%	6%	7%	8%	6%

We compare ESG scores downloaded on February 9 and March 23, 2021 (just six weeks apart)!

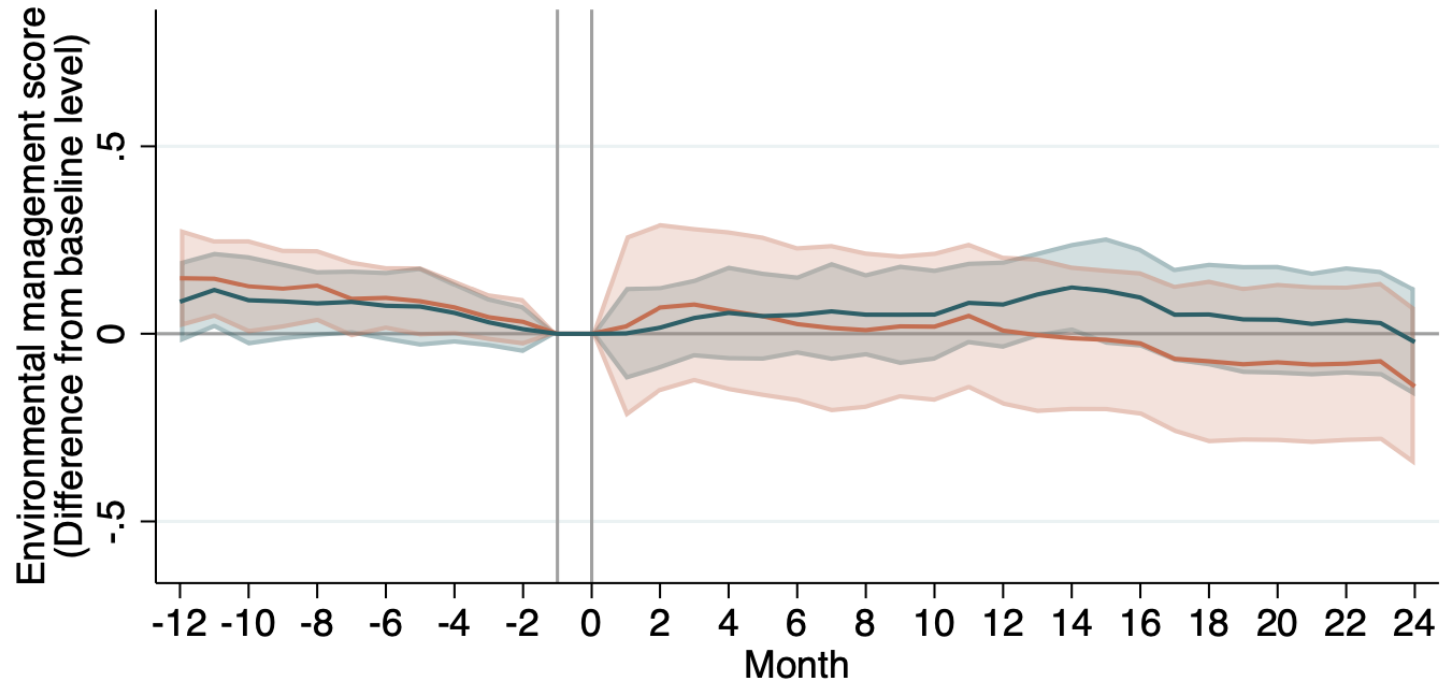
Reaction of CAPEX to ESG Rating Changes



Downgrades Upgrades

Baseline level upgrades: 5.71
Baseline level downgrades: 6.22
90% confidence intervals displayed.

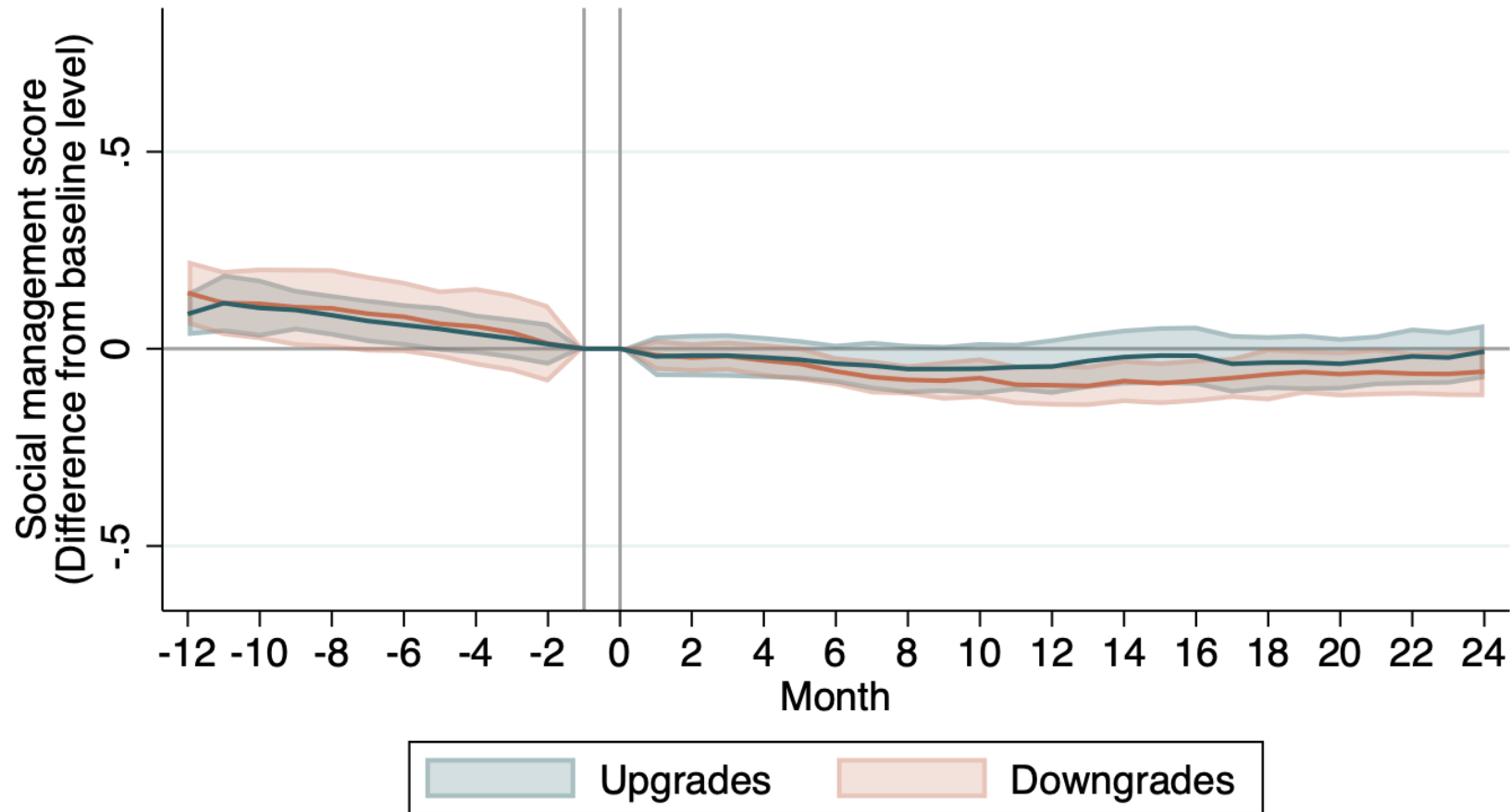
Reaction E Practices to ESG Rating Changes



Upgrades Downgrades

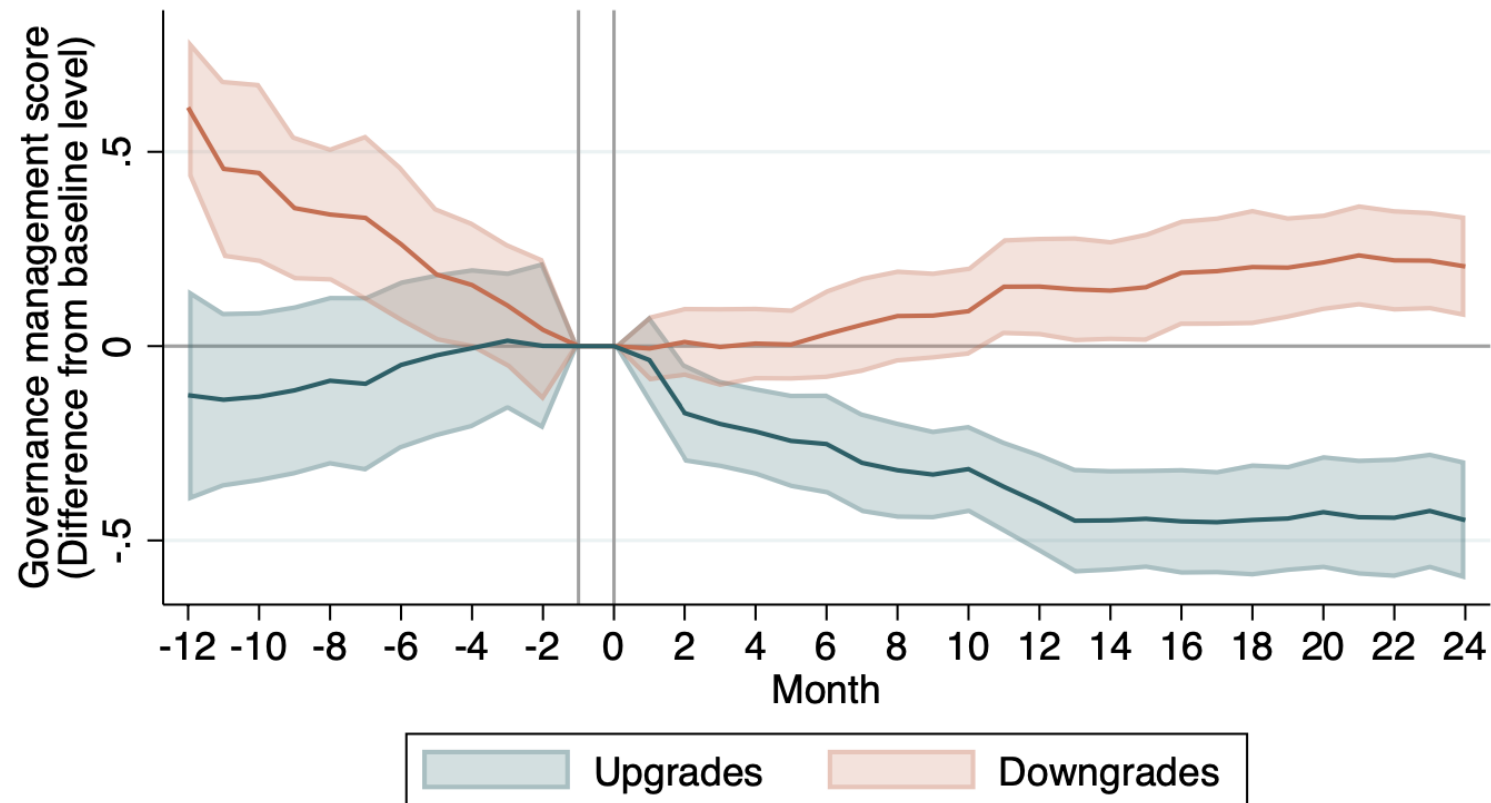
Baseline levels:
Before upgrade: 3.40
After upgrade: 3.62
Before downgrade: 3.49
After downgrade: 3.35

Reaction S Practices to ESG Rating Changes



Baseline levels:
Before upgrade: 3.23
After upgrade: 3.61
Before downgrade: 3.25
After downgrade: 3.29

Reaction G Practices to ESG Rating Changes



Baseline levels:
Before upgrade: 5.45
After upgrade: 6.19
Before downgrade: 5.15
After downgrade: 5.22