

Tilting the wrong firms? How inflated ESG ratings negate socially responsible investing under information asymmetries

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CSR

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Introduction

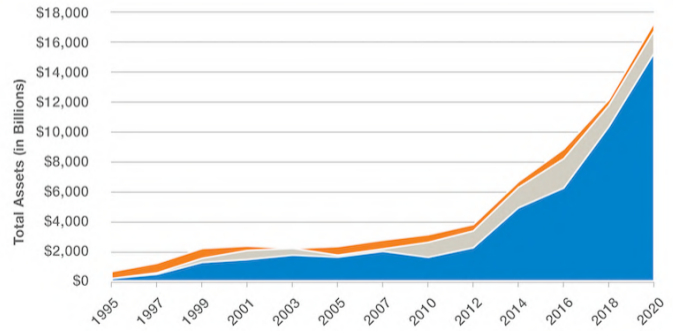


Introduction



Sustainable Investing in the United States 1995–2020

- ESG Incorporation
- Overlapping Strategies
- Shareholder Advocacy



SOURCE: US SIF Foundation.

Introduction



Environment

- Climate risks
- Natural resource scarcity
- Pollution
- Waste
- Environmental opportunities



Social

- Labour issues
- Product liability
- Gender diversity
- Human rights
- Geopolitical environment



Governance

- Board quality & effectiveness
- Leadership
- Executive pay
- Audits
- Internal control
- Shareholder rights

Introduction



Introduction

MSCI ESG Score									
Environment Pillar				Social Pillar				Governance Pillar	
Climate Change	Natural Capital	Pollution & Waste	Env. Opportunities	Human Capital	Product Liability	Stakeholder Opposition	Social Opportunities	Corporate Governance	Corporate Behavior
Carbon Emissions	Water Stress	Toxic Emissions & Waste	Clean Tech	Labor Management	Product Safety & Quality	Controversial Sourcing	Access to Communication	Board	Business Ethics
Product Carbon Footprint	Biodiversity & Land Use	Packaging Material & Waste	Green Building	Health & Safety	Chemical Safety	Community Relations	Access to Finance	Pay	Tax Transparency
Financing Environmental Impact	Raw Material Sourcing	Electronic Waste	Renewable Energy	Human Capital Development	Consumer Financial Protection		Access to Health Care	Ownership	
Climate Change Vulnerability				Supply Chain Labor Standards	Privacy & Data Security		Opportunities in Nutrition & Health	Accounting	
					Responsible Investment				
					Insuring Health & Demographic				

Socially responsible investing

- Trade-off Financial and Sustainable performance (Riedl & Smeets, 2017; Barber, Morse, & Yasuda, 2021; Bonnefon, Landier, Sastry, & Thesmar, 2022)

Socially responsible investing

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- In addition to engagement, portfolio tilting is key (Daviers & van Wesep, 2018; Avramov, Cheng, Lioui, & Tarelli, 2021; Berk & van Binsbergen, 2021; Edmans, Levit, & Schneemeir, 2022)

Portfolio tilting in detail



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Portfolio tilting in detail



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- Firm incentives to inflate ratings

Portfolio tilting under information asymmetries



WACC: 5%

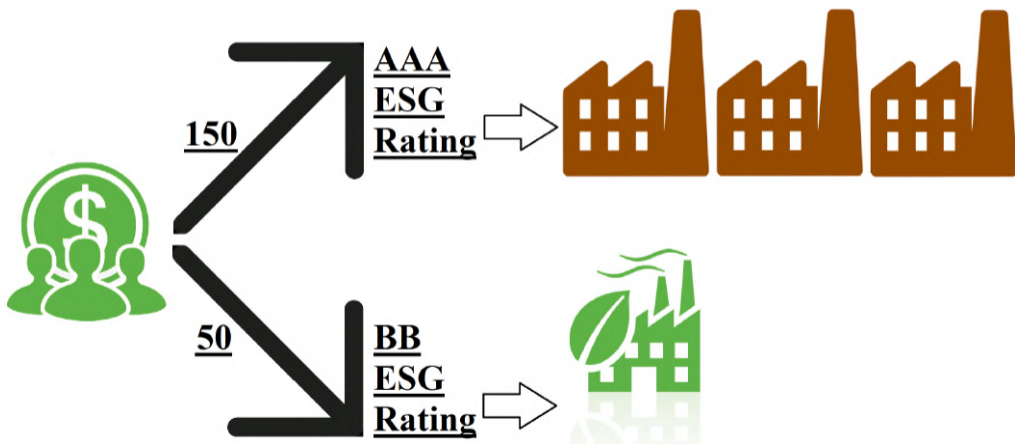
Portfolio tilting under information asymmetries



Portfolio tilting under information asymmetries



Portfolio tilting under information asymmetries



Main questions

- What exactly is captured by ESG ratings?
- How does this effect the efficacy of portfolio tilting?

Preview of results

- Global ESG rating inflation
- Socially responsible investors “tilt the wrong firms”
- Cost of capital reductions for unsustainable firms

Data

- Refinitiv ESG data on 466 granular ESG aspects from 2003 to 2022
- Average market capitalization: 28.6 trillion USD
- 3,341 are domiciled in Asia, 2,968 in North America, 1,874 in Europe, 373 in Oceania, and 574 in Latin America, the Middle East, or Africa

Detailed ESG Data

Granular ESG information

Greenhouse gas emissions	Emission policy	Policy	67,258	0.60	0.49	0.00	1.00
	Emission trading	Activity	67,258	0.09	0.29	0.00	1.00
	Emission targets	Target	67,258	0.34	0.47	0.00	1.00
	Emission reduction target (%)	Target	67,258	6.55	19.43	0.00	100.00
	CO ₂ Emissions	Performance	64,682	0.00	0.01	-0.00	2.61
Air quality	Staff transportation impact reduction	Activity	67,258	0.17	0.37	0.00	1.00
	Ozon-depleting substances	Performance	67,258	0.02	0.12	0.00	1.00
	NO _x and SO _x Emissions	Performance	13,443	0.00	0.04	0.00	2.86
	NO _x and SO _x Emission reduction	Performance	67,258	0.19	0.40	0.00	1.00
	VOC and PM Emissions	Performance	66,212	0.16	0.36	0.00	1.00
	VOC and PM Emission reduction	Performance	67,258	0.14	0.35	0.00	1.00
Energy management	Energy efficiency policy	Policy	67,258	0.62	0.49	0.00	1.00
	Energy efficiency targets	Target	67,258	0.21	0.41	0.00	1.00
	Renewable energy ratio	Performance	66,626	0.40	0.49	0.00	1.00
Water and wastewater	Water efficiency policy	Policy	67,258	0.46	0.50	0.00	1.00
	Water technologies	Activity	67,258	0.06	0.24	0.00	1.00
	Water efficiency targets	Target	67,258	0.15	0.35	0.00	1.00
	Water usage / assets	Performance	26,653	18,032.75	361,246.01	0.00	32,055,458.77
	Water recycled	Performance	6,535	0.02	0.38	0.00	22.16
Waste & hazardous management	Water pollutant emissions	Performance	5,658	0.00	0.02	0.00	1.67
	Waste reduction initiatives	Activity	67,258	0.60	0.49	0.00	1.00
	Waste	Performance	22,941	1,025.91	10,812.32	0.00	644,208.43
	Waste recycled (%)	Performance	67,258	0.17	0.32	0.00	1.00
	Hazardous waste	Performance	15,447	0.00	0.00	-0.00	0.08
	Toxic chemicals reduction	Performance	67,258	0.15	0.36	0.00	1.00
Ecological impact	Electronic waste reduction	Performance	67,258	0.15	0.36	0.00	1.00
	Environmental restoration initiatives	Activity	67,258	0.48	0.50	0.00	1.00
	Land environmental impact reduction	Policy	67,258	0.08	0.28	0.00	1.00
	Biodiversity impact reduction	Policy	67,258	0.23	0.42	0.00	1.00
Human rights & Community relations	Policy human rights	Policy	67,258	0.50	0.50	0.00	1.00

Promised and Realized sustainable performance

- Promises: Reporting, policies, activities, and targets
- Realizations: Controversies and performance
- Non-parametric rank ordering mechanism (Wittkowski, Lee, Nussbaum, Chamian, & Krueger, 2004)

$$ESG_f > ESG_{f'} \Leftrightarrow (\forall_{x=1,2,\dots,X} ESG_{fx} \geq ESG_{f'x} \cap \exists_{x=1,2,\dots,X} ESG_{fx} > ESG_{f'x}) \quad (1)$$

$$Rank(ESG_f) = \sum_{f'} I(ESG_f > ESG_{f'}) - \sum_{f'} I(ESG_f < ESG_{f'}) \quad (2)$$

Overview

- ① **ESG rating inflation**
- ② Tilting the wrong firms?
- ③ Cost of capital

Contemporaneous ESG rating inflation

Table 2: ESG ratings: a measure of promised or realized sustainable performance?

This table regresses the promised and realized ESG scores of firms on their Refinitiv, MSCI, FTSE, S&P, and Sustainalytics ESG rating as given in Equation (3). Columns (1) to (3), (4) to (6), (7) to (9), (10) to (12), (13) to (15) use Refinitiv, MSCI, FTSE, S&P, and Sustainalytics ratings as dependent variable respectively. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

VARIABLES	Refinitiv			MSCI			FTSE			S&P			Sustainalytics		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
Promised	0.767*** (0.008)	0.630*** (0.009)	0.370*** (0.008)	0.538*** (0.034)	0.485*** (0.041)	0.157** (0.066)	0.917*** (0.025)	0.575*** (0.023)	0.068*** (0.018)	0.713*** (0.018)	0.451*** (0.015)	0.082*** (0.013)	0.164*** (0.011)	0.139*** (0.011)	0.021*** (0.006)
Realised	-0.015* (0.008)	-0.007 (0.007)	0.013** (0.006)	-0.034 (0.036)	-0.057 (0.035)	0.009 (0.040)	0.025 (0.024)	-0.069*** (0.019)	-0.035** (0.015)	-0.093*** (0.016)	-0.043*** (0.011)	-0.021** (0.011)	-0.051*** (0.011)	0.029*** (0.010)	-0.005 (0.005)
Observations	67,258	67,258	67,258	7,507	7,507	7,507	22,797	22,797	22,797	27,688	27,688	27,688	28,297	28,297	28,297
Adjusted R-squared	0.423	0.541	0.522	0.082	0.232	0.0553	0.181	0.500	0.461	0.186	0.497	0.103	0.026	0.311	0.150
Size	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Industry FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Country FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Year FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
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Contemporaneous ESG rating inflation

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Year FE	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES	NO	YES	YES
Firm FE	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	NO	YES	NO	NO	YES

Example: Heineken



REUTERS EVENTS™
SUSTAINABLE BUSINESS

Home Climate and Energy Natural Capital Social Equality Reporting and Finance Communications & Engagement Ethics and Governance On demand

How Heineken got into hot water by helping Cambodian ‘beer promoters’



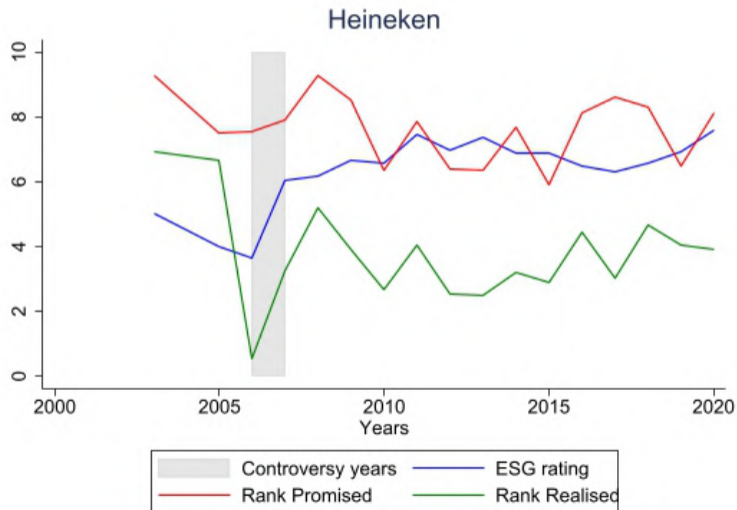
Stichting Onderzoek Multinationale Ondernemingen
Centre for Research on Multinational Corporations

Heineken
Overview of controversial business practices

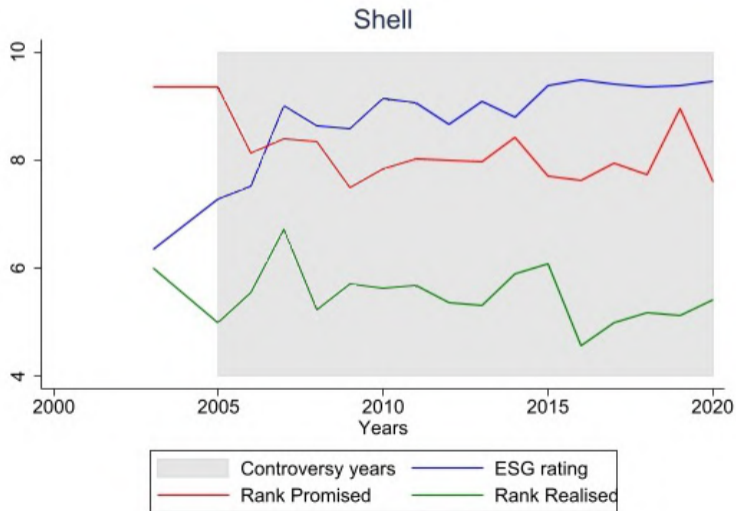
Example: Heineken

- Unsustainable wages: 71 USD/month
- No contracts, thus no tertiary labor benefits
- Alcoholism
- Bad labor conditions

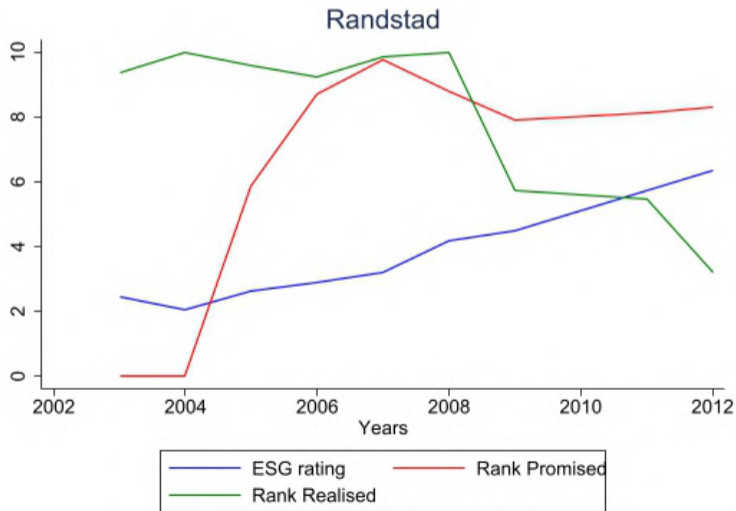
Example: Heineken



Example: Shell



Example: Randstad



Intertemporal ESG rating inflation

Table 3: Sustainable performance promises and subsequent realizations over 15 years

This table regresses the past 15 years promised ESG scores on current realized ESG scores. Each regression coefficient represents the parameter estimate of individual regressions of lagged promised ESG scores on realized ESG scores. Observations and adjusted R^2 represent the average over the 15 regressions in each Column. The dependent and independent variables for Column (1) are the realized and promised ESG score as before. The dependent and independent variables for the later Columns capture the realised and promised ESG scores specific to 14 SASB categories. These capture materials source management (2), supply chain management (3), business ethics (4), customer welfare (5), legal and regulatory concerns (6), labour practices (7), water management (8), water usage (9), wastewater management (10), business model resilience (11), greenhouse gas emissions (12), selling practices (13), employee health safety (14), employee management (15). Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
<i>Promised_{t,j-1}</i>	0.00 (0.00)	0.07*** (0.00)	-0.06*** (0.00)	0.18*** (0.00)	-0.00** (0.00)	-0.05*** (0.00)	0.01*** (0.00)	-0.04*** (0.00)	-0.00 (0.00)	0.00 (0.00)	0.33*** (0.00)	-0.37*** (0.00)	-0.04*** (0.00)	-0.06*** (0.00)	-0.06*** (0.00)
<i>Promised_{t,j-2}</i>	-0.01** (0.00)	0.05*** (0.00)	-0.07*** (0.00)	0.18*** (0.00)	-0.01*** (0.00)	-0.06*** (0.00)	0.01* (0.00)	-0.07*** (0.00)	-0.00 (0.00)	0.00** (0.01)	0.32*** (0.01)	-0.38*** (0.01)	-0.04*** (0.00)	-0.06*** (0.00)	-0.07*** (0.00)
<i>Promised_{t,j-3}</i>	-0.02*** (0.00)	0.03*** (0.00)	-0.08*** (0.00)	0.17*** (0.00)	-0.01*** (0.00)	-0.06*** (0.00)	0.00 (0.00)	-0.06*** (0.00)	-0.00** (0.00)	0.01*** (0.01)	0.30*** (0.01)	-0.36*** (0.01)	-0.04*** (0.00)	-0.06*** (0.01)	-0.07*** (0.00)
<i>Promised_{t,j-4}</i>	-0.03*** (0.00)	0.02*** (0.00)	-0.08*** (0.00)	0.16*** (0.00)	-0.01*** (0.00)	-0.06*** (0.00)	0.00 (0.00)	-0.06*** (0.00)	-0.01*** (0.00)	0.01*** (0.01)	0.28*** (0.01)	-0.33*** (0.01)	-0.04*** (0.00)	-0.06*** (0.01)	-0.07*** (0.00)
<i>Promised_{t,j-5}</i>	-0.03*** (0.00)	0.01 (0.00)	-0.09*** (0.00)	0.16*** (0.00)	-0.01*** (0.00)	-0.06*** (0.00)	0.01 (0.00)	-0.05*** (0.00)	-0.01*** (0.00)	0.01*** (0.01)	0.26*** (0.01)	-0.31*** (0.01)	-0.04*** (0.00)	-0.06*** (0.01)	-0.07*** (0.00)
<i>Promised_{t,j-6}</i>	-0.03*** (0.01)	-0.00 (0.00)	-0.09*** (0.00)	0.15*** (0.00)	-0.02*** (0.00)	-0.06*** (0.00)	0.01 (0.00)	-0.05*** (0.00)	-0.01*** (0.00)	0.01*** (0.00)	0.24*** (0.01)	-0.28*** (0.01)	-0.05*** (0.00)	-0.05*** (0.01)	-0.08*** (0.01)
<i>Promised_{t,j-7}</i>	-0.03*** (0.01)	-0.01*** (0.00)	-0.09*** (0.00)	0.14*** (0.00)	-0.02*** (0.00)	-0.06*** (0.00)	0.00 (0.00)	-0.04*** (0.01)	-0.01** (0.00)	0.01*** (0.00)	0.22*** (0.01)	-0.25*** (0.01)	-0.06*** (0.01)	-0.05*** (0.01)	-0.08*** (0.01)
<i>Promised_{t,j-8}</i>	-0.03*** (0.01)	-0.02*** (0.01)	-0.09*** (0.01)	0.14*** (0.01)	-0.02*** (0.00)	-0.05*** (0.01)	-0.00 (0.01)	-0.04*** (0.00)	-0.00 (0.00)	0.01*** (0.01)	0.20*** (0.01)	-0.23*** (0.01)	-0.07*** (0.01)	-0.05*** (0.01)	-0.08*** (0.01)
<i>Promised_{t,j-9}</i>	-0.03*** (0.01)	-0.03*** (0.01)	-0.09*** (0.01)	0.13*** (0.01)	-0.02*** (0.01)	-0.06*** (0.01)	-0.01 (0.01)	-0.05*** (0.00)	-0.00 (0.00)	0.01*** (0.01)	0.18*** (0.01)	-0.21*** (0.01)	-0.08*** (0.01)	-0.05*** (0.01)	-0.07*** (0.01)
<i>Promised_{t,j-10}</i>	-0.03*** (0.01)	-0.03*** (0.01)	-0.09*** (0.01)	0.13*** (0.01)	-0.02*** (0.01)	-0.06*** (0.01)	-0.01** (0.01)	-0.04*** (0.01)	-0.00 (0.00)	0.01*** (0.01)	0.16*** (0.01)	-0.19*** (0.01)	-0.08*** (0.01)	-0.05*** (0.01)	-0.08*** (0.01)
<i>Promised_{t,j-11}</i>	-0.02*** (0.01)	-0.04*** (0.01)	-0.09*** (0.01)	0.12*** (0.01)	-0.01** (0.01)	-0.06*** (0.01)	-0.01** (0.01)	-0.04*** (0.00)	0.01 (0.00)	0.01*** (0.00)	0.13*** (0.01)	-0.16*** (0.01)	-0.08*** (0.01)	-0.04*** (0.01)	-0.07*** (0.01)
<i>Promised_{t,j-12}</i>	-0.02*** (0.01)	-0.06*** (0.01)	-0.09*** (0.01)	0.12*** (0.01)	-0.01 (0.01)	-0.06*** (0.01)	-0.02*** (0.01)	-0.04*** (0.00)	0.01* (0.00)	0.01* (0.01)	0.11*** (0.01)	-0.14*** (0.01)	-0.08*** (0.01)	-0.03*** (0.01)	-0.07*** (0.01)
<i>Promised_{t,j-13}</i>	-0.02*** (0.01)	-0.08*** (0.01)	-0.10*** (0.01)	0.12*** (0.01)	-0.01 (0.01)	-0.06*** (0.01)	-0.01 (0.01)	-0.04*** (0.01)	0.01 (0.01)	0.01* (0.01)	0.08*** (0.02)	-0.11*** (0.02)	-0.08*** (0.01)	-0.03*** (0.01)	-0.07*** (0.01)
<i>Promised_{t,j-14}</i>	-0.02*** (0.01)	-0.11*** (0.01)	-0.10*** (0.01)	0.10*** (0.01)	-0.02 (0.01)	-0.05*** (0.01)	-0.01 (0.01)	-0.03*** (0.01)	0.00 (0.01)	0.01 (0.01)	0.07*** (0.02)	-0.10*** (0.02)	-0.09*** (0.01)	-0.01 (0.02)	-0.08*** (0.01)
<i>Promised_{t,j-15}</i>	-0.02*** (0.01)	-0.11*** (0.01)	-0.09*** (0.01)	0.09*** (0.01)	0.00 (0.02)	-0.05*** (0.01)	-0.01 (0.01)	-0.02* (0.01)	0.01* (0.01)	0.00 (0.02)	0.05*** (0.02)	-0.08*** (0.02)	-0.09*** (0.01)	-0.01 (0.02)	-0.08*** (0.02)
Observations	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586	24,586
Adjusted R^2	0.002	0.019	0.016	0.119	0.029	0.084	0.003	0.006	0.015	0.002	0.042	0.088	0.008	0.116	0.047
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Time FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FX	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Intertemporal ESG rating inflation

- In aggregate: Negative relation

Intertemporal ESG rating inflation

- In aggregate: Negative relation
- CO_2 (-0.240), supply chain management (-0.087), employee management (-0.073), selling practices (-0.064), legal and regulatory concerns (-0.057), employee health and safety policy (-0.045), and water management (-0.045)

Intertemporal ESG rating inflation

- In aggregate: Negative relation
- CO_2 (-0.240), supply chain management (-0.087), employee management (-0.073), selling practices (-0.064), legal and regulatory concerns (-0.057), employee health and safety policy (-0.045), and water management (-0.045)
- Material source management, customer welfare, labor practices, water usage, and wastewater management

Intertemporal ESG rating inflation

- In aggregate: Negative relation
- CO_2 (-0.240), supply chain management (-0.087), employee management (-0.073), selling practices (-0.064), legal and regulatory concerns (-0.057), employee health and safety policy (-0.045), and water management (-0.045)
- Material source management, customer welfare, labor practices, water usage, and wastewater management
- Business ethics and business model resilience

Overview

- 1 ESG rating inflation
- 2 **Tilting the wrong firms?**
- 3 Cost of capital

Portfolio tilting in detail

Table 4: Portfolio tilting under information asymmetries

This table shows the impact of ESG rating inflation on the portfolio allocation of institutional investors. We divide the sample into three types of investors namely, conventional profit-optimizing investors, PRI asset owners, and PRI asset managers and collect their holdings using Thompson Reuters 13F forms. For each of these investor types, we compute the share of institutional ownership at the firm level. The average ESG rating represents the equally-weighted ESG rating of Refinitiv, MSCI, FTSE, S&P, and Sustainalytics where available. The engagement dummy in Panel B represents a successful environmental or social engagement retrieved from the ISS database. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: ESG rating inflation and Portfolio tilting

VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.735*** (0.124)	0.273** (0.122)	0.463*** (0.061)	0.006* (0.003)	0.457*** (0.061)					
Promised						0.498*** (0.130)	0.112 (0.126)	0.386*** (0.069)	-0.003 (0.004)	0.386*** (0.068)
Realized						-0.019 (0.096)	-0.110 (0.096)	0.091 (0.057)	-0.002 (0.003)	0.087 (0.056)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R ²	0.0493	0.0237	0.0300	0.0103	0.0281	0.0471	0.0232	0.0281	0.0101	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Portfolio tilting in detail

Table 4: Portfolio tilting under information asymmetries

This table shows the impact of ESG rating inflation on the portfolio allocation of institutional investors. We divide the sample into three types of investors namely, conventional profit-optimizing investors, PRI asset owners, and PRI asset managers and collect their holdings using Thompson Reuters 13F forms. For each of these investor types, we compute the share of institutional ownership at the firm level. The average ESG rating represents the equally-weighted ESG rating of Refinitiv, MSCI, FTSE, S&P, and Sustainalytics where available. The engagement dummy in Panel B represents a successful environmental or social engagement retrieved from the ISS database. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: ESG rating inflation and Portfolio tilting

VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.735*** (0.124)	0.273** (0.122)	0.463*** (0.061)	0.006* (0.003)	0.457*** (0.061)					
Promised						0.498*** (0.130)	0.112 (0.126)	0.386*** (0.069)	-0.003 (0.004)	0.386*** (0.068)
Realized						-0.019 (0.096)	-0.110 (0.096)	0.091 (0.057)	-0.002 (0.003)	0.087 (0.056)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R ²	0.0493	0.0237	0.0300	0.0103	0.0281	0.0471	0.0232	0.0281	0.0101	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Portfolio tilting in detail

Table 4: Portfolio tilting under information asymmetries

This table shows the impact of ESG rating inflation on the portfolio allocation of institutional investors. We divide the sample into three types of investors namely, conventional profit-optimizing investors, PRI asset owners, and PRI asset managers and collect their holdings using Thompson Reuters 13F forms. For each of these investor types, we compute the share of institutional ownership at the firm level. The average ESG rating represents the equally-weighted ESG rating of Refinitiv, MSCI, FTSE, S&P, and Sustainalytics where available. The engagement dummy in Panel B represents a successful environmental or social engagement retrieved from the ISS database. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: ESG rating inflation and Portfolio tilting

VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.735*** (0.124)	0.273** (0.122)	0.463*** (0.061)	0.006* (0.003)	0.457*** (0.061)					
Promised						0.498*** (0.130)	0.112 (0.126)	0.386*** (0.069)	-0.003 (0.004)	0.386*** (0.068)
Realized						-0.019 (0.096)	-0.110 (0.096)	0.091 (0.057)	-0.002 (0.003)	0.087 (0.056)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R ²	0.0493	0.0237	0.0300	0.0103	0.0281	0.0471	0.0232	0.0281	0.0101	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Portfolio tilting in detail

Table 4: Portfolio tilting under information asymmetries

This table shows the impact of ESG rating inflation on the portfolio allocation of institutional investors. We divide the sample into three types of investors namely, conventional profit-optimizing investors, PRI asset owners, and PRI asset managers and collect their holdings using Thompson Reuters 13F forms. For each of these investor types, we compute the share of institutional ownership at the firm level. The average ESG rating represents the equally-weighted ESG rating of Refinitiv, MSCI, FTSE, S&P, and Sustainalytics where available. The engagement dummy in Panel B represents a successful environmental or social engagement retrieved from the ISS database. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: ESG rating inflation and Portfolio tilting

VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.735*** (0.124)	0.273** (0.122)	0.463*** (0.061)	0.006* (0.003)	0.457*** (0.061)					
Promised						0.498*** (0.130)	0.112 (0.126)	0.386*** (0.069)	-0.003 (0.004)	0.386*** (0.068)
Realized						-0.019 (0.096)	-0.110 (0.096)	0.091 (0.057)	-0.002 (0.003)	0.087 (0.056)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R ²	0.0493	0.0237	0.0300	0.0103	0.0281	0.0471	0.0232	0.0281	0.0101	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Portfolio tilting in detail

Table 4: Portfolio tilting under information asymmetries

This table shows the impact of ESG rating inflation on the portfolio allocation of institutional investors. We divide the sample into three types of investors namely, conventional profit-optimizing investors, PRI asset owners, and PRI asset managers and collect their holdings using Thompson Reuters 13F forms. For each of these investor types, we compute the share of institutional ownership at the firm level. The average ESG rating represents the equally-weighted ESG rating of Refinitiv, MSCI, FTSE, S&P, and Sustainalytics where available. The engagement dummy in Panel B represents a successful environmental or social engagement retrieved from the ISS database. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: ESG rating inflation and Portfolio tilting

VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.735*** (0.124)	0.273** (0.122)	0.463*** (0.061)	0.006* (0.003)	0.457*** (0.061)					
Promised						0.498*** (0.130)	0.112 (0.126)	0.386*** (0.069)	-0.003 (0.004)	0.386*** (0.068)
Realized						-0.019 (0.096)	-0.110 (0.096)	0.091 (0.057)	-0.002 (0.003)	0.087 (0.056)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R ²	0.0493	0.0237	0.0300	0.0103	0.0281	0.0471	0.0232	0.0281	0.0101	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Portfolio tilting in detail

Table 4: Portfolio tilting under information asymmetries

This table shows the impact of ESG rating inflation on the portfolio allocation of institutional investors. We divide the sample into three types of investors namely, conventional profit-optimizing investors, PRI asset owners, and PRI asset managers and collect their holdings using Thompson Reuters 13F forms. For each of these investor types, we compute the share of institutional ownership at the firm level. The average ESG rating represents the equally-weighted ESG rating of Refinitiv, MSCI, FTSE, S&P, and Sustainalytics where available. The engagement dummy in Panel B represents a successful environmental or social engagement retrieved from the ISS database. Firm clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

Panel A: ESG rating inflation and Portfolio tilting

VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.735*** (0.124)	0.273** (0.122)	0.463*** (0.061)	0.006* (0.003)	0.457*** (0.061)					
Promised						0.498*** (0.130)	0.112 (0.126)	0.386*** (0.069)	-0.003 (0.004)	0.386*** (0.068)
Realized						-0.019 (0.096)	-0.110 (0.096)	0.091 (0.057)	-0.002 (0.003)	0.087 (0.056)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R ²	0.0493	0.0237	0.0300	0.0103	0.0281	0.0471	0.0232	0.0281	0.0101	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Portfolio tilting in detail

Table 4 – continued

Panel B: Engagement Robustness on ESG rating inflation and Portfolio tilting										
VARIABLES	(1) Institutional	(2) Conventional	(3) PRI	(4) PRI AO	(5) PRI IM	(6) Institutional	(7) Conventional	(8) PRI	(9) PRI AO	(10) PRI IM
ESG rating	0.774*** (0.126)	0.297** (0.123)	0.477*** (0.063)	0.006* (0.003)	0.471*** (0.062)					
Promised						0.492*** (0.132)	0.108 (0.128)	0.384*** (0.070)	-0.003 (0.004)	0.383*** (0.069)
Realized						-0.019 (0.097)	-0.108 (0.097)	0.089 (0.058)	-0.001 (0.004)	0.086 (0.057)
Successful SRI Engagement	2.805** (1.129)	1.727 (1.108)	1.077** (0.479)	0.033 (0.027)	1.031** (0.479)	-0.371 (2.194)	0.066 (2.125)	-0.437 (1.030)	0.050 (0.050)	-0.483 (1.033)
Successful SRI Engagement X ESG rating	-0.752*** (0.211)	-0.469** (0.207)	-0.283*** (0.091)	0.002 (0.005)	-0.280*** (0.091)					
Successful SRI Engagement X Promised						-0.038 (0.254)	-0.048 (0.254)	0.010 (0.114)	0.005 (0.006)	0.012 (0.114)
Successful SRI Engagement X Realized						-0.064 (0.247)	-0.076 (0.235)	0.013 (0.117)	-0.010 (0.006)	0.015 (0.117)
Observations	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764	19,764
Adjusted R^2	0.0502	0.0240	0.0305	0.0110	0.0287	0.0472	0.0232	0.0281	0.0107	0.0263
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Industry FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Country FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Year FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES

Overview

- ① ESG rating inflation
- ② Tilting the wrong firms?
- ③ **Cost of capital**

ESG ratings and cost of capital

Multiple measures for cost of capital

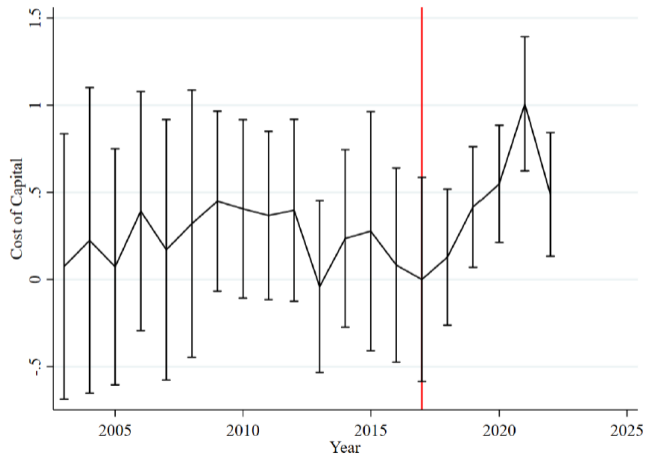
- (Gebhardt, Lee, & Swaminathan, 2001)
- (Hou, van Dijk, & Zhang, 2012)
- (Fama & French, 2017)
- (Chattopadhyay, Lyle, Wang, 2021; Lee, So, Wang, 2021)

Causal identification

- Non Financial Reporting Directive: Shock to promised sustainable performance
(Fiechter, Hitz, & Lehmann, 2022)
- Only European Union Memberstates
- Switzerland VS Austria and Germany

Portfolio tilting in detail

Figure 1: Parallel trends in Cost of Capital



DiD: Cost of capital

Table 5: Difference-in-differences: Cost of Capital

This table performs a difference-in-differences analysis of the introduction of the Non-Financial Reporting Directive (NFDR) as exogenous shock to ESG ratings inflation and cost of capital. We regress a NFDR structural break dummy from 2017 onwards interacted with a treatment dummy on the cost of equity, debt, and capital of firms. In Columns (1) to (3), we consider Austrian and German firms as treated and Swiss firms as control; in Columns (4) to (6), we consider Swedish and Finnish firms as treated and Norwegian firms as control; and in Columns (7) to (9), we use a joint sample resembling (Fiechter et al., 2022). Treatment clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

VARIABLES	Switzerland			Norway			Combined		
	(1) Cost of Equity	(2) Cost of Debt	(3) Cost of Capital	(4) Cost of Equity	(5) Cost of Debt	(6) Cost of Capital	(7) Cost of Equity	(8) Cost of Debt	(9) Cost of Capital
Treatment	-0.635*** (0.101)	-0.319*** (0.053)	-0.475*** (0.065)	-0.249*** (0.008)	0.111*** (0.013)	-0.080*** (0.012)	-0.529*** (0.058)	-0.185*** (0.061)	-0.367*** (0.055)
NFDR	-2.057*** (0.868)	1.392*** (0.462)	-1.444*** (0.563)	-1.190*** (0.026)	-0.120 (0.115)	1.304*** (0.039)	-2.064*** (0.616)	1.548*** (0.672)	-1.486*** (0.590)
Treatment X NFDR	-0.228*** (0.033)	-0.571*** (0.017)	-0.331*** (0.021)	-0.111*** (0.026)	-0.651*** (0.061)	-0.389*** (0.039)	-0.076*** (0.005)	-0.524*** (0.003)	-0.266*** (0.003)
Observations	3,034	2,950	2,845	2,923	2,959	2,852	5,957	5,909	5,697
Adjusted R^2	0.153	0.577	0.389	0.131	0.661	0.418	0.145	0.625	0.416
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

DiD: Cost of capital

Table 5: Difference-in-differences: Cost of Capital

This table performs a difference-in-differences analysis of the introduction of the Non-Financial Reporting Directive (NFDR) as exogenous shock to ESG ratings inflation and cost of capital. We regress a NFDR structural break dummy from 2017 onwards interacted with a treatment dummy on the cost of equity, debt, and capital of firms. In Columns (1) to (3), we consider Austrian and German firms as treated and Swiss firms as control; in Columns (4) to (6), we consider Swedish and Finnish firms as treated and Norwegian firms as control; and in Columns (7) to (9), we use a joint sample resembling (Fiechter et al., 2022). Treatment clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

VARIABLES	Switzerland			Norway			Combined		
	(1) Cost of Equity	(2) Cost of Debt	(3) Cost of Capital	(4) Cost of Equity	(5) Cost of Debt	(6) Cost of Capital	(7) Cost of Equity	(8) Cost of Debt	(9) Cost of Capital
Treatment	-0.635*** (0.101)	-0.319*** (0.053)	-0.475*** (0.065)	-0.249*** (0.008)	0.111*** (0.013)	-0.080*** (0.012)	-0.529*** (0.058)	-0.185*** (0.061)	-0.367*** (0.055)
NFDR	-2.057*** (0.868)	1.392*** (0.462)	-1.444*** (0.563)	-1.190*** (0.026)	-0.120 (0.115)	1.304*** (0.039)	-2.064*** (0.616)	1.548*** (0.672)	-1.486*** (0.590)
Treatment X NFDR	-0.228*** (0.033)	-0.571*** (0.017)	-0.331*** (0.021)	-0.111*** (0.026)	-0.651*** (0.061)	-0.389*** (0.039)	-0.076*** (0.005)	-0.524*** (0.003)	-0.266*** (0.003)
Observations	3,034	2,950	2,845	2,923	2,959	2,852	5,957	5,909	5,697
Adjusted R^2	0.153	0.577	0.389	0.131	0.661	0.418	0.145	0.625	0.416
Size	YES	YES	YES	YES	YES	YES	YES	YES	YES
Firm FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

DiD: Growth rates

Table 6: Difference-in-differences: Aggregate formation of sustainable assets

This table performs a difference-in-differences analysis of the introduction of the Non-Financial Reporting Directive (NFDR) as exogenous shock to ESG ratings inflation and the formation of green assets in the economy. We regress a NFDR structural break dummy from 2017 onwards interacted with a treatment dummy on yearly growth rates in total assets of firms. In Columns (1) to (3), we consider Austrian and German firms as treated and Swiss firms as control; in Columns (4) to (6), we consider Swedish and Finnish firms as treated and Norwegian firms as control; and in Columns (7) to (9), we use a joint sample resembling (Fiechter et al., 2022). Treatment clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

VARIABLES	(1) Switzerland	(2) Norway	(3) Combined
Treatment	-0.057*** (0.007)	-0.050*** (0.000)	-0.064*** (0.002)
NFDR	-0.465*** (0.065)	0.851*** (0.010)	-0.572*** (0.021)
Treatment X NFDR	0.045*** (0.003)	0.014*** (0.005)	0.041*** (0.000)
Observations	2,835	2,629	5,464
Adjusted R-squared	0.089	0.281	0.211
Size	YES	YES	YES
Firm FE	YES	YES	YES

DiD: Growth rates

Table 6: Difference-in-differences: Aggregate formation of sustainable assets

This table performs a difference-in-differences analysis of the introduction of the Non-Financial Reporting Directive (NFDR) as exogenous shock to ESG ratings inflation and the formation of green assets in the economy. We regress a NFDR structural break dummy from 2017 onwards interacted with a treatment dummy on yearly growth rates in total assets of firms. In Columns (1) to (3), we consider Austrian and German firms as treated and Swiss firms as control; in Columns (4) to (6), we consider Swedish and Finnish firms as treated and Norwegian firms as control; and in Columns (7) to (9), we use a joint sample resembling (Fiechter et al., 2022). Treatment clustered standard errors are given in parentheses. *, ** and *** denote significance at the 10%, 5% and 1% level, respectively.

VARIABLES	(1) Switzerland	(2) Norway	(3) Combined
Treatment	-0.057*** (0.007)	-0.050*** (0.000)	-0.064*** (0.002)
NFDR	-0.465*** (0.065)	0.851*** (0.010)	-0.572*** (0.021)
Treatment X NFDR	0.045*** (0.003)	0.014*** (0.005)	0.041*** (0.000)
Observations	2,835	2,629	5,464
Adjusted R-squared	0.089	0.281	0.211
Size	YES	YES	YES
Firm FE	YES	YES	YES

Conclusion

- Refinitiv, MCSI, and FTSE ESG ratings inversely related to sustainable performance
- Socially responsible investors tilt the wrong firms
- ESG rating inflation has a causal impact on cost of capital
- ESG-rating-based portfolio tilting not beneficial for society

Discussion

- Sustainable performance information asymmetry in theoretical portfolio tilting models (Daviers & van Wesepe, 2018; Landier & Lovo, 2020; Berk & van Binsbergen, 2021; Edmans, Levit, & Schneemeir, 2022)

Practical implications

- Need for accurate sustainable performance estimates: Reporting?

Practical implications

- Need for accurate sustainable performance estimates: Reporting?
- Use of ESG ratings?

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Questions?

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