MANAGERIAL CONSISTENCY

The value of walking the green talk

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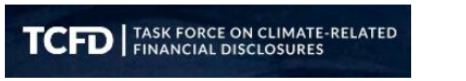
MOTIVATION

Large number of firm, institutional, governmental, and non-governmental initiatives supporting ESG

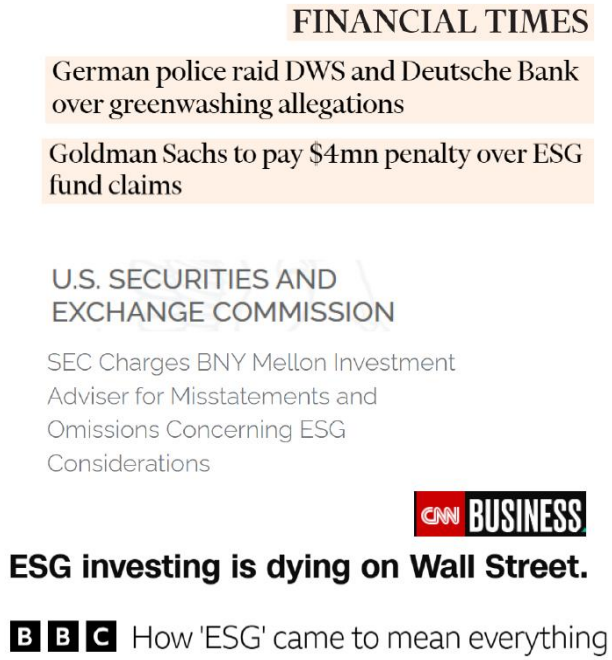


The six Principles for Responsible Investment offer a menu of possible actions for incorporating ESG issues into investment practice.

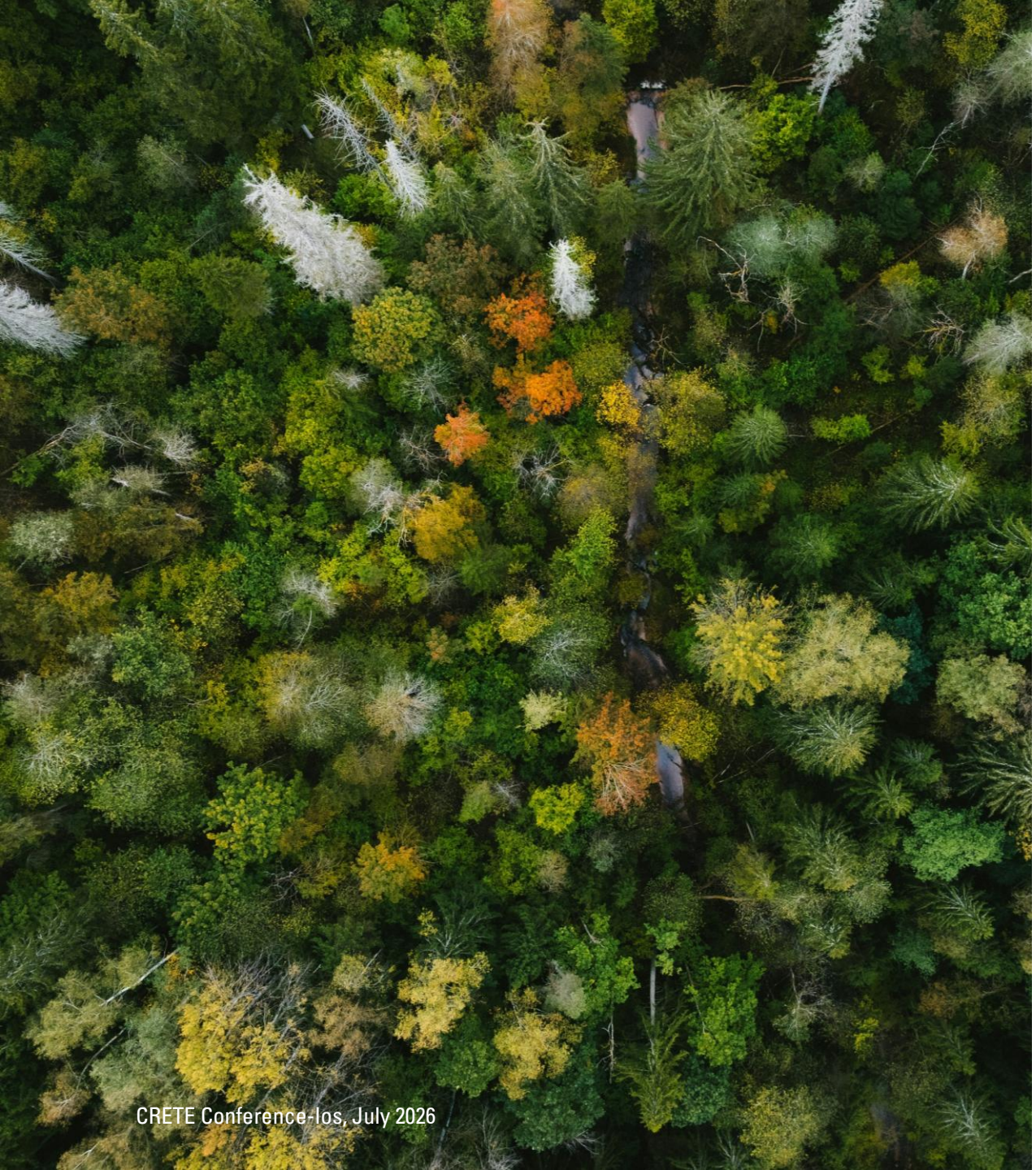
- **Principle 1:** We will incorporate ESG issues into investment analysis and decision-making processes.
- **Principle 2:** We will be active owners and incorporate ESG issues into our ownership policies and practices.
- **Principle 3:** We will seek appropriate disclosure on ESG issues by the entities in which we invest.
- **Principle 4:** We will promote acceptance and implementation of the Principles within the investment industry.
- **Principle 5:** We will work together to enhance our effectiveness in implementing the Principles.
- **Principle 6:** We will each report on our activities and progress towards implementing the Principles.

The Sustainable Finance Disclosure Regulation (SFDR) is a European regulation introduced to improve transparency in the market for sustainable investment products, to prevent greenwashing and to increase transparency around sustainability claims made by financial market participants.

MOTIVATION



Large anecdotal evidence for skepticism regarding ESG and greenwashing



QUESTIONS

- When do firms commit to net-zero emissions?
- (How) do firms deliver on net-zero emissions?

⇒ What is the market reaction to commitment and delivery on net-zero emissions?

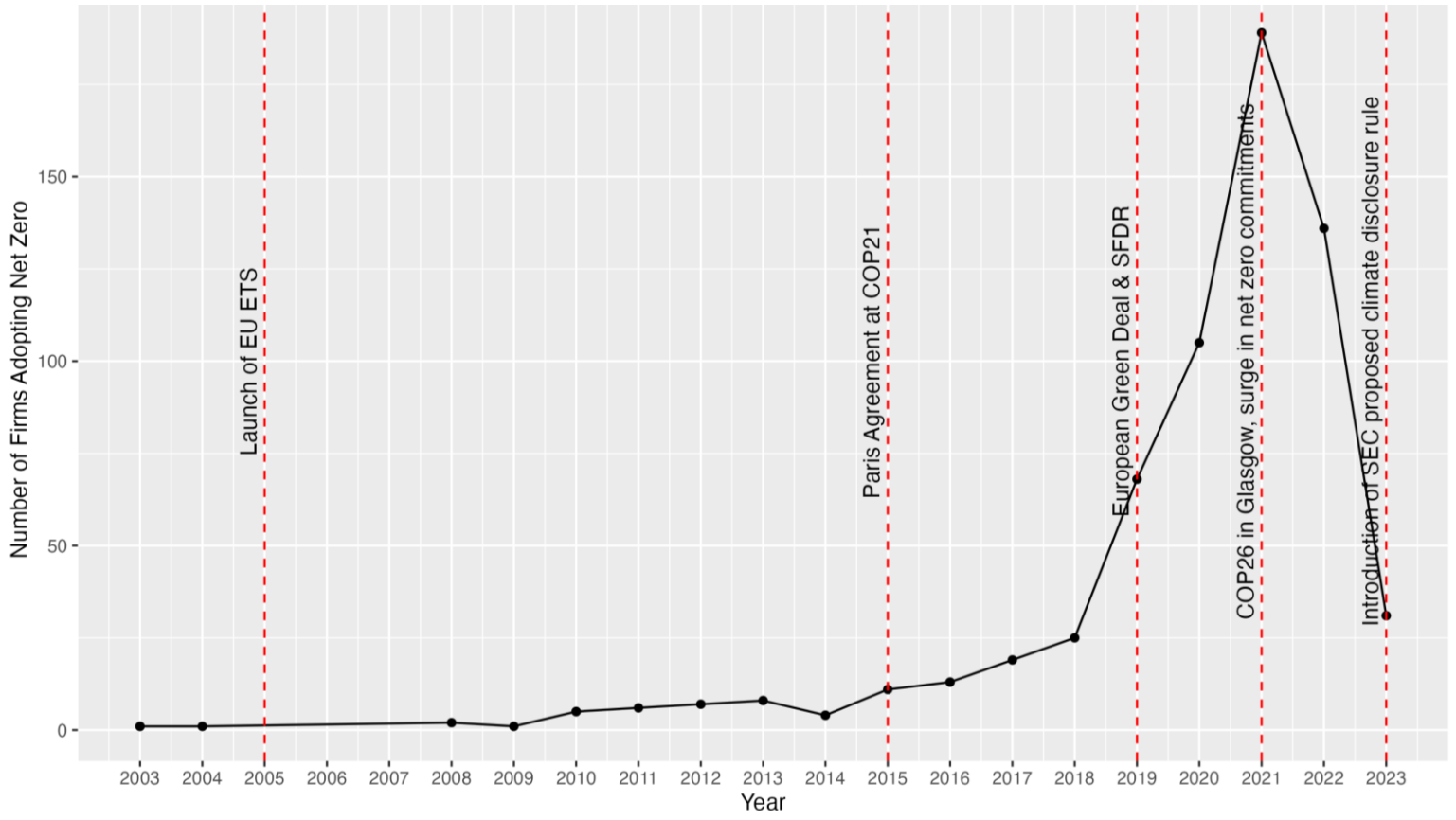
DATA DESCRIPTION

- Firm coverage: Largest 2’500 U.S. publicly traded firms from 2003 to 2023
- Data sources- Financials: Compustat
- Emissions: Trucost
- Net-zero policy: Corporate sustainability reports (text analysis)

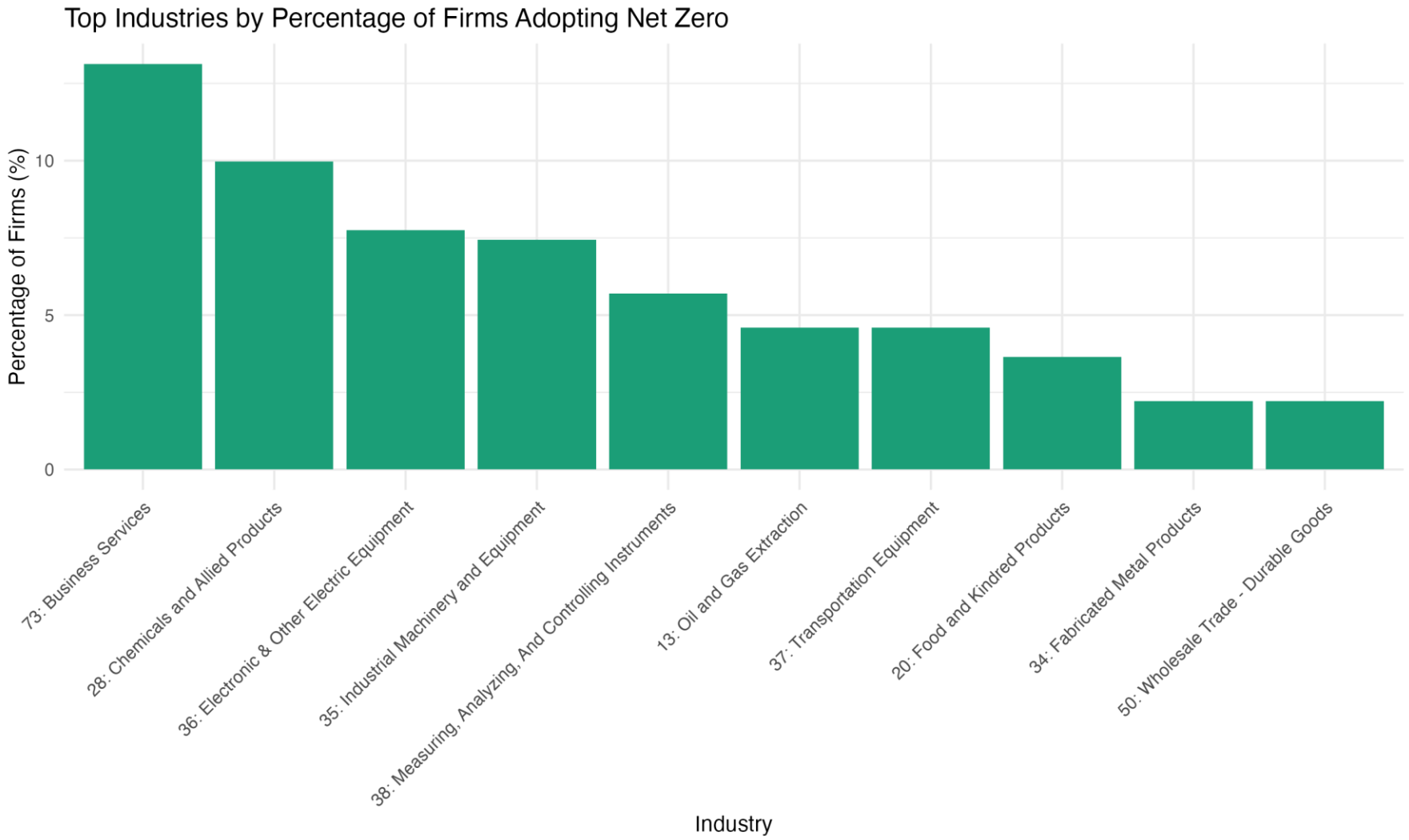
NET- ZERO ADOPTION OVER TIME

Fiscal Year	Number of Firms	Number of Firms with Net-Zero Year	Share of Firms
2003	6 380	1	0,000
2004	6 362	2	0,000
2005	6 293	2	0,000
2006	6 208	2	0,000
2007	6 105	2	0,000
2008	5 774	4	0,001
2009	5 509	5	0,001
2010	5 400	10	0,002
2011	5 308	16	0,003
2012	5 220	22	0,004
2013	5 304	30	0,006
2014	5 448	34	0,006
2015	5 387	45	0,008
2016	5 232	57	0,011
2017	5 225	77	0,015
2018	5 214	103	0,020
2019	5 192	171	0,033
2020	5 370	276	0,051
2021	5 863	465	0,079
2022	5 763	601	0,104
2023	4 807	605	0,126

NET ZERO ADOPTION OVER TIME



SHARE OF FIRMS WITH A NET-ZERO TARGET BY INDUSTRY



EMISSION CHANGES

Metric / Horizon	Mean	SD	25%	50%	75%	Obs.	Unique Firms
Scope 1, 1 Year	0,22	2,32	-0,09	0,02	0,14	2 534	773
Scope 1, 3 Years	0,66	5,59	-0,22	0,03	0,33	2 385	744
Scope 1, 5 Years	1,68	35,05	-0,32	0,03	0,50	2 050	691
Scope 2, 1 Year	0,15	1,16	-0,10	0,00	0,14	2 536	773
Scope 2, 3 Years	0,38	3,24	-0,21	-0,01	0,29	2 386	745
Scope 2, 5 Years	3,41	123,67	-0,26	0,02	0,58	2 050	691

PROMISE AND DELIVERY- HOW TO MEASURE

- LHS: Log market-to-book
- RHS: net zero dummy
  - But: firms time the announcement-> selectivity effect

- Value of delivery: Net zero dummy x Intensity
  - But: Environmental commitment is measured vs a yardstick that could vary by firm!

- Net zero xpost intenisty-> What the firms do post- commitment
- Net zero x Benchmark intensity-> what investors plausibly expect

PROMISE AND DELIVERY- TRACK RECORDS

- Learning about environmental commitment is about a track record, not a single year observation

- Net zero x Running mean post-intensity
- Net zero x Running mean benchmark intensity
- Add controls, firm FE, time effects…

- Key idea: No firm in sample ever withdrew from a net-zero commitment

PROMISE AND DELIVERY- THE FRAMEWORK

- Valuation:
- $y_{it} = \beta' x_{it} + \lambda_0 w_{it} + \lambda_1 w_{it}\overline{h}_{it} + \lambda_2 \overline{h}_{it} + \lambda_3 w_{it}\widetilde{h_{it}} + \lambda_4 \widetilde{h_{it}} + \eta_i + \epsilon_{it}$
- Selection:
- $w_{it} = 1$ if $w_{it-1} = 1$ or $w_{it-1} = 0$ and $\delta_0 + \delta_1 x_{it} + z'_{it}\gamma + \theta_i + u_{it} > 0$
- $w_{it} = 0$ if $w_{it-1} = 0$ and $\delta_0 + \delta_1 x_{it} + z'_{it}\gamma + \theta_i + u_{it} < 0$
- ϵ_{it} , u_{it} are possibly correlated
- Benchmark:
- $\Delta h_{it+1} = a^h\left(\overline{h}_i - h_{it}\right) + d^h_{t+1} + \sigma^h_i \epsilon^h_{it+1}$

- y_{it}: $log(M/B)$
- w_{it}: net zero dummy
- h_{it}: intensity
- $\overline{h}_{it}$: running mean intensity
- $\widetilde{h_{it}}$: running mean benchmark intensity
- z_{it} :instrument
- x_{it} : controls

SELECTION INTO NET ZERO STATUS

Probit regressions for first time net zero adoption

Instrument: Peer effect

Controls: *ROA ,Firm Size, Tangibility, CAPX, Rev. Growth, R&D/Assets*

	Scope 1	Scope 2	Scope 3	All
Scope1 intensity	0.022			-0.039
	(0.042)			(0.046)
Scope2 intensity		0.816***		0.736***
		(0.197)		(0.214)
Scope3 intensity			0.506***	0.464***
			(0.108)	(0.112)
Trucost dummy	1.056***	1.024***	0.966***	0.950***
	(0.084)	(0.085)	(0.087)	(0.087)
Peer Effect	1.479***	1.483***	1.360***	1.364***
	(0.241)	(0.241)	(0.243)	(0.244)
Time effects	yes	yes	yes	yes
Random effects	yes	yes	yes	yes
Observations	54,318	54,318	54,318	54,318

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DELIVERY

GMM Estimates

Includes Firm FE, year FE

Controls: *ROA,Firm Size, Tangibility, CAPX, Rev. Growth, R&D/Assets, Industry log(M/B), Trucost dummy, running mean intensity*

Dep. : log(M/B)	Scope 1	Scope 2	Scope 3	All
Net-Zero Firm	0.008	-0.003	0.012	0.008
	(0.011)	(0.012)	(0.013)	(0.014)
Net-Zero × Mean post-intensity	**-0.063*** **	**-0.390*** **	**-0.151**	
	(0.018)	**(0.110)**	**(0.113)**	
Net-Zero × Benchmark intensity	0.043	0.735***	0.109	
	(0.029)	(0.209)	(0.141)	
Net-Zero × Mean post-intensity (Scope 1)				**-0.046****
				(0.019)
Running Mean intensity (Scope 1)				-0.008
				(0.018)
Net-Zero × Benchmark intensity (Scope 1)				0.015
				(0.026)
Net-Zero × Mean post-intensity (Scope 2)				**-0.246****
				(0.115)
Running Mean intensity (Scope 2)				0.108
				(0.156)
Net-Zero × Benchmark intensity (Scope 2)				0.836***
				(0.219)
Net-Zero × Mean post-intensity (Scope 3)				**-0.088**
				(0.098)
Running Mean intensity (Scope 3)				0.143**
				(0.066)
Net-Zero × Benchmark intensity (Scope 3)				-0.016
				(0.136)
Selection effect	**0.010*** **	**0.010*** **	**0.010*** **	**0.010*** **
	(0.002)	**(0.002)**	**(0.002)**	**(0.002)**
Observations	41,194	41,194	41,194	41,194

INTERPRETATION

Increasing intensity by 1 standard deviation implies a valuation penalty post Net Zero adoption:

Single-scope: 5.4% (Scope 1), 3.1% (Scope 2), and 2.9% (Scope 3)

Pooled: 3.9% (Scope 1), 2.0% (Scope 2), 1.7% (Scope 3, not significant)

Benchmark effect: 1 st.dev increase raises log(M/B) 6%-10%

Robustness: Valuation penalties largely robust to omitting the benchmarks

Value of promise: adoption yields 2.6% increase in M/B, effect diminishes once we control for delivery

EARLY VS LATE ADOPTERS

- Has the market changed stance lately?
- Split sample to before and after 2017
- Coefficients much stronger in latest subsample
- Post 2017: coefficients on valuation penalties much stronger
- One-standard-deviation increase in intensity corresponds to −5.9% lower M/B for Scope 1,−3.7% for Scope 2, and −2.5% for Scope 3.
- Before 2017: Insignificant effects

- **Market is much more focused on delivery recently**

HARD-TO-ABATE INDUSTRIES

- Certain industries are hard to abate:
- *E.g. Chemicals ,Metals, Concrete, Transportation*
- For such industries, perhaps the market is more lenient on delivery?
- Interact valuation penalties with hard-to-abate status
- Result: not- significant!
- **Market says: Even if your emissions are hard to abate, up to you to deliver on your own promise!**
- **Recall selection effect: Firms with high scope 1 emissions are not more eager to adopt a net zero-target!**

CONCLUSION

- Increasingly large number of firms have an active net-zero emission target
- Adoption rate lower in recent years
- Large heterogeneity on whether and how firms deliver on net-zero emissions
- There is a 2.6% valuation premium for adoption
- But mostly it is only granted if coupled with delivery
- In recent years markets are much more focused on delivery
- Even hard-to-abate industries are not exempt from this rule
- Markets do work as a safeguard against cheap-talk in environmental commitments

GMM ESTIMATION FRAMEWORK

- **Lemma**

Let $\chi_{it} = \left(x_{it}, w_{it}, w_{it}\overline{h}_{it}, \overline{h}_{it}, w_{it}\widetilde{h_{it}}, \widetilde{h_{it}}\right)$, $m_{it} = \frac{\phi(\delta_0+\delta_1 x_{it}+z'_{it}\gamma+\theta_i)}{1-\Phi(\delta_0+\delta_1 x_{it}+z'_{it}\gamma+\theta_i)}$, and $n_{it} = \frac{\phi(\delta_0+\delta_1 x_{it}+z'_{it}\gamma+\theta_i)}{\Phi(\delta_0+\delta_1 x_{it}+z'_{it}\gamma+\theta_i)}$.

Furthermore, let the selection correction term be defined as

$$s_{it} = (m_{it} - n_{it-1})w_{it}(1 - w_{it-1}) - (n_{it} - n_{it-1})(1 - w_{it})(1 - w_{it-1})$$

Then for $\xi = \rho\sigma_\varepsilon, E[(\Delta\varepsilon_{it} - \xi s_{it})\Delta\chi_{it}] = 0$ and $E[(\Delta\varepsilon_{it} - \xi s_{it})s_{it}] = 0$

LITERATURE

- **Determinants and Implications of Carbon Reduction Targets**: Dahlmann et al. (2019), Comello et al. (2021), Tomar (2023), Ioannou et al. (2016), Freiberg et al. (2021), Greenstone et al. (2023), Kacperczyk and Peydró (2022)
- **Bolton and Kacperczyk (2025):** Track the international evolution of standardized decarbonization pledges, identifying why companies commit and evaluating the absolute scale of their subsequent emissions reductions

- **Pricing of Carbon Emissions and Climate Disclosure**: Bolton and Kacperczyk (2021), Ding et al. (2024), Matsumura et al. (2013), Matsumura et al. (2024), Dhaliwal et al. (2011), Dhaliwal et al. (2012),Leuz and Verrecchia (2000), Bolton et al. (2022)

- *Our paper: Evaluates the pricing effects of net zero pledges, accounting for the endogenous timing of such pledges*