ESG and Downside Risks: Implications for Pension Funds

Laura T. Starks
McCombs School of Business
University of Texas at Austin

Risks seen more clearly through an ESG lens

- Reputation risk
- Litigation risk
- Supply chain risk
- Corruption risk
- Regulatory and political risk
- **Climate risk**
- Human capital management risk

Components of risk affected differentially by ESG issues

- Systematic risk
- Estimation risk
- Tracking error
- **Downside (tail) risk**

Empirical evidence on downside (tail) risk and a firm's ESG profile

- Many investors consider higher ESG/CSR profiles to provide protection against downside risk

- Empirical evidence suggests that the tail-risk measures are closely related to ESG/CSR risk, as firms with better ESG/CSR performance are less vulnerable to company specific negative events.

  Diemont, Moore, and Soppe, 2016; Krüger, 2015

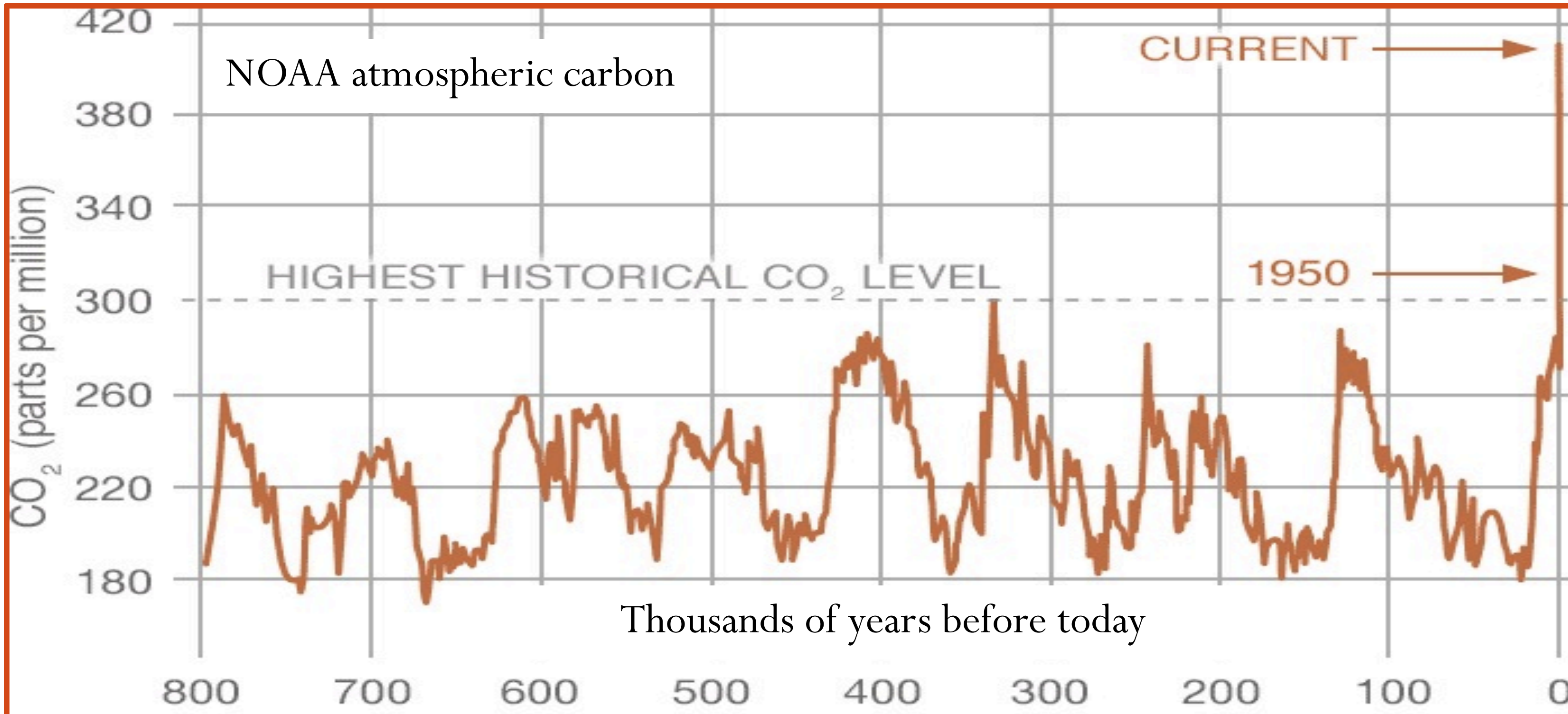
- Engagement by investors on ESG issues results in lower downside risk.

  Hoepner, Oikonomou, Sautner, Starks and Zhou 2021

- High carbon emissions increase a firm's tail risk.

  Ilhan, Sautner, Vilkov 2020

Focus on climate risks



Issues with Climate Risk

- Can adversely affect asset values, especially for long-term investors
- Is difficult to price and hedge
  - Systematic nature
  - Lack of disclosure by portfolio firms
  - Difficulty in finding suitable hedging instruments
- Has become a first order topic for policy makers

G7 Finance Ministers & Central Bank Governors Communiqué 5 June 2021

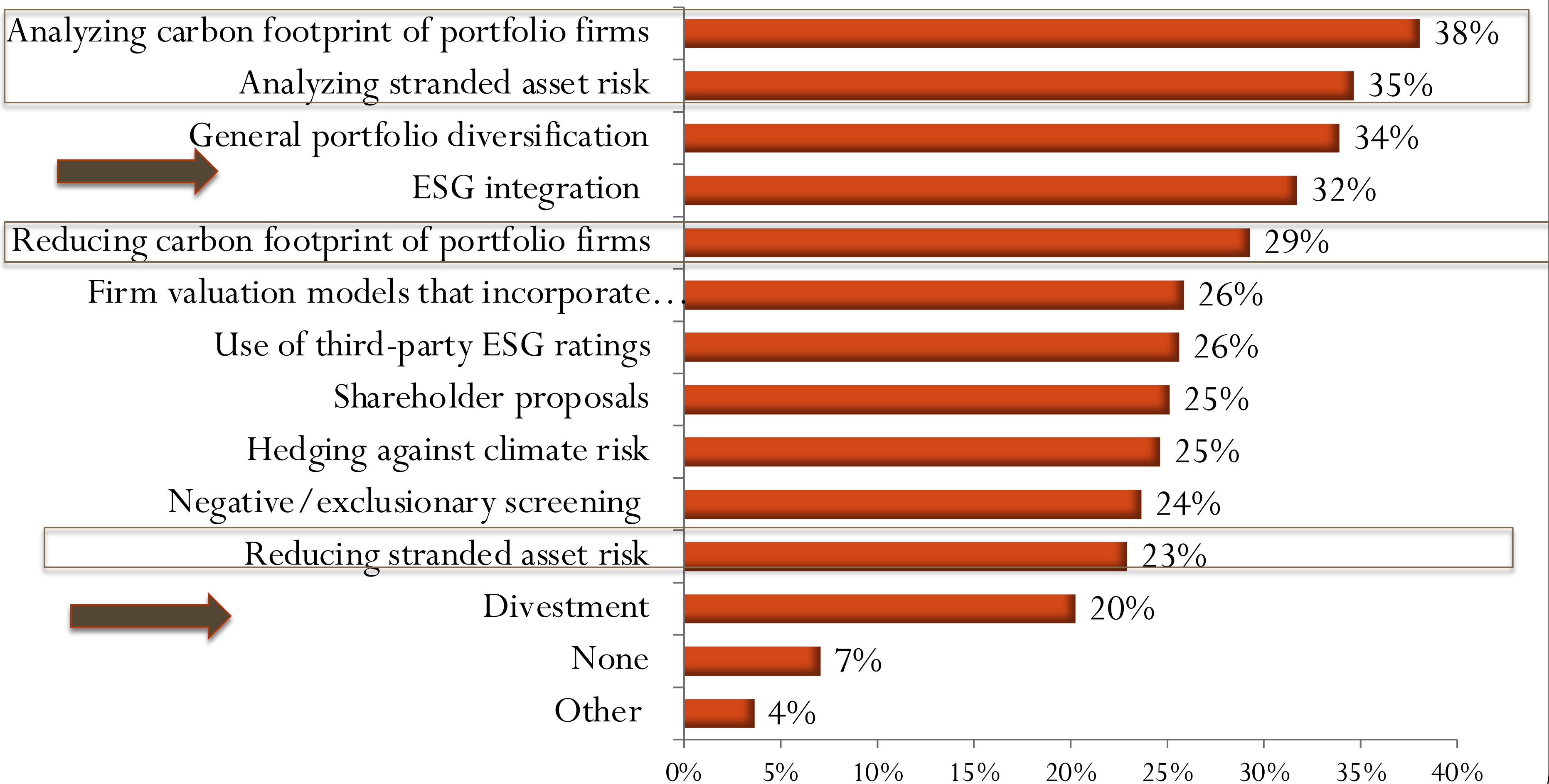
- We emphasise the need to green the global financial system so that financial decisions take climate considerations into account. This will help mobilise the trillions of dollars of private sector finance needed, and reinforce government policy to meet our net zero commitments. <u>We support moving towards mandatory climate-related financial disclosures that provide consistent and decision-useful information for market participants</u> and that are based on the Task Force on Climate-related Financial Disclosures (TCFD) framework, in line with domestic regulatory frameworks. Investors need high quality, comparable and reliable information on climate risks. [emphasis added]

Focus on downside risks: Important for pension funds

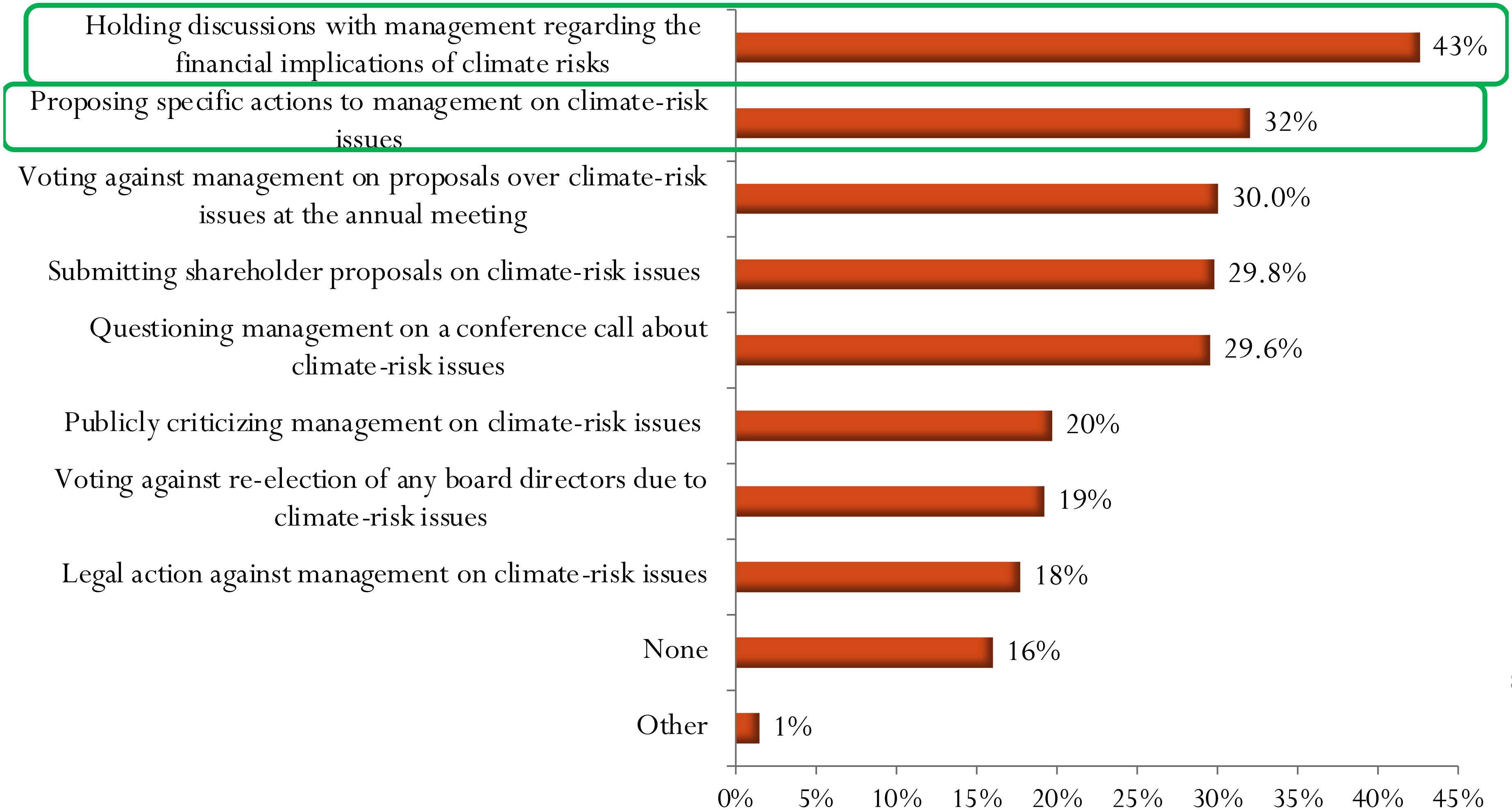
- Downside risk relevant for investors whose assets need to match liabilities and face downside risk constraints.
  - As wealth protection becomes important, pension funds have a preference to avoid downside risk.
  - Pension funds face large liabilities towards their beneficiaries and the failure to meet those liabilities carries significant penalties
- Downside risks relevant for institutional investors more broadly
  - For banks and insurance companies, regulatory capital requirements for equity positions are calculated based on downside risk measures.
  - Mean-variance framework assumes that asset returns are jointly normally distributed; an assumption that is likely violated (e.g., returns are typically skewed).

Investors' approaches to incorporating climate risk management into the investment process

From Global Survey of Large Institutional Investors: 439 Respondents



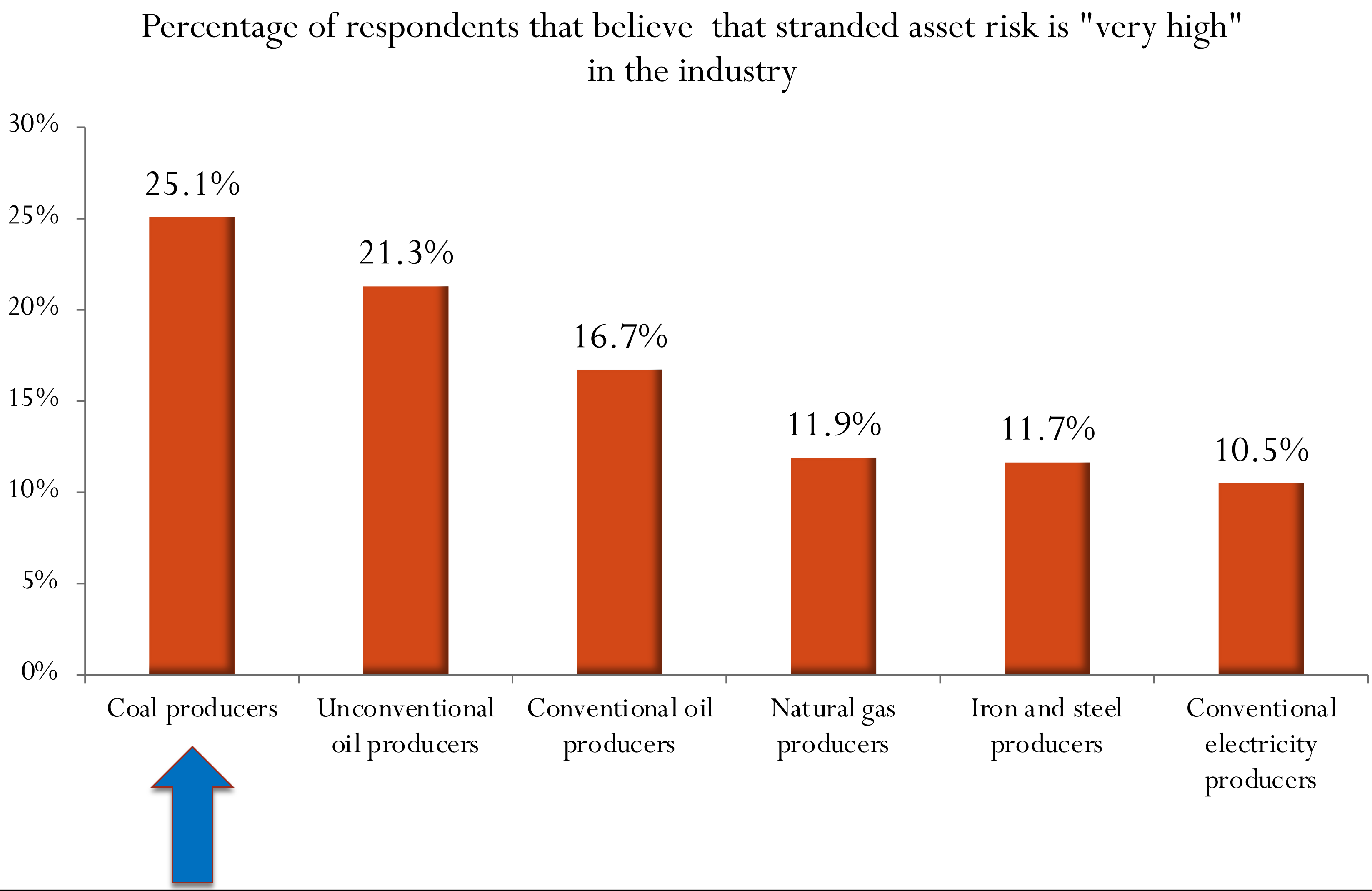
Investors' approaches to engaging firms on climate risk



ESG engagement and downside risk

- Engagement by one large investor with over $200 billion in assets under management. The investor primarily uses a private and non-public route to engage portfolio firms.
- 1,712 engagements across 573 targeted firms worldwide, covering the years 2005 through 2018
- Across all 1712 engagements no significant average reductions in downside risk are found
- However, for those targets where target management, at the minimum, acknowledged the existence of an ESG issue, ESG engagements significantly reduce downside risk.
- Engagement over environmental topics (primarily over climate change) delivers the highest benefits in terms of downside-risk reduction.
- Also sensitivity to a downside risk factor reduces after engagement.
    - Hoepner, Oikonomou, Sautner, Starks and Zhou 2021

Investors’ perceptions of stranded asset risks

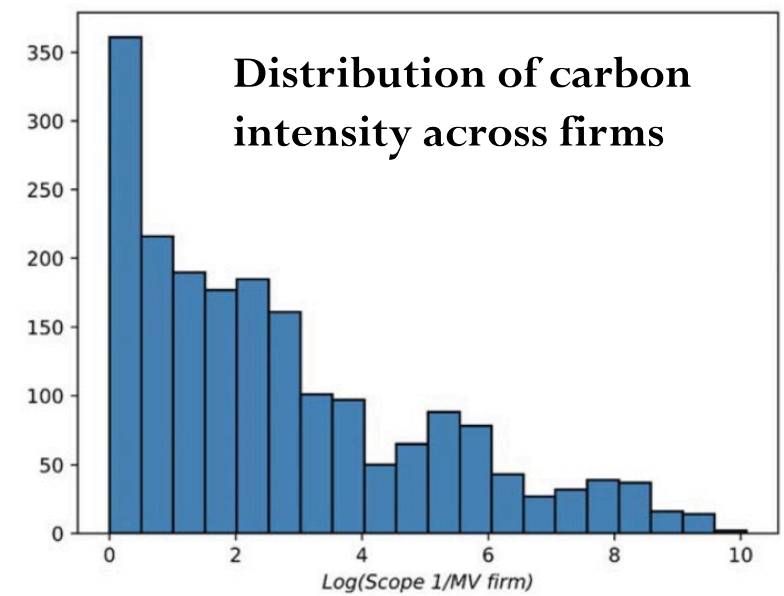


Pricing of climate risk: Evidence from option markets

- Increased regulation needed to meet the Paris Agreement
- Regulatory climate risks likely most severe for firms with large carbon emissions: “carbon risks“
- Political uncertainty about regulation affects asset prices
- Is the cost of option protection against the tail risk associated with climate policy larger for more carbon-intense firms?
  - Option markets provide forward looking information on various risks
  - Formally: *SlopeD* reflects the steepness of the implied volatility slope
  - Intuition: how expensive is it for investors to use options to get insurance against downside tail events?

Carbon risks are very concentrated

100 firms account for 71% of global industrial GHG emissions!



Pricing of protection against downside tail climate risk

Dependent variable:	*SlopeD*	*SlopeD*	*SlopeD*
	(1)	(2)	(3)
log(Scope 1/MV firm)	0.006***		
	(3.39)		
Residual log(Scope 1/MV firm)		0.003	0.005
		(0.81)	(1.06)
log(Scope 1/MV industry)			0.006***
			(3.76)
Model	Heckman	Heckman	Heckman
Controls	Yes	Yes	Yes
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

Higher carbon intensity increases price of downside protection.

Change in pricing of tail risk protection with change in regulatory uncertainty

Dependent variable:	*SlopeD*	*SlopeD*	*SlopeD*	*SlopeD*	*SlopeD*	*SlopeD*
Event window:	[-250; +250]	[-250; +250]	[-250; +250]	[-250; +250]	[-250; +250], excl. [-50; +50]	[-250; +250], excl. [-50; +50], excl. Healthcare
	(1)	(2)	(3)	(4)	(5)	(6)
Post-Trump election x Scope 1/MV industry high	-0.025**	-0.029**	-0.025***	-0.020**	-0.037***	-0.035**
	(-2.18)	(-2.43)	(-2.88)	(-2.20)	(-2.63)	(-2.45)
Scope 1/MV industry high	0.041*	0.043*			0.046*	0.043*
	(1.67)	(1.77)			(1.88)	(1.72)
Post-Trump election	-0.025***			-0.022***	-0.036***	-0.041***
	(-4.63)			(-4.33)	(-5.97)	(-6.13)
Model	DiD	DiD	DiD	DiD	DiD	DiD
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Day fixed effects	No	Yes	Yes	No	No	No
Firm fixed effects	No	No	Yes	No	No	No
Industry fixed effects	No	No	No	Yes	No	Yes
Level	Firm	Firm	Firm	Firm	Firm	Firm
Frequency	Daily	Daily	Daily	Daily	Daily	Daily
Obs.	200,897	200,897	200,897	200,897	159,041	139,635
Adj. R^2	.062	.091	.294	.184	.061	.060

When regulatory uncertainty is reduced, the price of downside protection decreases.

Conclusions

- Pension funds should care about downside risks.
- ESG lens of downside risks
  - allows for a better understanding of the sources of the downside risks
  - and how they can be addressed through risk management or engagement.
- Downside risks related to climate change should be a key focus for pension funds.