Climate Risk Disclosure and Institutional Investors

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Motivation

- firms' climate risk exposures is important for stock pricing
- lack sufficient information - mandatory climate risk disclosure
- firms do not disclosures voluntarily - counterbalancing considerations:
  - benefits: ncreasing stock liquidity, reducing capital cost, pricing more efficient
  - unwarranted costs:reveal future strategy,affect financial information pricing
- Institutional investors pressure is the most powerful financial mechanism to reduce firms' climate risk exposures (Stroebel and Wurgler, 2021)
- idea: can inst pressure extend to climate risk disclosure ?

Question

- Can inst effect climate disclosure?
  - Yes
  - influence by cost and benefit
- Channel?
  - Climate-conscious inst actively engage firms to demand voluntarily information (influence effect) Yes
  - invest in firms that already provide such disclosures (selection effect).

Contribution

- 对企业非财务信息（气候）自愿披露的文献贡献了新颖发现-机构所有权视角
  - common: firm size（Li et al. 2021）、Ownership structure（Höllerer，2013）、corporate governance & managerial（Dalla Via and Perego，2018）
  - Firms' Business Activities(sin) 、External Events(Grougiou et al. ,2016)
  - policymakers;Shareholders: 社会活动家股东提案 (Reid and Toffel, 2009)
- 最相关：机构投资者的环境相关股东提案更加有效（FTV, 2021）
- 本文基于投资者异质性，从机构所有权角度检验了影响效应

Conceptual Framework

- Three ownership groups of climate-conscious investors：
  1. The first group captures institutional ownership from countries with stewardship codes
  2. The second group definition reflects disclosure demand due to environmental norms in an inst’ s home country.
  3. The third ownership group consists of universal owners(owning broad、long term、not trade often),face externality risks,demand more information

- expect: firms with greater ownership by this 3 owners expect stronger demand for climate risk disclosure

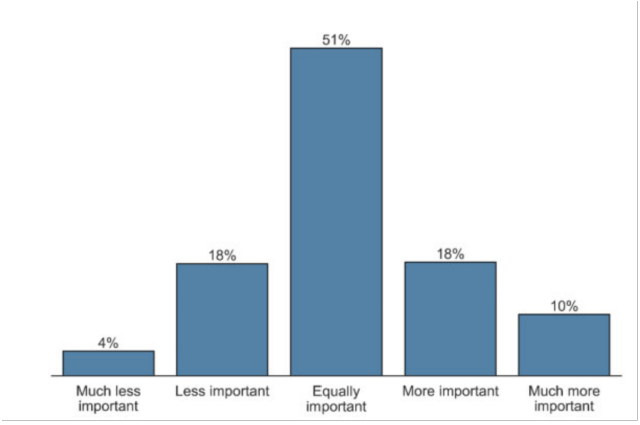
Conceptual Framework

- demand and supply of climate risk disclosure depend on the corresponding costs and benefits.
  - One potential cost： reveal proprietary information
  - expect: the climate-conscious inst's disclosure demand is smaller when competitive pressures are larger
  - A benefit:reduction in the environment negative externalities
  - expect: disclosure demand is larger for firms in high-emission industries

Survey

- Question Survey: both an online and a paper version of the survey:439 responses.
- only one observation per institution
- 1/3 hold executive-level positions; 11% are employed by institutions with assets $>$ \$100 billion.

Survey



- how important investors consider climate risks report compared to financial information report

Survey

A. Respondents' views on current climate risk disclosure practices

	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
Management discussions on climate risk are not sufficiently precise.	1	9	22	47	21
Firm-level quantitative information on climate risk is not sufficiently precise.	1	7	24	48	19
Standardized and mandatory reporting on climate risk is necessary.	2	5	20	46	27
There should be more standardization across markets in climate-related financial disclosure.	2	7	16	48	27
Standardized disclosure tools and guidelines are currently not available.	3	12	24	40	21
Mandatory disclosure forms are not sufficiently informative regarding climate risk.	3	6	28	46	18
Investors should demand that portfolio firms disclose their exposure to climate risk.	2	6	18	46	28

- a widespread view exists that current disclosures are uninformative.

Survey

B. Respondents' views on TCFD and carbon footprint disclosure

	No (%)	Yes (%)	Do not know (%)
Do you engage (or plan to engage) portfolio companies to report according to the recommendations of the TCFD?	17	59	24
Do you disclose (or plan to disclose) the overall carbon footprint of your portfolio?	24	60	16

- many investors have a demand for climate risk disclosure
- willing to actively engage firms to increase disclosure.

Survey

	Importance of climate risk disclosure	*Management discussions imprecise*	*Quantitative information imprecise*	*Demand disclosure*	*TCFD engagement*	*Carbon footprint disclosure*
	(1)	(2)	(3)	(4)	(5)	(6)
Fiduciary duty institution	0.19*	0.08	0.13*	0.16***	0.04	0.01
	(0.10)	(0.05)	(0.06)	(0.02)	(0.05)	(0.06)
HQ country norms	1.23**	0.24	−0.15	0.07	1.08***	0.22
	(0.52)	(0.37)	(0.26)	(0.24)	(0.18)	(0.34)
Very large institution	0.31**	0.02	0.11*	−0.02	0.04	0.18***
	(0.11)	(0.04)	(0.06)	(0.04)	(0.10)	(0.06)
Climate risk ranking	0.11***	0.02*	0.01	0.01	0.01	0.01
	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Climate risk financial materiality	0.36***	0.07**	0.04	0.10***	0.02	0.05**
	(0.04)	(0.03)	(0.03)	(0.03)	(0.02)	(0.02)
ESG portfolio share	0.30	0.20***	0.14**	0.04	0.34**	0.23***
	(0.29)	(0.07)	(0.06)	(0.12)	(0.13)	(0.07)
Medium-term horizon	−0.05	0.07	0.01	−0.06	0.07	−0.02
	(0.19)	(0.08)	(0.08)	(0.13)	(0.09)	(0.10)
Long-term horizon	−0.12	0.11	0.06	−0.13	0.05	−0.09
	(0.26)	(0.10)	(0.09)	(0.12)	(0.07)	(0.10)
Respondent position fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Distribution channel fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Institutional investor type fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
N	363	363	363	363	277	306
Adj. R^2	.207	.099	.085	.135	.066	.025

- all 3 type ownership consider climate risk reporting more important

Archival Evidence: Data

- Carbon-related disclosure data
  - CDP: difficult to identify a missing observation is firm refusal or not requested to participate–clean by ralative size(Krugger,2015)
  - 3 ways: carbon scope 1; emissions;type(FTV);completeness score

B. Climate-related disclosure and investor holdings variables				
Scope 1 disclosure	0.26			43,221
Climate risk disclosure	0.50	1.08	0.00	25,932
Regulatory risk disclosure	0.19			25,932
Physical risk disclosure	0.18			23,892
Other risk disclosure	0.17			23,892
Climate disclosure score	16.47	32.82	0.00	25,934
10-K Climate risk disclosure	0.70			3,962

- overall voluntary disclosure: firm issues at least one voluntary earnings forecast in a year =1 and otherwise =0 (Li and Yang, 2016)

Archival Evidence: Data

- Institutional ownership data: FactSet data
  - Stewardship code IO: ownership by institutional investors from countries with stewardship codes.(Katelouzou and Siems， 2021)
  - High-norms IO: ownership by inst from high environmental norms countries (Dyck et al, 2019)
  - Universal owner IO： ownership by inst own top 1% number of firms in a year

Stewardship code IO	0.14	0.17	0.07	43,221
High-norms IO	0.09	0.11	0.05	43,221
Universal owner IO	0.14	0.14	0.09	37,740
Nonstewardship code IO	0.14	0.22	0.06	43,221
Low-norms IO	0.18	0.24	0.09	43,221
Nonuniversal owner IO	0.13	0.14	0.08	37,740

Archival Evidence: Model:

- For firm f in country c and year t, the model is as follows:

$$Climate\ disclosure_{f,c,t} = \alpha + \beta IO_{f,c,t} + \theta X_{f,c,t} + Fixed\ effects + \epsilon_{f,c,t} \quad (1)$$

High-competition firm	0.50			4,739
High-emission industry	0.38			43,221
log(Assets)	15.03	2.05	15.00	43,221
Dividends/net income	0.38	0.69	0.27	42,867
Debt/assets	0.45	0.20	0.45	36,164
EBIT/assets	0.07	0.10	0.06	42,317
CapEx/assets	0.04	0.05	0.03	42,967
Book-to-market ratio	0.72	0.57	0.58	43,174
Forecast occurrence	0.72			43,221

Archival Evidence: Model-cost and benefit

- For firm f in country c and year t, the model is as follows:

$$\begin{aligned} \textit{Climate disclosure}_{f,c,t} = & \alpha + \beta_1 IO_{f,c,t} \times Z_{f,c,t} + \beta_2 IO_{f,c,t} + \beta_3 Z_{f,c,t} \\ & + \theta X_{f,c,t} + \textit{Fixed effects} + \epsilon_{f,c,t} \end{aligned}$$

- $Z_{f,c,t}$ is a proxy for a cost or benefit of climate risk disclosure.
  - Highcompetition firm: firm in a competitive environment where the HHI is below the median in a year.(Hoberg and Phillips (2016) text-based HHI) $\beta_1 < 0$
  - High-emission industry , which equals one if a firm operates in 1 of the 20 SIC2 industries with the highest Scope 1 emissions. $\beta_1 > 0$

Archival Evidence: Model-influence and solution

- 2015.8, France passed Energy Transition for Green Growth Act, Article 173 requires French institutional investors disclose their climate risk exposures:

$$\begin{aligned} \textit{Climate disclosure}_{f,c,t} =& \alpha + \beta_1 \textit{Post Article}173_t \times \textit{High French IO}_{f,c,t} \\ &+ \beta_2 \textit{High French IO}_{f,c,t} + \theta X_{f,c,t} + \textit{Fixed effects} + \epsilon_{f,c,t} \end{aligned}$$

- Post Article173_t 2016、2017=1
- High French $IO_{f,c,t}$ =1 if French institutional ownership above the median in a year.

Experiment result

	Scope 1 disclosure			*Climate risk disclosure*			*log(1+ 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)
Nonstewardship 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)	
Nonuniversal owner IO			−0.15			−0.27			−0.62
			(0.10)			(0.31)			(0.50)
log(Assets)	0.13***	0.13***	0.13***	0.30***	0.30***	0.29***	0.57***	0.57***	0.56***
	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)	(0.04)
Dividends/net income	0.02***	0.02***	0.02***	0.05***	0.05***	0.06***	0.08***	0.08***	0.09***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)	(0.02)
Debt/assets	−0.03	−0.03	−0.03	−0.23***	−0.22***	−0.20***	−0.47***	−0.46***	−0.42***
	(0.03)	(0.03)	(0.03)	(0.07)	(0.07)	(0.07)	(0.10)	(0.10)	(0.10)
EBIT/assets	0.01	0.01	0.02	−0.12	−0.12	−0.08	0.02	0.02	0.09
	(0.05)	(0.05)	(0.05)	(0.12)	(0.12)	(0.12)	(0.19)	(0.19)	(0.19)
CapEx/assets	0.05	0.05	0.05	0.14	0.15	0.24	−0.24	−0.20	−0.12
	(0.14)	(0.14)	(0.14)	(0.33)	(0.33)	(0.33)	(0.48)	(0.48)	(0.47)
Book-to-market ratio	−0.08***	−0.08***	−0.08***	−0.19***	−0.19***	−0.18***	−0.39***	−0.39***	−0.38***
	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.04)	(0.05)	(0.05)	(0.06)
Forecast occurrence	0.06***	0.06***	0.06***	0.12*	0.12*	0.13*	0.12**	0.13**	0.14**
	(0.02)	(0.02)	(0.02)	(0.06)	(0.06)	(0.07)	(0.06)	(0.06)	(0.06)
Sample		All firms			All firms			All firms	
Years		2010–2019			2011–2016			2010–2015	

- climate conscious ownership positively relates to the disclose
- large firms, higher dividend payouts, growth firms, more voluntarily firm disclose more

Empirical result

A. Proprietary disclosure costs

	Scope 1 disclosure			*Climate risk disclosure*			*log(1 + Climate disclosure score)*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
High-competition firm	0.16*	0.17**	0.17*	0.71**	0.65**	0.62*	0.37	0.33	0.28
	(0.09)	(0.09)	(0.09)	(0.32)	(0.33)	(0.34)	(0.48)	(0.48)	(0.50)
High-competition firm × Stewardship code IO	−0.29**			−5.47***			−5.59**		
	(0.11)			(1.27)			(2.30)		
High-competition firm × High-norms IO		−1.09***			−3.44**			−6.09**	
		(0.39)			(1.46)			(2.43)	
High competition firm × Universal owner IO			−0.48***			−1.02*			−1.67*
			(0.16)			(0.57)			(0.86)
Stewardship code IO	0.53***			5.98***			8.48***		
	(0.14)			(1.05)			(1.84)		
High-norms IO		1.71***			4.67***			7.12***	
		(0.30)			(1.12)			(1.81)	
Universal owner IO			0.76***			0.85*			2.80***
			(0.12)			(0.46)			(0.65)
Sample		U.S. firms			U.S. firms			U.S. firms	
Years		2010–2019			2011–2016			2010–2015	
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
N	3,967	3,967	3,575	2,387	2,387	2,387	2,372	2,372	2,372
Adj. R^2	.235	.240	.254	.193	.184	.179	.279	.274	.280

- proprietary costs discrease the disclosure demand

Empirical result

Disclosure externality benefits

	Scope 1 disclosure			*Climate risk disclosure*			*log(1+ Climate disclosure score)*		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
High-emission industry × Stewardship code IO	0.13***			0.39*			0.83***		
	(0.04)			(0.19)			(0.21)		
High-emission industry × High-norms IO		0.21***			0.53			1.03***	
		(0.06)			(0.33)			(0.29)	
High-emission industry × Universal owner IO			0.12			0.60***			0.47
			(0.11)			(0.21)			(0.41)
Stewardship code IO	0.11			0.46**			0.81		
	(0.07)			(0.22)			(0.49)		
High-norms IO		0.22*			0.41**			0.60	
		(0.11)			(0.20)			(0.39)	
Universal owner IO			0.35***			0.40**			1.02***
			(0.08)			(0.17)			(0.32)
Sample	All firms			All firms			All firms		
Years	2010–2019			2011–2016			2010–2015		

- stronger disclosure demand for firms in high-emitting industries.
- climate risk disclosure demand by climate-conscious institutions depends on the costs and benefits of the reporting.

Empirical result

	Scope 1 disclosure				*Climate risk disclosure*
	(1)	(2)	(3)	(4)	(5)
Post-Article 173 × High French IO	0.020**	0.021**	0.032**		0.078**
	(0.009)	(0.010)	(0.014)		(0.037)
Post-Article 173 × French IO				1.379**	
				(0.540)	
High French IO	0.059***	0.059***	−0.007	continuous	0.074
	(0.012)	(0.012)	(0.012)		(0.052)
French IO				0.621	
				(0.445)	
log(Assets)	0.13***	0.13***	0.00	0.18***	0.30***
	(0.01)	(0.01)	(0.02)	(0.01)	(0.03)
Dividends/net income	0.03***	0.03***	0.01	0.02	0.06***
	(0.01)	(0.01)	(0.00)	(0.03)	(0.01)
Debt/assets	−0.02	−0.02	0.08	−0.06	−0.20**
	(0.03)	(0.03)	(0.06)	(0.15)	(0.08)
EBIT/assets	−0.03	−0.01	0.10**	0.00	−0.12
	(0.05)	(0.06)	(0.04)	(0.23)	(0.14)
CapEx/assets	0.05	0.09	−0.14*	−1.22***	0.06
	(0.17)	(0.17)	(0.07)	(0.22)	(0.34)
Book-to-market ratio	−0.08***	−0.07***	−0.02	−0.11***	−0.18***
	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)
Forecast occurrence	0.07***	0.07***	0.02	−0.06*	0.15**
	(0.02)	(0.02)	(0.02)	(0.03)	(0.06)
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

- after Article 173, Scope 1 disclosure increases by 2 pp more at firms with high French IO compared low

Robustness-solution channel

	A. Addressing selection effects Scope 1 disclosure			B. Alternative specifications Scope 1 disclosure			C. Placebo test Forecast occurrence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post-Article 173 × High French IO	0.022** (0.010)		0.025*** (0.008)	0.032*** (0.011)	0.030*** (0.010)		0.006 (0.008)
Post-Article 173 × High French IO pre-Article 173		0.024** (0.011)		balanced pannel, SE clusterd by firm	firm year collapsed in pre/post years		
2017 × High French IO						0.027*** (0.010)	
2016 × High French IO						0.022* (0.011)	
2014 × High French IO						0.002 (0.013)	
2013 × High French IO						0.005 (0.015)	
High French IO	0.053*** (0.014)		0.009 (0.005)	−0.007 (0.010)	−0.017 (0.013)	0.050*** (0.013)	0.046** (0.023)
Δ French IO pre- to post-Article 173	0.467 (0.565)	0.683 (0.615)	0.179 (0.178)			0.467 (0.564)	
High French IO pre-Article 173		0.056** (0.024)					
Scope 1 disclosure pre-Article 173			0.954*** (0.013)				
Post-Article 173					0.012* (0.007)		

- control for changes in French institutional ownership around Article 173

Robustness-solution channel

	A. Addressing selection effects Scope 1 disclosure			B. Alternative specifications Scope 1 disclosure			C. Placebo test Forecast occurrence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post-Article 173 × High French IO	0.022** (0.010)		0.025*** (0.008)	0.032*** (0.011)	0.030*** (0.010)		0.006 (0.008)
Post-Article 173 × High French IO pre-Article 173		0.024** (0.011)		balanced pannel, SE clusterd by firm	firm year collapsed in pre/post years		
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High French IO	0.053*** (0.014)		0.009 (0.005)	−0.007 (0.010)	−0.017 (0.013)	0.050*** (0.013)	0.046** (0.023)
Δ French IO pre- to post-Article 173	0.467 (0.565)	0.683 (0.615)	0.179 (0.178)			0.467 (0.564)	
High French IO pre-Article 173		0.056** (0.024)					
Scope 1 disclosure pre-Article 173			0.954*** (0.013)				
Post-Article 173					0.012* (0.007)		

- using past values - reduces concerns about selection channel.

Robustness-solution channel

	A. Addressing selection effects Scope 1 disclosure			B. Alternative specifications Scope 1 disclosure			C. Placebo test Forecast occurrence
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Post-Article 173 × High French IO	0.022**		0.025***	0.032***	0.030***		0.006
	(0.010)		(0.008)	(0.011)	(0.010)		(0.008)
Post-Article 173 × High French IO pre-Article 173		0.024**		balanced pannel, SE clusterd by firm	firm year collapsed in pre/post years		
		(0.011)					
2017 × High French IO						0.027***	
						(0.010)	
2016 × High French IO						0.022*	
						(0.011)	
2014 × High French IO						0.002	
						(0.013)	
2013 × High French IO						0.005	
						(0.015)	
High French IO	0.053***		0.009	−0.007	−0.017	0.050***	0.046**
	(0.014)		(0.005)	(0.010)	(0.013)	(0.013)	(0.023)
Δ French IO pre- to post-Article 173	0.467	0.683	0.179			0.467	
	(0.565)	(0.615)	(0.178)			(0.564)	
High French IO pre-Article 173		0.056**					
		(0.024)					
Scope 1 disclosure pre-Article 173			0.954***				
			(0.013)				
Post-Article 173					0.012*		
					(0.007)		

- control for Scope 1 disclosures in the years before Article 173 -selection channel is plausibly strongest among those firms that already disclosure

Robustness-solution channel

- whether changes in French IO around Article 173 depend on the practices of firm-level climate risk disclosure in years before the reform.

	French IO (×100)	
	(1)	(2)
Post-Article 173 × Scope 1 disclosure pre-Article 173	−0.092	
	(0.065)	
Post-Article 173 × Climate risk disclosure pre-Article 173		−0.028
		(0.026)
Scope 1 disclosure pre-Article 173	0.214**	
	(0.100)	
Climate risk disclosure pre-Article 173		0.091**
		(0.039)
Sample	All firms	All firms
Years	2013–2017	2013–2017

- unable to detect that French IO increases more strongly among firms with relatively high pre-Article 173 disclosure levels

Conclusion

- institutional investors value and demand climate risk disclosures
- climate risk disclosure of firms owned by French inst improves in response to Article 173, which provides a shock to disclosure demand-influence channel

Thanks!