Unpackaging ESG: Evidence from 401(k) Investment

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Abstract

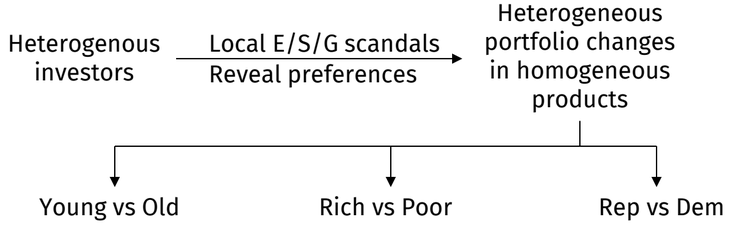
Motivation

- ESG product market: **homogeneous**
  - 50% name : "XXX Social Responsible Fund"
  - 80% benchmark: MSCI ESG Index, S&P500 ESG Index, and FTSE Russell ESG index
  - Limited in specifically focused topics: gender equality, health, pollution...
- ESG demand: **heterogeneous preferences**
  - E/S: externalities
  - G: firm internal agency problem
- Potential conflicts between the demand and supply
  - welfare implication: **do we need more products?**

Research Question

How to estimate the heterogeneous sustainable preferences given investors are holding homogeneous products?

Main Massage



- scandals may "**evoke**" the non-pecuniary concerns

Methodology and Data

401(k) Pension Plans

- A menu of 10-50 funds for employees to choose from
  - annual contribution: 3-5% of income
- annual report Form 5500 + Brightscope Beacon
  - 29,000 plans with >200 participants and >10M USD assets 2012 - 2019
- aggregated investment menu and fund balance
  - plans → representative agents
- infer investor characteristics from plan / local data
  - age (TDF), wealth (plan account balance), political leaning (local presidential voting outcomes)

RepRisk ESG Incidents

- negative experiences and triggers to investment decisions
  - 51,000 scandals of 29,000 firms 2011 – 2018
  - 3 main topics, 13 main issues, and 73 tags

Empirical Strategy

$$Y_{i,t} = \beta ESG\_Scandal_{i,t-1} + \Gamma Controls_{i,t-1} + FEs$$

- Y: # ESG funds, addition / deletion, ESG fund flows
- X: # scandals in previous year
  - act as shocks for this year's investment
  - employees respond to ESG scandals around the sponsor's (firm's) address
  - employee + employer co-decide the menu

A Real-World Example

Scandals in Philadelphia:
13 → 21 (2011-2012)

Oppenheimer-International Growth Fund
Vanguard Total Stock Market Index Fund
Alliance-Small Cap Growth Fund
Neuberger-Socially Responsive Fund
Loomis-Bond Fund
Oppenheimer-Developing Markets Fund
Loomis-Investment Grade Fund
Transamerica-Ivy Science Fund
Alger-Green Fund
Prudential-Mid Cap growth Fund
Vanguard REIT Index Fund
Black Rock Health Science Fund
Wells Fargo-Govt. Securities Fund
American Fund-New Perspective Fund
Vanguard Small Cap Index Fund
Vanguard Target Retirement 2050 Fund

Plans in Philadelphia:
add ESG funds (2013)

Results

Investors response to local ESG scandals by **adding new ESG funds** and **putting more money** into existing funds

- One s.d. more local ESG scandals →
  - 10-70% higher likelihood of adding an ESG fund
  - 20-40% more ESG fund inflow

	ESG_Fund	ESG_Add	ESG_Del
ESG_Scandal	0.005**	0.014**	0.002
	(0.002)	(0.007)	(0.005)
# Obs	114,645	4,316	7,601
R^2	0.757	0.488	0.460
Conditional	Uncon	Adding	Deleting

Scandals: "**evoke**" investor ESG preferences

- not change their expectations of pecuniary returns or risks
- highly spread, new and unexpected scandals: large marginal effect → **awareness**
- severe or harsh scandals: no difference

Condition	Change			Unconditional		
$High\_Severity_{t-1}$	-0.196			0.028		
	(0.185)			(0.046)		
$High\_Reach_{t-1}$		0.040**			0.005*	
		(0.020)			(0.003)	
New_{t-1}			0.043*			0.010**
			(0.023)			(0.004)
$ESG\_Scandal_{i,t-1}$	0.017**	0.005*	0.003**	0.004**	0.001*	0.001*
	(0.008)	(0.003)	(0.001)	(0.003)	(0.001)	(0.001)

Two-Dimensional Matrix

- Adding ESG funds

		Social		Environment		Governance	
Political	Republican	-0.178	(0.929)	-0.948	(0.718)	-1.367	(0.963)
	Democratic	**1.016*** **	**(0.371)**	**1.589***	**(0.861)**	0.020	(0.181)
Flow Age	Old	**1.322****	**(0.640)**	-0.434	(0.702)	**1.135****	**(0.483)**
	Young	**0.565***	**(0.320)**	**1.038***	**(0.574)**	-0.020	(0.172)
TDF Age	Old	**1.217****	**(0.603)**	1.645	(1.468)	0.155	(0.343)
	Young	**0.838****	**(0.336)**	**0.566****	**(0.221)**	0.022	(0.182)
Deferral	Poor	-0.447	(1.668)	-2.531	(3.732)	-0.623	(1.617)
	Rich	**0.823*** **	**(0.317)**	0.804	(0.665)	0.159	(0.163)
Account Balance	Poor	0.603	(0.654)	0.2978	-0.414	-0.344	(0.425)
	Rich	**0.954*** **	**(0.288)**	**1.314****	**(0.698)**	0.186	(0.181)

- Existing ESG fund flow: specific scandal issue

	Whole Sample	Political		TDF Age		Account Balance	
		Republican	Democratic	Old	Young	Poor	Rich
Social	**0.035****	-0.000	**0.096*****	**0.060****	0.017	0.033	**0.034***
Environmental	**0.069****	0.050	**0.066***	0.077	0.046	0.055	**0.102*****
Biodiversity	0.003	0.007	0.001	0.006	0.003	-0.001	**0.005***
Economic	**0.004*****	**0.003***	**0.005****	0.002	**0.004****	**0.006****	**0.004****
Pollution	**0.001****	0.001	**0.001***	**0.001***	0.000	0.001	**0.001*****
Health	**0.001****	0.002	0.001	0.002	0.002	0.001	**0.002****
Human Rights	**0.001***	-0.000	**0.002***	0.001	**0.001***	**0.002***	0.001

- **Social**: all investors, heterogeneity exists in the
  - magnitude: old investors twice likely to change portfolio
  - specific scandals: rich-technology; poor-human rights, labor; Republican-bribery; Democratic-privacy
- **Environmental**: young, rich and Democratic investors
- **Governance**: none of the investor

Investor: Decomposition of ESG Products

- When encountering certain E/S/G scandals, investors prefer funds with higher E/S/G scores in that aspects
  - After E-scandal: 20-30% overweight
  - After S-scandal: 33-50% overweight

	E-Score	S-Score	G-Score
	Whole Sample		
Social	**0.193*****	**0.191*****	0.054
	(0.047)	**(0.050)**	(0.046)
Environmental	**0.120***	0.018	0.070
	(0.068)	(0.104)	(0.117)
Governance	**-0.063****	-0.018	0.012
	(0.026)	(0.022)	(0.032)

- Welfare losses still exist: **the more benchmarks exist, the better the investors are**

Main References

- Hartzmark, Samuel M, and Abigail B Sussman. 2019. "Do Investors Value Sustainability? A Natural Experiment Examining Ranking and Fund Flows." The Journal of Finance, 74(6): 2789–2837.
- Bolton, Patrick, and Marcin Kacperczyk. 2021. "Do Investors Care About Carbon Risk?" Journal of Financial Economics, 142(2): 517–549.
- Bernstein, Asaf, Matthew T Gustafson, and Ryan Lewis. 2019. "Disaster on the Horizon: The Price Effect of Sea Level Rise." Journal of Financial Economics, 134(2): 253– 272.
- Sialm, Clemens, Laura Starks, and Hanjiang Zhang. 2018. "Defined Contribution Pension Plans and Mutual Fund Flows." Journal of Investment Management, 16(3): 31– 45.
- Agnew, Julie, Pierluigi Balduzzi, and Annika Sunden. 2003. "Portfolio Choice and Trading in a Large 401 (k) Plan." American Economic Review, 93(1): 193–215.

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