The "Green" Geography: Corporate Environmental Policies and Local Institutional Investors

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Clustering of Corporate Policies

Industry clustering:

- Corporate policies can be correlated within industry
- E.g., due to product market competition

Geographic clustering:

- **Within-industry** clustering of firms: Silicon Valley/River/Hills
- **Inter-industry** clustering of policies **within each region**:
  - Dividend (Becker et al, 2011), financial misconduct (Parsons et al, 2018)
  - Underexplored: lower barrier to movement of labor, capital, and firms

This paper:

- Inter-industry clustering of corporate **environmental** policies
- Link with **local norms** and **local institutional ownership**

This paper

Geographic clustering of **corporate policies** and the role of **local norms** in generating such clustering

Why **environmental policy?**

- Potentially wide-reaching externalities
- Not obvious that a positive policy is value enhancing for shareholders

Local **environmental norms** ~ acceptable corporate practices with respect to the environment

- A relatively clean measure of local norms
- Quite stable over time
- Unlikely that local environment norms are driven by corporate policies

Summary

Do environmental corporate policies vary across regions?

- Yes, cross-regional variation in corporate environmental policies
- (Local) regulation is not the only channel
- Correlated with local norms: both environmental and more general norms

(How) do investors respond to violations of local norms?

- Systematic cross-regional variation in local investors' **sensitivity** to corporate environmental policies
- A potential link between this sensitivity and cross-sectional variation in firm **valuations**

Data

MSCI ESG Research database (KLD data)

Positive indicators: Environmental Strengths

- *Environmental Opportunities, Clean Technology*
- *Toxic Emissions and Waste*
- *Packaging Materials & Waste*
- *Climate Change, Carbon Emissions*

Negative indicators: Environmental Concerns

- *Toxic Emissions and Waste*
- *Impact of Products and Services (e.g., ozone depletion and agricultural chemicals)*
- *Regulatory Compliance*

Variables of Interest

- Environmental Strength (ENV_STR)
  - 1, if the firm has any **positive** environmental indicator from KLD
  - 0, otherwise
- Environmental Concern (ENV_CON)
  - 1, if the firm has any **negative** environmental indicator from KLD
- Net = Strength minus Concern (ENV_NET)
  - +1, if the firm has **only positive** indicators and no negative indicators
  - –1, if the firm has **only negative** indicators and no positive indicators
  - 0, otherwise (either both exist, or neither exists)

Russell 1000 index constituents

- A wide cross-section of firms with environmental indicators in KLD
- Reasonably long time period: 2001-2013

18 cities: SF, LA, Seattle, ... NY, DC, ... , Detroit, Pittsburgh, Cleveland

Clustering of Environmental Policies

Controlling for **firm characteristics** and **industry*time fixed effects**

	(1)	(2)	(3)	(4)
Variable	EnvNet	EnvStrength	EnvConcern	EnvConcern
Area_EnvNet	0.35***			
	[8.82]			
Area_EnvStrength		0.04		
		[0.11]		
Area_EnvConcern			1.21***	
			[3.56]	
Area_OthIndEnvConcern				0.70**
				[2.06]
Method	OLS	CLogit	CLogit	CLogit
FE - Ind & Year	✓	✓	✓	✓
Obs	9,084	9,084	9,084	8,700
RSq	0.133	0.208	0.205	0.212

Firm-level environmental indicators

The fraction of other **local firms** with **negative** indicators

Average of firms in the same area

Why do we observe this clustering?

Not (just) industry clustering

- We used the broadest possible industry classifications (FF 10) to allow for a cleaner identification of "inter-industry" effect
  - Durable, Non-Durable, Manufacturing, Energy, High Tech, Telecom, Shops, Healthcare, Utilities
    - *Local firms in other FF10 industries are unlikely to operate in related sectors*
- Results are robust to using FF48 instead
    - *Power issue in conditional logit: insufficient observations within each industry*year combination*

(Unobservable) firm characteristics?

- We included size, leverage, profitability, valuation (Q), etc.

Locally acceptable practices?

Local Norms

Environmental norms:

- **Green City Index** (Economist Intelligence Unit, 2011)
- Based on nine criteria:
  - CO_2 emissions, energy, land use, buildings, transport, water, waste, air quality, and environmental governance

Corruption Index

# of federal convictions for corruption-related crimes by elected officials, per million of population

- From the Report to Congress on the Activities and Operations of Public Integrity Section (U.S. DOJ; used in Glaeser and Saks, 2006)

- Indicate a general apathy towards the well-being of the local community

Local Norms – Less Green Cities

City	Fraction of Firms with **Env. Concerns**		Green City Index	Corruption Index
	Industry-Adjusted	Raw		
Detroit, MI	0.13 (18)	0.39 (18)	28.4 (1)	1.83 (12)
Pittsburgh, PA	0.08 (17)	0.35 (17)	56.6 (3)	2.16 (11)
Cleveland, OH	0.06 (16)	0.30 (16)	39.7 (2)	5.03 (3)
Atlanta, GA	0.06 (15)	0.20 (12)	57.8 (5)	2.53 (8)
Chicago, IL	0.05 (14)	0.22 (13)	66.9 (10)	4.92 (4)
Washington, DC	0.04 (13)	0.17 (10)	71.4 (12)	7.97 (1)
Charlotte, NC	0.03 (12)	0.29 (15)	59.0 (6)	1.66 (15)
New York, NY	0.02 (11)	0.14 (7)	79.2 (17)	4.30 (5)
Dallas, TX	0.02 (10)	0.20 (11)	62.3 (7)	1.69 (14)

Local Norms – Greener Cities

City	Fraction of Firms with **Env. Concerns**		Green City Index	Corruption Index
	Industry-Adjusted	Raw		
Philadelphia, PA	0.01 (9)	0.17 (9)	66.7 (9)	3.86 (6)
Denver, CO	-0.02 (8)	0.12 (6)	73.5 (15)	1.78 (13)
Minneapolis, MN	-0.02 (7)	0.15 (8)	67.7 (11)	1.18 (17)
Seattle, WA	-0.03 (6)	0.06 (3)	79.1 (16)	1.42 (16)
Boston, MA	-0.04 (5)	0.07 (5)	72.6 (14)	2.31 (9)
Los Angeles, CA	-0.05 (4)	0.05 (2)	72.5 (13)	2.27 (10)
San Francisco, CA	-0.06 (3)	0.04 (1)	83.8 (18)	1.00 (18)
Houston, TX	-0.06 (2)	0.26 (14)	62.6 (8)	3.24 (7)
Miami, FL	-0.07 (1)	0.06 (4)	57.3 (4)	5.39 (2)

Local Norms

Predicting the presence of **environmental concerns** in firms

- Controlling for firm characteristics and industry*year FE
- A higher value for Green implies a **greener** city
- A higher value for Ethical implies a **less** corrupt city.

Variable	(1)	(2)	(3)	(4)	(5)
Green	-0.05***				
	[-6.23]				
Best5_Green		-0.42***			-0.43***
Greenest cities		[-5.01]			[-5.08]
Ethical			-0.04***		
			[-4.94]		
Best5_Ethical				-0.41***	-0.42***
Least corrupt cities				[-4.25]	[-4.33]

What's Driving the Correlation?

Local stakeholders

- Potential employees in "green" areas avoid dirty firms
- Also local lenders and suppliers?

➔ Affecting firm performance? We do not observe it

Local regulators

- Relatively large firms (Russell 1000)
  - **Results are consistent using S&P500 firms**
  - **Results are consistent for firms with dispersed locations (Garcia and Norli 2012)**
- Plants/factories are away from local regulators
  - **Plant-level analysis**

Plant Location

Panel A: Firm level analysis of facility locations

Variable	(2) Loc_FacNGreen
HqRank	-0.11***
	[-4.49]
ROA	-0.82
	[-0.51]
Leverage	0.03
	[0.04]
Log(TA)	0.56***
	[5.65]
Q	-0.11
	[-1.12]
Log(CF/TA)	-0.37
	[-1.42]

Presence of facilities in non-green areas (outside of the top 5 green areas)

Firms in "greener" location are less likely to have facilities in non-green areas

- conditional on having at least one facility outside of the HQ state

Plant Toxicity (EPA Data)

Panel A: Firm level analysis of facility locations

Variable	(2) Loc_FacNGreen	(3) Toxicity: All areas	(4) Toxicity: Non-Green Areas	(5) Toxicity: Green Areas
HqRank		-0.18***	-0.17***	-0.06**
		[-9.30]	[-8.07]	[-2.42]
ROA		7.06***	7.44***	2.98
		[4.49]	[4.32]	[1.53]
Leverage		2.81***	1.44**	2.08***
		[4.48]	[1.97]	[2.68]
Log(TA)		0.66***	0.49***	0.44***
		[8.41]	[6.01]	[4.80]
Q		-0.30***	-0.19	-0.16
		[-2.94]	[-1.45]	[-1.61]
Log(CF/TA)		-0.09	-0.20	0.17
		[-0.40]	[-0.81]	[0.65]

Aggregate toxicity level of facilities

Firms in "greener" location operate less environmentally harmful facilities

Particularly in "non-green" areas

Tighter local regulation?

Plant Toxicity (EPA Data)

Toxicity level of facility

Facilities in (ranked) cities

All facilities; ranked using nearest city

Facility CSA fixed effect

Panel B: Facility level analysis of toxicity

Fac =	--	FacRank	FacRank	FacRankNr	FacRankNr	FacFE
Variable	(1)	(2)	(3)	(4)	(5)	(6)
			Tighter local regulation?			
Fac		-0.14***	-0.12***	-0.06***	-0.05***	
		[-9.79]	[-8.91]	[-6.91]	[-5.85]	
HqRank	-0.06***		-0.05***		-0.05***	-0.03***
	[-5.00]		[-3.53]		[-4.31]	[-3.22]
			?!?			
Observations	16,192	5,973	5,973	16,192	16,192	16,192
R^2	0.026	0.072	0.076	0.025	0.030	0.124
FE: Year	Yes	Yes	Yes	Yes	Yes	Yes
Cluster: Firm-Year	Yes	Yes	Yes	Yes	Yes	Yes
FE: Facility Area	No	No	No	No	No	Yes

What's Driving the Correlation?

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Local investors?

Local Investors

Are local investors sensitive to corporate environmental policy?

- Examine overweighting of local stocks (relative to market portfolio)
- Focus on: (1) investors in **"green"** cities, and
  (2) distinction based on environmental **concerns**

Variable	(1) Adj_Loc
Best5_Green **Greenest cities**	-1.94 [-0.96]
Intercept	3.50** [2.50]

- Local overweighting of about 3.50% outside of "green" cities
- Less in "green" cities
  - Difference is not statistically significant

Local Investors

Overweighting in local firms WITHOUT Env. Concerns

Overweighting in local firms WITH Env. Concerns

Variable	Adj_Loc	Adj_LocNoCon	Adj_LocCon	Ex_AdjLocNoCon
Best5_Green	-1.94	0.19	-2.13**	2.32***
	[-0.96]	[0.15]	[-2.63]	[2.92]
Intercept	3.50**	2.23**	1.27**	0.96
	[2.50]	[2.20]	[2.75]	[1.33]

Institutional investors display local overweighting:

- 3.50% outside of "green" cities, and about half that in "green" cities

Difference is due to local stocks **with environmental concerns**

- Investors in **non-green** cities **overweight** local stocks with environmental concerns (1.27%) ➔ consistent with these investors being not "too" sensitive to environmental policies
- Investors in **green** cities **underweight** local stocks with environmental concerns

Diff-in-diff of about **2.32%** (of portfolio value)

Value Implication

Predicting **industry-adjusted Q** using environmental concerns and city "green"ness – along with other firm characteristics (including profitability)

Variable	(1)	(2)	(3)	(4)	(5)
EnvNet	0.09*				
	[2.11]				
EnvStrength		-0.18***			
		[-6.58]			
EnvConcern			-0.30***	0.00	-0.23***
			[-7.22]	[0.05]	[-5.74]
Green				0.02***	
				[8.57]	
EnvConcern * Green				-0.03***	
				[-9.14]	
Best5_Green					0.14***
					[5.72]
EnvConcern * Best5_Green					-0.17***
					[-7.76]

Potentially endogenous

Less so …

Lower valuation for "dirty" firms in "green" cities

Obfuscation: The presence of "strength"

Predicting the presence of "strength"

With firm characteristics

Variable	(3)	(4)
EnvConcern	1.11***	0.36***
	[11.27]	[3.27]
Best5_Green	0.08	-0.05
	[1.07]	[-0.63]
EnvConcern * Best5_Green	0.79***	0.77***
	[5.09]	[4.56]

- Controlling for firm characteristics:
  - Higher CF ➔ more likely to have environmental strengths
  - Larger firms ➔ more likely to have environmental strengths

Presence of "strength" is related to the presence of "concerns"

- Particularly in "green" cities

Conclusions

Regional clustering of corporate **environmental** policies

- Mostly in terms of environmental "**concerns**"

Correlated with local **norms**

- **Greener** cities ~ Firms are **more friendly** to environment
  - Even when operating facilities outside "green" areas
- **Corrupt** cities ~ Firms are **less friendly** to environment

Related to local ownership and firm valuation

- Local bias **against** firms with environmental concerns
  - **But only in "green" cities!**
- Such firms tend to have **lower valuation**
  - Controlling for profitability, etc.
  - Whereas the remaining firms in those cities tend to have (slightly) higher valuation

Clustering of Environmental Policies

EnvStrength: 1 for the presence of positive indicators, 0 otherwise

Environment Rating	Statistic	(1) FE: Year	(2) FE: Ind	(3) FE:Area	(4) FE:Year & Ind	(5) FE:Year & Area	(6) FE:Year, Ind & Area
EnvStrength	RSq	0.0879	0.0616	0.0146	0.1463	0.1033	0.1619
	AdjRSq	0.0868	0.0607	0.0111	0.1445	0.0990	0.1571
	Obs	9851	9851	9851	9851	9851	9851
	FE_year	59.83***			58.86***	60.82***	61.02***
	FE_ind		55.98***		55.61***		57.68***
	FE_area			66.51***		14.82***	8.32***

Clustering of Environmental Policies

EnvConcern: 1 for the presence of negative indicators, 0 otherwise

Environment Rating	Statistic	(1) FE: Year	(2) FE: Ind	(3) FE:Area	(4) FE:Year & Ind	(5) FE:Year & Area	(6) FE:Year, Ind & Area
EnvConcern	RSq	0.0103	0.2012	0.0607	0.2097	0.0705	0.2346
	AdjRSq	0.0091	0.2005	0.0573	0.2080	0.0661	0.2302
	Obs	9851	9851	9851	9851	9851	9851
	FE_year	8.19***			8.47***	8.40***	8.87***
	FE_ind		162.51***		163.51***		148.03***
	FE_area			58.69***		32.55***	9.82***

Clustering of Environmental Policies

EnvNet = EnvStrength minus EnvConcern (-1, 0, +1)

Environment Rating	Statistic	(1) FE: Year	(2) FE: Ind	(3) FE:Area	(4) FE:Year & Ind	(5) FE:Year & Area	(6) FE:Year, Ind & Area
EnvNet	RSq	0.0811	0.0336	0.0438	0.1165	0.1263	0.1450
	AdjRSq	0.0800	0.0327	0.0403	0.1146	0.1221	0.1401
	Obs	9851	9851	9851	9851	9851	9851
	FE_year	58.39***			61.34***	62.44***	63.56***
	FE_ind		25.33***		27.63***		15.80***
	FE_area			12.27***		14.05***	9.22***