Social Networks and Corporate Social Responsibility

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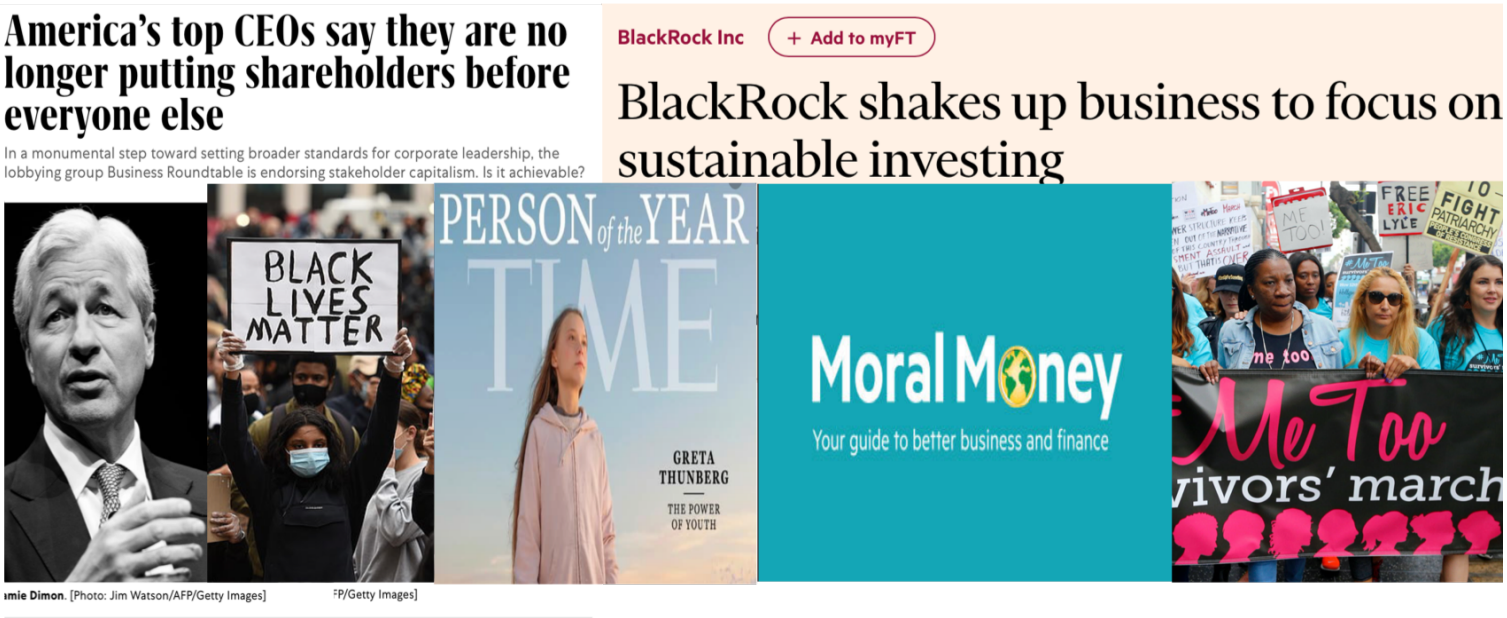
Motivation

1. CSR is a highly relevant topic right now:
   - What drives firms' CSR decisions?



Goal of the Paper

1. Studies a **new driver of CSR**:
   - Are CSR policies transmitted across firms through the social networks of their executives and directors?
   - What is the role of the executive team and the board?
   - What drives social network effects?
     - Focus on ex-ante incentives that give rise to social network effects.

2. Answer questions in a convincing way:
   - Novel IV methodology.
   - DiD: deaths of directors and executives that break social connections.
   - RDD: close-call shareholder-sponsored CSR proposals.

Why Would Social Networks Matter?

- Benefits of CSR often intangible, long term or and state-dependent $\Rightarrow$ challenging to estimate NPV.

Will the gym attract and retain workers, and what's their value to Apple? How many lost days due to sickness will the gym avoid, and how much would they have cost Apple? How many interactions between colleagues in different departments will the gym foster? These questions are almost impossible to answer. So you can't calculate the NPV of the gym (...).

in Grow the Pie by Alex Edmans (2020)

- Firms have incentives to learn from their peers to create firm value.
- Alternatively, peers may influence private utility, e.g.,: deviating from peers could lead to weaker social ties and fewer job opportunities (e.g., Akerlof and Kranton (2000), Bénabou and Tirole (2011), Levit and Malenko (2016)).

Overview of Findings

1. **Do Social Peers Mimic Each Other?**
   - Yes! CSR increases by 16% in response to a 1 standard deviation shock to peers' CSR.
   - Comparable to industry peer effects of CSR.
2. **Which Individuals Mimic?**
   - Mimicking occurs through board networks.
   - Specialized CSR board committees play an important role.
3. **Which Firms Mimic?**
   - Firms pursuing product differentiation strategies.
   - Firms strategically positioned in the social network.
4. **Why Do Firms Mimic?**
   - Incentives matter! Firms in which incentives of managers and shareholders are aligned mimic more.

Literature Overview

- **CSR Drivers:** Edmans (2011), Servaes and Tamayo (2013), Flammer (2015), Albuquerque et al. (2019), Cao et al. (2019), Dai et al. (2019), Dyck et al. (2019), Flammer and Kacperczyk (2019).
- **CSR and Agency Problems:** DiGiuli and Kostovetsky (2014), Masulis and Reza (2014), Ferrell, Liang and Renneboog (2016), Cronqvist and Yu (2017).
- **Role of Social Networks in Firms:** Hwang and Kim (2009), Fracassi and Tate (2012), Butler and Gurun (2012), Engelberg, Gao and Parsons (2013), Ishii and Xuan (2014), Liu (2014), Ahern (2017).
- **Role of Social Capital (Social Norms and Trust) in Firms:** Hasan et al. (2017a), Hasan et al. (2017b), Lins, Servaes and Tamayo (2017), Servaes and Tamayo (2017), Lin and Pursiainen (2018).
- **Peer Effects in Corporate Finance:** Leary and Roberts (2014), Dougal, Parsons and Titman (2015), Kaustia and Rantala (2015), Fracassi (2017), Grennan (2019), Zacchia (2019).

Main Data Sources

- **Social Network Data:** BoardEx.
- **CSR Data:** MSCI ESG Stats Database (KLD).
- **Shareholder Proposals Data:** SharkRepellent and ISS Voting Analytics.
- **Compensation Data:** ExecuComp.
- **Institutional Ownership Data:** Thompson Reuters.
- **Accounting Data:** Compustat.
- **Geographical Social Capital Data:** MIT Election Lab, American Community Survey, County Business Patterns, National Center for Charitable Statistics, Organ Procurement and Transplantation Network.

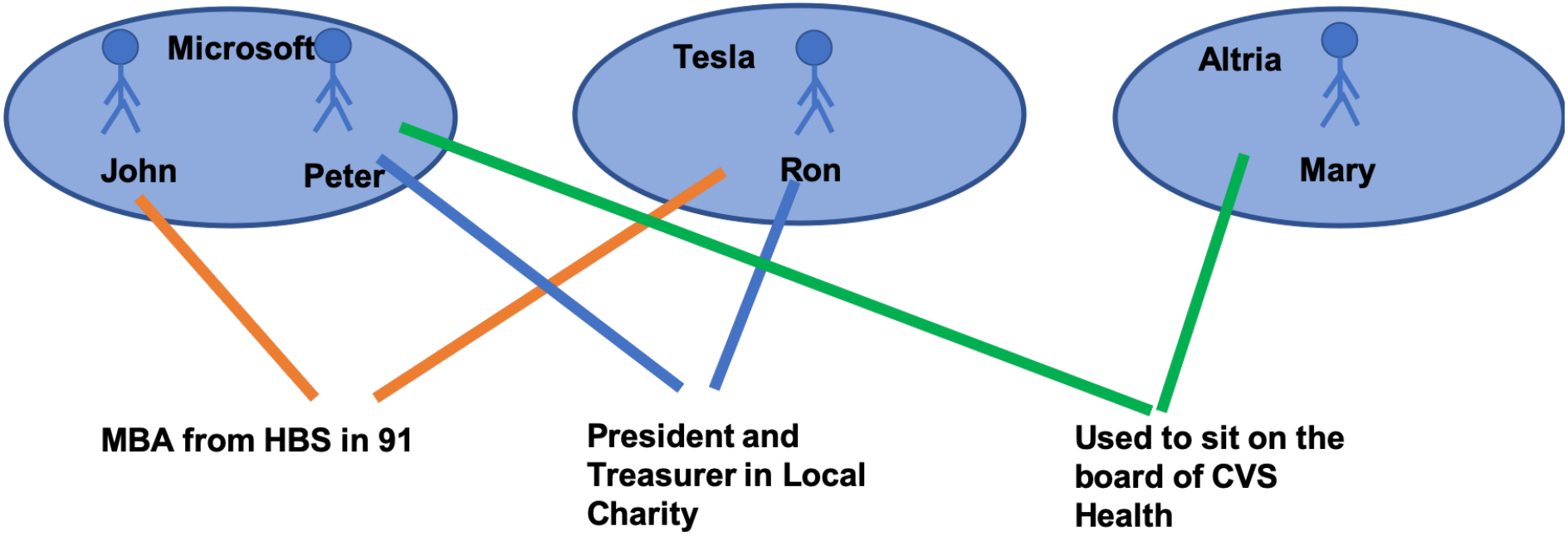
CSR measure

- Environmental Score (e.g., raw material sourcing, carbon emissions)
- Social Score
  - Employee relations (e.g., relationship with unions, employee involvement through participation in decision-making, health and safety programs in place)
  - Community relations (e.g., charitable giving, support for housing and education)
  - Workforce diversity (e.g., representation of minorities, childcare and elder care benefits)
- Sum of scores in each category divided by maximum possible score in a given year.
- Sum across the four categories.

Social Network Construction

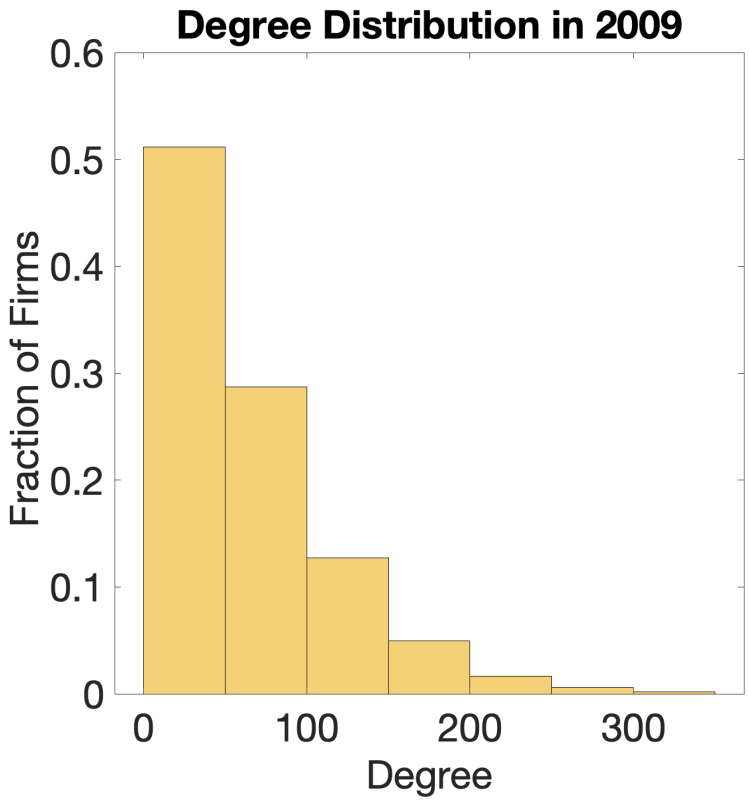
- Data on social connections for 83,604 top executives and directors of Russell 3000 firms from 2001 to 2016.
- Four types of social connections as in Fracassi and Tate (2012), Engelberg Gao and Parsons (2013) and Fracassi (2017):
  - Current Employment (CE).
  - Past Employment (PE).
  - Education (EDU).
  - Other Activities (OA).
- Sum across the four networks to obtain a time-varying firm-level weighted network.

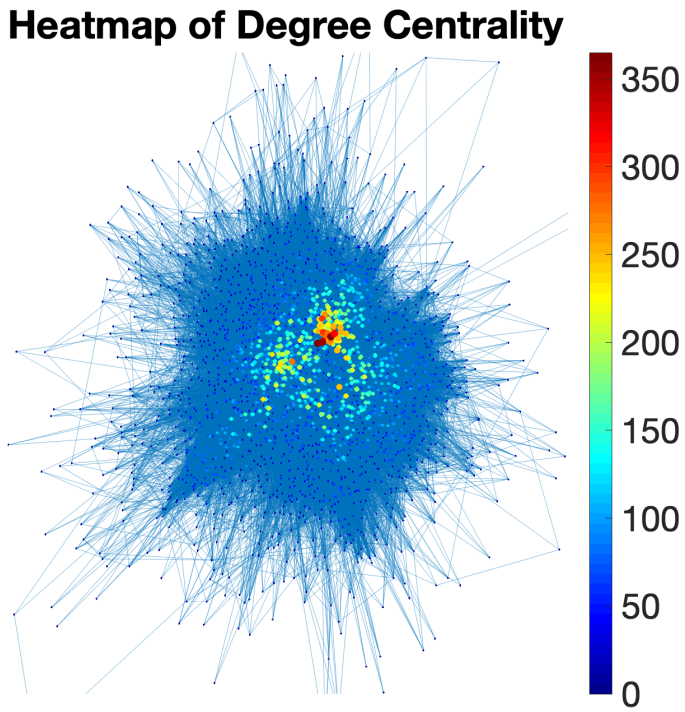
Social Network Construction: Example



- Weight of Tesla in Microsoft network $= 2/3$.
- Weight of Altria in Microsoft network $= 1/3$.

Social Network Summary Statistics





- Small number of firms with a large number of connections and a large number of firms with relatively few connections.

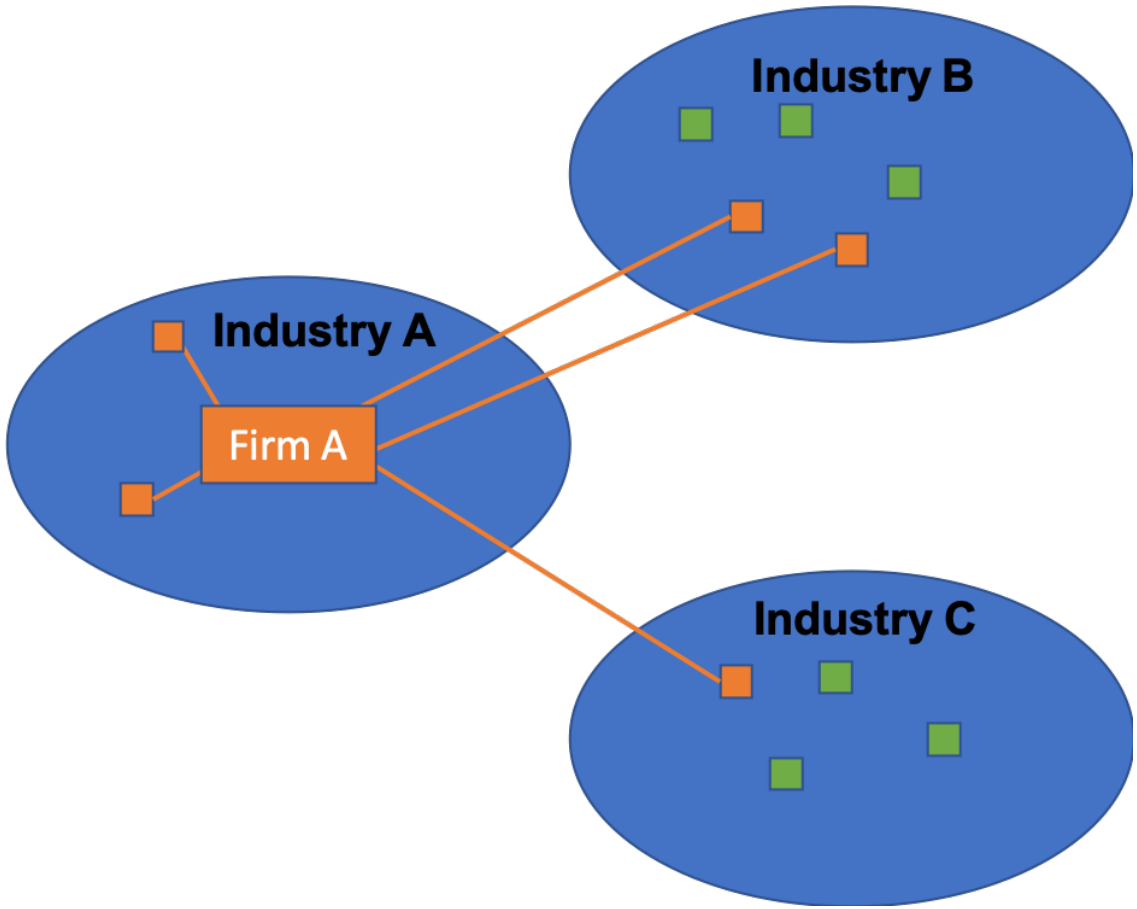
Identification Strategy

- Main empirical challenges:
  - separating peer effects from common unobserved shocks.
  - peers' actions and characteristics simultaneously determined (Manski's (1993) reflection problem).
- Instrumental Variable (IV) Approach
- Complement with many robustness tests, simulations of placebo networks, partial identification method of Oster (2019).
- Two quasi-natural experiments:
  - Differences-in-differences based on deaths of directors and executives.
  - Regression discontinuity design based on close-call shareholder-sponsored CSR proposals.

Instrumental Variable Approach

- IV explores two insights:
  - intransitive network structures can be used for identification (Bramoullé, Djebbari, and Fortin (2009)).
  - CSR decisions of industry peers are strategic complements (Cao, Liang and Zhan (2019)).
- CSR decisions of *some* industry peers of the social peers of a firm A should only affect firm A through its social peers.
- The CSR choices of indirect peers can be used as valid IV.

Instrumental Variable Approach



- Define indirect peers as the industry peers of the social peers of firm A that do not have geographic, social or industry links with firm A.

Instrumental Variable Approach

- Mitigate bias from common shocks and other unobservables:
  - high-dimensional fixed effects (CSA-by-year, state-of-incorporation-by-year and industry-by-year).
  - first-differences and lags.
  - placebo network simulations and community detection algorithms.
  - partial identification (Oster, 2019).

- I employ variations of the linear-in-means model of peer effects:

$$CSR_{i,t} = \alpha + \beta Peers' CSR_{i,t} + Controls + FE + \epsilon_{i,t}$$

1. Do Firms Mimic Each Other?

	Baseline Regression (1)	Excludes Industry Peers (2)	Additional Controls (3)
Peers' CSR	**0.437*** **	**0.450*** **	**0.455*** **
	(2.623)	(2.712)	(2.827)
Kleiberg-Paap F-stat	78.543	64.563	65.471
First Stage Instrument	0.199***	0.202***	0.207***
	(8.860)	(8.040)	(8.090)
CSA-by-year FE	Yes	Yes	Yes
Industry-by-year FE	Yes	Yes	Yes
State-by-year FE	Yes	Yes	Yes
Firm-Level Controls	Yes	Yes	Yes
Peer-Level Controls	Yes	Yes	Yes
Additional Controls	No	No	Yes
Ex. Industry Peers	No	Yes	Yes
No. Obs.	25,808	25,808	25,808

- Yes! The average firm increases CSR by 16% in response to a 1 standard deviation shock to peers' CSR.

Robustness Tests

Result robust to:

1. Using different CSR data provider (Thomson Reuters ESG).
2. Excluding firms with a very low or very high number of social peers.
3. Using different geographic and industry boundaries.
4. Lagging peers' CSR once and instrument twice.
5. First-differencing.
6. Excluding interlocks in which firms share the same director.
7. Controlling for endogenous network formation.
   - social network community-by-year FE and SEs (Louvain algorithm).
8. Controlling for common unobservable shocks.
   - placebo networks.
   - Oster (2019) partial identification.

2. Which Individuals Mimic?

	Executive Network		Board Network			
	Environment	Social	Environment	Social	Non-Specialized Peers	Specialized Peers
	(1)	(2)	(3)	(4)	(5)	(6)
$\Delta\times$ Peers' CSR	-0.018	-0.074	**0.407****	**0.786*****		
	(-0.162)	(-0.481)	(2.404)	(3.654)		
$\Delta\times$ Peers' CSR $\times$ No Committee					**0.304*****	0.001
					(2.674)	(0.009)
$\Delta\times$ Peers' CSR $\times$ Committee					**0.864*****	**0.600*****
					(7.600)	(4.864)
P(Committee = No Committee)					0.000	0.000
CSA-by-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry-by-year FE	Yes	Yes	Yes	Yes	Yes	Yes
State-by-year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Peer-Level Controls	Yes	Yes	Yes	Yes	Yes	Yes
Additional Controls	Yes	Yes	Yes	Yes	Yes	Yes
Ex. Industry Peers	Yes	Yes	Yes	Yes	Yes	Yes
No. Obs.	19,154	19,154	21,997	21,997	22,730	17,174

- Spillovers occur through board networks and CSR committees.
- A typical firm can reach 4 times as many firms within 1 step through board networks compared to executive networks.

3. Which Firms Mimic?

	Product Differentiation (1)	Industry CSR Intensity (2)	Firm Size (3)
Δ Peers' CSR $\times D_{Low}$	0.155	0.068	-0.013
	(1.473)	(0.736)	(-0.131)
Δ Peers' CSR $\times D_{High}$	**0.223****	**0.408****	**0.366*****
	(2.355)	(2.241)	(4.145)
P(H=L)	0.029	0.063	0.000
CSA-by-year FE	Yes	Yes	Yes
Industry-by-year FE	Yes	Yes	Yes
State-by-year FE	Yes	Yes	Yes
Firm-Level Controls	Yes	Yes	Yes
Peer-Level Controls	Yes	Yes	Yes
Additional Controls	Yes	Yes	Yes
Ex. Industry Peers	Yes	Yes	Yes
No. Obs.	22,833	22,833	22,833

- Large firms pursuing product differentiation strategies obtain information from their social peers in different industries to gain a competitive edge over industry rivals.

3. Which Firms Mimic?

	Decay Centrality (1)	Diffusion Centrality (2)	Clustering Coefficient (3)
Δ Peers' CSR $\times D_{Low}$	0.046	0.044	**0.405*** **
	(0.452)	(0.435)	(4.626)
Δ Peers' CSR $\times D_{Med}$	0.132	**0.176** **	0.154
	(1.511)	(2.003)	(1.579)
Δ Peers' CSR $\times D_{High}$	**0.504*** **	**0.535*** **	-0.082
	(6.375)	(6.919)	(-0.755)
P(H=L)	0.000	0.000	0.000
CSA-by-year FE	Yes	Yes	Yes
Industry-by-year FE	Yes	Yes	Yes
State-by-year FE	Yes	Yes	Yes
Firm-Level Controls	Yes	Yes	Yes
Peer-Level Controls	Yes	Yes	Yes
Additional Controls	Yes	Yes	Yes
Ex. Industry Peers	Yes	Yes	Yes
No. Obs.	22,833	22,833	22,833

- Firms strategically positioned in the social network to acquire valuable information mimic more.

4. Why Do Firms Mimic?

	CEO Delta (1)	CEO Vega (2)	Fraction Indep. Directors (3)	Institutional Ownership (4)	Industry Competition (5)
Δ Peers' CSR $\times D_{Low}$	0.060	0.076	0.136	**0.188***	**0.185***
	(0.494)	(0.641)	(0.725)	(1.897)	(1.815)
Δ Peers' CSR $\times D_{Med}$	0.193	0.153	0.262	**0.180***	**0.240****
	(1.639)	(1.313)	(1.413)	(1.827)	(2.367)
Δ Peers' CSR $\times D_{High}$	**0.345*****	**0.445*****	**0.452*****	**0.196***	**0.215****
	(3.031)	(4.124)	(2.600)	(1.932)	(2.065)
P(H=L)	0.000	0.000	0.000	0.810	0.472
CSA-by-year FE	Yes	Yes	Yes	Yes	Yes
Industry-by-year FE	Yes	Yes	Yes	Yes	Yes
State-by-year FE	Yes	Yes	Yes	Yes	Yes
Firm-Level Controls	Yes	Yes	Yes	Yes	Yes
Peer-Level Controls	Yes	Yes	Yes	Yes	Yes
Additional Controls	Yes	Yes	Yes	Yes	Yes
Ex. Industry Peers	Yes	Yes	Yes	Yes	Yes
No. Obs.	15,151	15,151	12,185	22,798	22,448

- Incentives Matter! Firms mimic more if incentives are more aligned.

4. Why Do Firms Mimic?

	Inst. Own. HHI Index (1)	Inst. Own. Largest 5 (2)	Inst. Own. Blockholders (3)
Δ Peers' CSR $\times D_{Low}$	**0.314*** **	**0.260*** **	**0.256** **
	(3.360)	(2.671)	(2.409)
Δ Peers' CSR $\times D_{Med}$	0.182*	**0.177***	**0.218** **
	(1.844)	(1.790)	(2.020)
Δ Peers' CSR $\times D_{High}$	0.033	0.063	0.082
	(0.322)	(0.609)	(0.722)
P(H=L)	0.000	0.000	0.000
CSA-by-year FE	Yes	Yes	Yes
Industry-by-year FE	Yes	Yes	Yes
State-by-year FE	Yes	Yes	Yes
Firm-Level Controls	Yes	Yes	Yes
Peer-Level Controls	Yes	Yes	Yes
Additional Controls	Yes	Yes	Yes
Ex. Industry Peers	Yes	Yes	Yes
No. Obs.	22,833	22,827	20,175

Quasi-Experimental Evidence from Deaths

- Use the death of directors and executives as an exogenous shock that breaks social connections.
- Treatment group: firm-pairs in which deceased individual was connecting a firm-pair.
- Control group: firm-pairs in which deceased individual was not connecting a firm-pair.
- Excludes firm-pairs in which individuals work in both companies simultaneously.

- 4263 deaths in total.

Quasi-Experimental Evidence from Deaths

1. First stage to compute idiosyncratic CSR comovement:

$$CSR_{it} = \alpha + Controls + FE + \epsilon_{it} \tag{1}$$

$$y_{a,b,t} = |\epsilon_{a,t} - \epsilon_{b,t}| \tag{2}$$

2. Second stage to compute causal effect of interest:

$$\begin{aligned} y_{a,b,t} = \alpha + \beta_1 Death_{a,b,t} + \beta_2 Death_{a,b,t} \times Connected_{a,b,t} \\ + Controls + \tau_{a,b} + \lambda_t + \eta_{a,b,t} \end{aligned} \tag{3}$$

$Death_{a,b,t} = 1$ after death event occurs.

$Connected_{a,b,t} = 1$ if deceased individual connected firm-pair.

Quasi-Experimental Evidence from Deaths

	Directors Network		Executives Network		Aggregate Network	
	(1)	(2)	(3)	(4)	(5)	(6)
Death	-0.015***	-0.019***	-0.026*	-0.034**	-0.020***	-0.024***
	(-3.416)	(-4.467)	(-1.773)	(-2.336)	(-4.879)	(-5.852)
Death × Connected	0.027**	0.024**	-0.009	-0.001	0.027**	0.024**
	(2.268)	(2.035)	(-0.182)	(-0.026)	(2.399)	(2.131)
Firm-Pair FE	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Firm-Pair Controls	No	Yes	No	Yes	No	Yes
R-squared	0.450	0.450	0.447	0.448	0.450	0.451
No. Obs.	851,102	851,102	74,049	74,049	865,883	865,883

- Similar results as in IV.
- Robust to excluding firms in the same industry.

Quasi-Experimental Evidence from Proposals

- Compare firms whose peers pass CSR proposals by a small margin with firms whose peers fail proposals by a small margin.
- Firm is treated if at least one social peer passes proposal.
- How to define running variable?
  1. Aggregating proposals through sum (Cuñat et al., 2012):
     - If firm is treated: sum votes across peer proposals that pass.
     - If firm is in control group: sum votes across peer proposals that fail.
  2. MaxMin Aggregation procedure:
     - If firm is treated: choose max vote across peer proposals that pass.
     - If firm is in control group: min votes across peer proposals that fail.

Quasi-Experimental Evidence from Proposals

	MaxMin Aggregation Method					
	Directors Network		Executives Network		Aggregate Network	
	(1)	(2)	(3)	(4)	(5)	(6)
Triangular Kernel	**0.257*** **	**0.274*** **	0.042	0.217	**0.254*** **	**0.293*** **
	(3.257)	(3.445)	(0.273)	(1.620)	(3.136)	(3.770)
Industry-Year FE	No	Yes	No	Yes	No	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Bandwidth	Imbens and Kalyanaraman (2012) Optimal Bandwidth					

- Excludes industry peers.
- Comparable to industry peer effects of Cao, Liang and Zhan (2019).
- Robust to orthogonalizing wrt industry-year FE in first stage.
- Robust to alternative methods of aggregating proposals.
- Robust to alternative bandwidths and kernels.
- No effects at placebo cutoffs.

Conclusion

1. Social network spillovers in CSR exist for:
   - firms with product differentiation strategies for which CSR is more likely to add value.
   - firms that are strategically positioned in the corporate social network to obtain valuable information.
   - firms in which the profit maximization incentives of managers and shareholders are aligned.
2. Boards of directors shape CSR policy.
3. At odds with the view that the CSR wave of last two decades is mostly overinvestment due to agency problems.
   - Does *not* imply that CSR always creates value.

Thank you!