Peer Effects in Campaign Contributions: Evidence from the Members of the Corporate Boards of the S&P 1500 List*

Horacio Larreguy† Edoardo Teso‡

March 2018

Abstract

We investigate the presence of peer effects in U.S. campaign finance by studying whether the contribution behavior of corporate directors of firms in the S&P 1500 list is affected by the contributions of members of their corporate network. To identify the presence of these peer effects, we use an instrumental variable approach that exploits the passage of the 2002 McCain-Feingold Act, combined with the presence of partially overlapping groups of peers in the corporate network. Consistent with the presence of significant peer effects in campaign contribution behavior, we show that an increase in peers' contributions to Congressional candidates increases a director's amount of contributions. The presence of peer effects is particularly strong along party lines: a $1 increase in peers' contributions to Republican (Democratic) candidates increases a director's contributions to Republicans (Democrats) by $0.163 ($0.239).

*We thank John Marshall, James Snyder and Jörg Spenkuch for comments. All errors are our own.
†Department of Government, Harvard University, hlarreguy@fas.harvard.edu.
‡Department of Economics, Harvard University, eteso@fas.harvard.edu.

1 Introduction

The amount of campaign contributions from firms and individuals to political candidates, parties, and Political Action Committees (PACs) has been steadily increasing over the past decades. While the effects and underlying motivations of this phenomenon have been at the center of a long debate (see discussion later), existing studies share a common feature that could affect their conclusions: they take the individual donor as the basic unit of analysis. However, if individuals' contribution behavior also affects and is affected by the behavior of members of their social network, the influence of money in politics might be misunderstood. Scholars' and regulators' lack of attention to the possible presence of these peer effects in campaign donations is surprising, especially in light of existing evidence of influence between peers in political networks in advanced democracies (see discussion below).

In this paper, we estimate the importance of peer effects in campaign finance. Specifically, we show causal evidence of the presence of peer effects in the contributions to candidates to the U.S. Congress by the members of the corporate boards (i.e., directors) of the U.S. firms in the S&P 1500 list between 2001 and 2004. We focus on this sample of individuals and type of donations for two reasons. First, campaign donations by corporate leaders are extremely common: 48% of corporate directors in our dataset made at least a donation in the 2004 election cycle. Second, relatively to campaign donations to PACs, donations to candidates might be significantly more subject to contracting between candidates and donors (Milyo et al., 2000).

We construct the network of directors of U.S. firms in the S&P 1500 in the 2001-2004 period by considering two directors as directly connected if, in a given year, they sit on the board of the same public company, or if they ever sat on the board of the same public company in the past. We then link all directors to information on their campaign contributions to candidates to the U.S. Congress in the 2000, 2002 and 2004 election cycles (corresponding to the periods 1999-2000, 2001-2002 and 2003-2004, respectively).

The identification of peer effects within social networks is challenging for two main reasons. First, if we are interested in the effect of a director j's contribution behavior on the contribution behavior of a director i to whom j is directly connected, we may be affected by a "reflection problem" (Manski, 1993): if we observe a correlation in their contribution behavior, it is possible that this is either because j's contributions are affecting i's contributions, or vice versa. A second problem is that of common shocks. Specifically, unobserved shocks might affect the behavior of directors who are

connected, and might be the underlying reason for the observed correlation in their behavior. Our identification strategy addresses both these problems.

We follow the instrumental-variable (IV) approach developed in Bramoullé, Djebbari and Fortin (2009) and De Giorgi, Pellizzari and Redaelli (2010) for the identification of peer effects in social networks. In our setting, we exploit the McCain-Feingold Act of 2002 to construct a shock to the ability to make campaign contributions of a director k, who is indirectly connected to director i only via director j, and use this shock to instrument for j's contribution behavior. Focusing on such shocks addresses the reflection problem by establishing the direction of causality. Second, we include a series of controls and fixed effects to minimize the possibility that common shocks to directors i and k account for our results.

We find evidence of significant positive peer effects in campaign contribution behavior: an increase in peers' contributions increases a director's contributions. Peer effects are stronger along party lines. However, we also find evidence that peers' contributions to Republicans trigger a director to donate more to Democratic candidates. Specifically, A \$1 increase in peers' contributions to Republican candidates significantly increase a director's contributions to Republicans by \$0.163 and to Democrats by \$0.116. A \$1 increase in peers' contributions to Democratic candidates significantly increases a director's contributions to Democrats by \$0.239 but has no significant effect on contributions to Republicans.

Our paper provides the first empirical evidence on the presence of peer effects in campaign contribution behavior within corporate networks. While our study leverages quasi-experimental variation combined with the presence of partially overlapping groups of peers in the network, Perez-Truglia and Cruces (2017) investigates peer effects in campaign contributions through the use of a field experiment conducted during the 2012 Presidential election, showing that an individual's contributions are significantly affected by perceptions about contributions by other people living in her area. Sinclair (2012) also documents the relevance of social influences in political contributions.

The positive peer effects that we document in this context might be explained by information diffusion between directors (Alatas et al., 2016; Banerjee et al., 2017), a director's pressure to conform with the social norms within the network (Bénabou and Tirole, 2006), or by coordination of actions (Chwe, 2000; Siegel, 2009). Irrespective of the mechanism behind the results, our estimates imply that increases in the amount of money in politics brought about by lifts to campaign contribution limits are likely exacerbated by the presence of peer effects in corporate networks. Importantly, while we show that peer effects are positive in the corporate context, the opposite may be

true within different social networks. For instance, individual donors may decide to free ride on the contributions of ideologically close peers (Perez-Truglia and Cruces, 2017).

Our results also speak to the large literature that has analyzed the motives and effects of corporate directors' contributions. Seminal and follow-up work argues that campaign contributions by corporations and interest groups can be seen as an investment aimed at influencing policy or obtaining access to legislators (Denzau and Munger, 1986; Fouirnaies and Hall, forthcoming; Hall and Wayman, 1990; Powell and Grimmer, 2016; Snyder, 1992; Stratmann, 1991; Snyder, 1990). Recent work, in turn, suggests that contributions by individuals simply represent a genuine expression of the donor's ideology (Bonica, 2014; Ensley, 2009; McCarty, Poole and Rosenthal, 2006), with Ansolabehere, de Figueiredo and Snyder (2003) arguing that contributions are simply consumption goods from which individuals derive utility since they enjoy participating in politics.[1] By studying members of the U.S. corporate elites, our study focuses on a group of individuals who are potentially interested both in donating for purely ideological reasons and in order to seek access to legislators on behalf of their firm or industry (Bonica, 2016*a*), which might be enhanced by the coordination of contribution behavior through their corporate networks.

Our results are also related to the literature on peer effects in politics in advanced democracies. An influential literature studies the extent of and forces behind peer effects in voting behavior in the United States (Bond et al., 2012; Gerber, Green and Larimer, 2008; Huckfeldt and Sprague, 1995; Nickerson, 2008)). Recent work highlights the importance of information diffusion within networks to account for correlated preferences and coordinated behavior more generally in contexts ranging from preference for redistribution to protests (Alt et al., 2017; Enikolopov, Makarin and Petrova, 2017; García-Jimeno, Iglesias and Yildirim, 2018; Halberstam and Knight, 2016; Sinclair, 2012).

2 Materials and Methods

Data

The starting dataset for our analysis, from RiskMetrics, includes all members of corporate boards of U.S. firms in the S&P 1500 index in the 2001-2004 period. To obtain

[1] However, Ovtchinnikov and Pantaleoni (2012) argue that even individual donors can be strategic in their contribution behavior, if they reside in Congressional districts with high industry clustering.

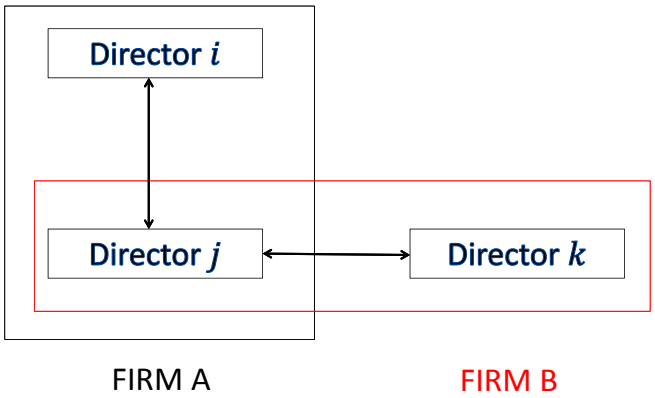
information on the boards of U.S. public firms in which these directors sat over their careers, we match them, by name and employer, to a database, from Boardex of Management Diagnostics Limited, on the employment histories of U.S. directors and senior company officers. We only keep information on employment on the board of a U.S. public company, and construct a network of directors' connections on the basis of their board appointments. Two directors are directly connected in a given election cycle if they shared a board in a U.S. public firm in or before that election year. The final dataset contains 18,742 unique directors and 7,691 unique firms.

Campaign contribution records at the federal level are from the Database on Ideology, Money in Politics, and Elections (DIME) (Bonica, 2016*b*). We match the dataset on directors to the DIME database also by director's name and employer. To that end, we use information from Boardex of Management Diagnostics Limited on all the employers of directors, and not only their employment in U.S. public firms. This is important since, while individual contributors must disclose to the Federal Election Commission the name of their employer, they can choose any of them in case they have multiple ones.

Research Design

We estimate how director j's contribution behavior affects the contribution behavior of director i, who are directly connected since they both sit on the board of firm A. To deal with the aforementioned "reflection problem" (Manski, 1993), we leverage two sources of variation. First, we exploit the fact that corporate directors typically sit on multiple corporate boards. Denote by k a director who sits on the board of firm B, on which j but not i also sits. Directors i and j, as well as j and k, are then directly connected—often referred as a first-degree connection—and i and k are indirectly connected—often referred as a second-degree connection. Figure 1 illustrates graphically this simple example.

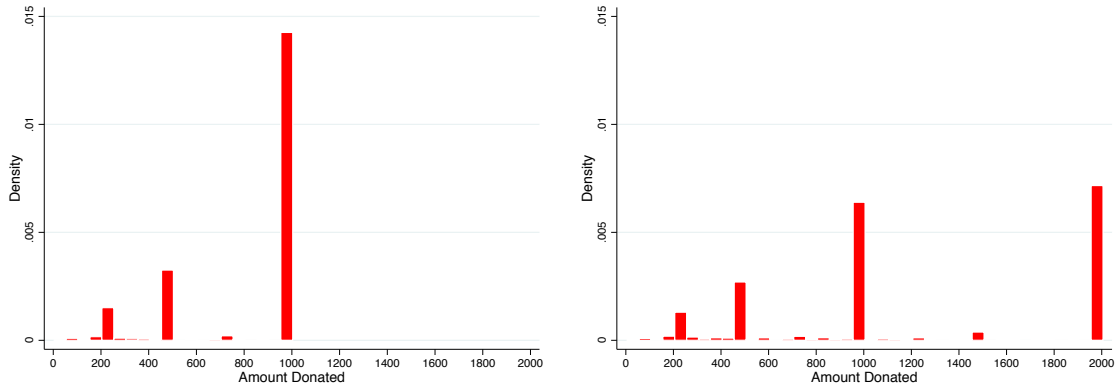
Figure 1: **Addressing the "reflection problem"**



Note: Directors i and j sit on the board of firm A, while directors j and k sit on the board of firm B.

Second, we exploit a shock to the ability to make campaign contributions of director k. Since this shock can affect i's contribution behavior only through its effect on j's contribution behavior, we can use it as an instrument for j's contributions to test whether j's contributions affect i's contributions. To construct this shock, we leverage the passage of the Bipartisan Campaign Reform Act (BCRA) of 2002, commonly known as the McCain-Feingold Act (see more details in Appendix S.3), which increased the limit on how much an individual could donate to a single Congressional candidate from $\$1,000$ (the limit in place until the 2002 election cycle) to $\$2,000$ (the new limit for the 2004 election cycle). The reform only affected those individuals who wanted to donate more than $\$1,000$ before the 2004 election cycle, but could not because of the existing limit. Figure 2 shows that, among directors of U.S. firms in our dataset, there was in fact considerable bunching at the $\$1,000$ contributions limit during the 2002 cycle, and how the distribution of their contributions changed during the 2004 cycle, when the limit was increased to $\$2,000$. Since different directors j were connected to directors k that varied in the extent to which they were constrained before the passage of the McCain-Feingold Act, we can effectively use how constrained were the latter directors in 2002 to instrument the change in contributions of the former directors between 2002 and 2004.

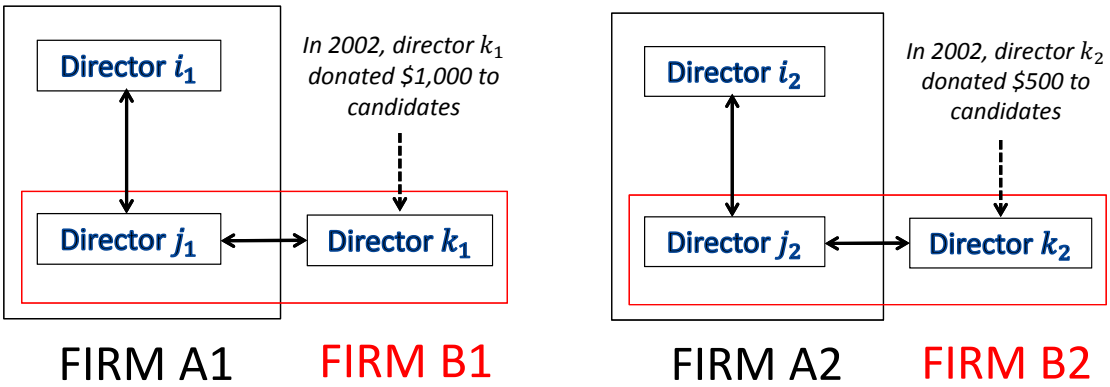
Figure 2: **Donations to Congressional candidates by corporate directors**



2002 election cycle 2004 election cycle

To better understand the intuition behind this identification strategy, consider the cases (a) and (b) in Figure 3. In case (a), director k_1 is constrained in her contribution behavior in 2002 since she donated to each of her candidates always up to the limit of \$1,000. Contrarily, in case (b), director k_2 is not constrained in 2002 since she donated to each of her candidates only \$500, well below the limit. In 2004, after the passage of the McCain-Feingold Act, we expect director k_1 to increase her contributions substantially, since now she can donate to her candidates up to \$2,000. On the contrary, we expect director k_2 not to alter her contributions significantly, since she could have donated more than \$500 even before the passage of the McCain-Feingold Act. In light of this, between 2002 and 2004 we expect director j_1 to be exposed to a greater increase in the contributions of her co-board members (in this example, originating from constrained director k_1 in firm B1) relative to director j_2 (who instead shares a board with unconstrained director k_2 in firm B2). If there are peer-effects at work between members on the same board, we expect director j_1 to increase her contributions more than director j_2, and, ultimately, director i_1 (who shares a board with director j_1 in firm A1) to increase her contributions more than director i_2 (who shares a board with director j_2 in firm A2).

Figure 3: **Variation exploited in the identification strategy to deal with the "reflection problem"**



(a) Constrained second-degree director k_1. (b) Unconstrained second-degree director k_2.

The use of shocks to second-degree connections as an instrument for first-degree connections' contributions solves the "reflection problem", but only translates the concern for correlated unobserved shocks affecting i and j to a concern for correlated unobserved shocks affecting i and k instead. In other words, our identification strategy relies on the assumption that any shock affecting director k's contribution behavior does not directly affect directors i's contribution behavior. To take care of the problem of possible correlated unobserved shocks, we first control in our baseline specification for whether i and j where also affected by the McCain-Feingold Act, thus dealing with the concern that whether k was constrained is correlated with whether i and j were also constrained in their contributions before the 2004 election cycle. Moreover, we show that our results are robust to the inclusion of industry-year specific fixed effects, thus dealing with the concern that the correlated contribution behavior of i, j, and k is driven by unobserved shocks that are specific to the industry of the firms on whose boards i, j, and k sit.

S.2 provides details on the estimating equations. Table S1 in the SI presents summary statistics for the estimating sample.

3 Results

Table 1 reports the estimates of peer effects in campaign contribution behavior. We separately analyze the effect of j's donations to candidates of a specific party on i's donations to candidates of the same party, and to i's donations to candidates of the

opposite party. Panel B presents the first stage estimates and shows that the shock generated by the McCain-Feingold Act led to significant effects in campaign contribution behavior among first-degree connections: relative to the pre-reform period, directors with a larger share of connections that were contributing up to the \$1,000 limit donate significantly higher amounts to Congressional races. Panel A presents the second-stage estimates, *i.e.,* our causal estimates of peer effects in campaign contribution behavior. We find evidence of significant peer effects in three out of four specifications. A \$1 increase in peers' contributions to Republican candidates increases a director's contributions to Republicans by \$0.163 and to Democrats by \$0.116 (both estimates are statistically significant, with $P < 0.1$). A \$1 increase in peers' contributions to Democratic candidates increases a director's contributions to Democrats by \$0.239 ($P < 0.05$) but has no significant effect on contributions to Republicans.

Our identification strategy account for any time-invariant unobservable factor that affects contributions of any triad of directors $i - j - k$. To take care of the possible presence of correlated time-varying unobservable shocks that are common to a triad of directors, we present estimates that control for industry-specific time-varying shocks. Specifically, we include a set of fixed effects both for the industry of director i and j's firm and for the industry of director j and k's firm. Table 2 shows that our results are qualitatively similar after accounting for unobserved shocks that are specific to the industry of the firms on whose boards i, j, and k sit.

Table 1: **Peer Effects in Campaign Contribution Behavior**

Contributions to:	(1) Republicans	(2) Republicans	(3) Democrats	(4) Democrats
Panel A: Second Stage - Dep. Var. is Contributions by i				
Contributions by j to Republicans	0.163*			0.116*
	(0.086)			(0.069)
Contributions by j to Democrats		-0.053	0.239**	
		(0.144)	(0.120)	
Std. dev. contributions by i	3,078	3,078	2,587	2,587
Std. dev. contributions by j	3,845	3,206	3,206	3,845
Panel B: First Stage - Dep. Var. is Contributions by j				
Shock k Republicans	192.394***			196.039***
	(60.739)			(60.785)
Shock k Democrats		139.600***	135.240***	
		(34.424)	(34.361)	
First stage F-stat	10.03	16.44	15.49	10.40
Observations	2,343,156	2,343,156	2,343,156	2,343,156

The top panel reports the second-stage estimates, and the bottom panel reports first-stage estimates. *Shock k Republicans/Democrats* is the share of donations made by director k to Republicans/Democrats in the previous election cycle that were up to the $\$1,000$ limit, interacted with an indicator for the 2004 election cycle. All regressions include fixed effects for the election cycle and for each triad of directors $i - j - k$ and controls for the share of donations made by director i in the previous election cycle who were up to the $\$1,000$ limit, its interaction with the $Post_t$ indicator, and for the same two variables for director j, as well as for the share of donations made by director k in the previous election cycle who were up to the $\$1,000$ limit. Standard errors in parentheses are double clustered by director i and k. $*p < 0.1, **p < 0.05, ***p < 0.01$

Table 2: **Peer Effects in Campaign Contribution Behavior with Industry Fixed Effects**

Contributions to:	(1) Republicans	(2) Republicans	(3) Democrats	(4) Democrats
Panel A: Second Stage - Dep. Var. is Contributions by i				
Contributions by j to Republicans	0.176*			0.133*
	(0.098)			(0.080)
Contributions by j to Democrats		-0.158	0.228**	
		(0.135)	(0.113)	
Std. dev. contributions i	3,078	3,078	2,587	2,587
Std. dev. contributions j	3,845	3,206	3,206	3,845
Panel B: First Stage - Dep. Var. is Contributions by j				
Shock k Republicans	285.306***			285.306***
	(56.693)			(56.693)
Shock k Democrats		174.294***	174.294***	
		(34.972)	(34.972)	
F-stat	7.81	15.75	15.11	8.03
Observations	2,343,156	2,343,156	2,343,156	2,343,156

The top panel reports the second-stage estimates, and the bottom panel reports first-stage estimates. All regressions include fixed effects for the industry of the firm in which directors i and j sit, interacted with an indicator for the 2004 election cycle, and fixed effects for the industry of the firm in which directors j and k sit, interacted with an indicator for the 2004 election cycle. See notes to Table 1 for a description of the other variables included in the regressions. Standard errors in parentheses are double clustered by director i and k. $*p < 0.1, **p < 0.05, ***p < 0.01$

4 Conclusion

This study estimates the magnitude of peer effects in U.S. campaign finance, focusing on the contributions to candidates to the U.S. Congress by members of the corporate boards of U.S firms in the S&P 1500 index over the period 2001-2004. By using an identification strategy that leverages a lift in campaign contribution limits, combined with the presence of partially overlapping groups of peers in the network, we provide evidence of significant positive peer effects among members of the U.S. corporate elites.

Our results have important implications for the debate on campaign finance reform. While our study focuses only on the lift to campaign contributions limits following the passage of the 2002 McCain-Feingold Act, the more recent Supreme Court's ruling in Citizens United v. Federal Election Commission (558 US 310 [2010]) further deregu-

lated campaign spending in U.S. elections. These increases in the amount of money that individuals are allowed to contribute have been accompanied by growing inequality in contributions, with a steadily increasing trend in campaign money coming from the richest subset of U.S. citizens (Bonica et al., 2013).Recent survey polls suggest that one in two Americans believe that the wealthy have more chances to influence the election process, with 84% of the surveyed individuals believing that money has too much influence in elections (Confessore and Thee-Brenan, 2015). Given that our sample is drawn from the population of the wealthiest Americans, our evidence on positive peer effects in corporate networks, together with the recent lifts to campaign contributions limits, can contribute to explain part of the increasing trend in inequality in campaign finance.

Lastly, while the corporate role of the individuals in our sample and their high likelihood of being active in campaign finance make them a particularly interesting case study, our results might not generalize to other populations. Indeed, other social networks may well be characterized by negative peer effects, as suggested by recent experimental evidence (Perez-Truglia and Cruces, 2017). Moreover, the channels behind the estimated positive peer effects, which our study is limited in its ability to identify, should be at the center of future studies.

References

Alatas, Vivi, Abhijit Banerjee, Arun G Chandrasekhar, Rema Hanna and Benjamin A Olken. 2016. "Network Structure and the Aggregation of Information: Theory and Evidence from Indonesia." *American Economic Review* 106(7):1663–1704.

Alt, James E., Amalie Jensen, Horacio Larreguy, David D. Lassen and John Marshall. 2017. "Contagious Political Concerns: Identifying Unemployment Information Shock Transmission Using the Danish Population Network." Working Paper.

Ansolabehere, Stephen, John M. de Figueiredo and James M. Jr. Snyder. 2003. "Why is There So Little Money in U.S. Politics?" *Journal of Economic Perspectives* 17(1):105–130.

Banerjee, Abhijit, Arun Chandrasekhar, Esther Duflo and Matthew O. Jackson. 2017. "Using Gossips to Spread Information: Theory and Evidence from a Randomized Control Trial.".

Bénabou, Roland and Jean Tirole. 2006. "Incentives and Prosocial Behavior." *American Economic Review* 96(5):1652–1678.

Bond, Robert M., Christopher J. Fariss, Jason J. Jones, Adam D.I. Kramer, Cameron Marlow, Jaime E. Settle and James H. Fowler. 2012. "A 61-million-person experiment in social influence and political mobilization." *Nature* 489:295–298.

Bonica, Adam. 2014. "Mapping the Ideological Marketplace." *American Journal of Political Science* 58(2):367–387.

Bonica, Adam. 2016*a*. "Avenues of Influence: On the Political Expenditures of Corporations and Their Directors and Executives." *Business and Politics* 18(4):367–394.

Bonica, Adam. 2016*b*. *Database on Ideology, Money in Politics, and Elections: Public version 2.0 [Computer file].* Stanford, CA: Stanford University Libraries https://data.stanford.edu/dime.

Bonica, Adam, Nolan McCarty, Keith Poole and Howard Rosenthal. 2013. "Why Hasn't Democracy Slowed Rising Inequality?" *Journal of Economic Perspectives* 27(3):103–124.

Bramoullé, Yann, Habiba Djebbari and Bernard Fortin. 2009. "Identification of peer effects through social networks." *Journal of Econometrics* 150(1):41–55.

Chwe, Michael Suk-Young. 2000. "Communication and coordination in social networks." *Review of Economic Studies* 67(1):1–16.

Confessore, Nicholas and Megan Thee-Brenan. 2015. "Poll Shows Americans Favor an Overhaul of Campaign Financing." *The New York Times* .

De Giorgi, Giacomo, Michele Pellizzari and Silvia Redaelli. 2010. "Identification of social interactions through partially overlapping peer groups." *American Economic Journal: Applied Economics* pp. 241–275.

Denzau, Arthur T. and Michael C. Munger. 1986. "Legislators and Interest Groups: How Unorganized Interests Get Represented." *American Political Science Review* 80(1):89–106.

Enikolopov, Ruben, Aleksey Makarin and Maria Petrova. 2017. "Social Media and Protest Participation: Evidence from Russia." Working Paper.

Ensley, Michael J. 2009. "Individual Campaign Contributions and Candidate Ideology." *Public Choice* 138(1/2):221–238.

Fouirnaies, Alexander and Andrew B. Hall. forthcoming. "How Do Interest Groups Seek Access to Committees?" *American Journal of Political Science* .

García-Jimeno, Camilo, Angel Iglesias and Pinar Yildirim. 2018. "Women, Rails, and Telegraphs: An Empirical Study of Information Diffusion and Collective Action." Working Paper.

Gerber, Alan S., Donald P. Green and Christopher W. Larimer. 2008. "Social Pressure and Voter Turnout: Evidence from a Large-Scale Field Experiment." *American Political Science Review* 102(1):33–48.

Halberstam, Yosh and Brian G. Knight. 2016. "Homophily, Group Size, and the Diffusion of Political Information in Social Networks: Evidence from Twitter." *Journal of Public Economics* 143:73–88.

Hall, Richard L. and Frank W. Wayman. 1990. "Buying Time: Moneyed Interests and the Mobilization of Bian in Congressional Committees." *American Political Science Review* 84(797-820).

Huckfeldt, Robert and John Sprague. 1995. *Citizens, Politics, and Social Communication: Information and Influence in an Election Campaign.* New York: Cambridge University Press.

Manski, Charles F. 1993. "Identification of endogenous social effects: The reflection problem." *Review of Economic Studies* 60(3):531–542.

McCarty, Nolan M., Keith T. Poole and Howard Rosenthal. 2006. *Polarized America: The Dance of Ideology and Unequal Riches*. Cambridge, MA: MIT Press.

Milyo, Jeffrey, David Primo, and Timothy Groseclose. 2000. "Corporate PAC campaign contributions in perspective." *Business and Politics* 2(2):75–88.

Nickerson, David W. 2008. "Is voting contagious? Evidence from two field experiments." *American Political Science Review* 102(1):49–57.

Ovtchinnikov, Alexei V. and Eva Pantaleoni. 2012. "Individual political contributions and firm performance." *Journal of Financial Economics* 105(2):367–392.

Perez-Truglia, Ricardo and Guillermo Cruces. 2017. "Partisan Interactions. Evidence from a Field Experiment in the United States." *Journal of Political Economy* 125(4):1208–1243.

Powell, Eleanor N. and Justin Grimmer. 2016. "Money in Exile: Campaign Contributions and Committee Access." *Journal of Politics* 78(4):974–988.

Siegel, David A. 2009. "Social networks and collective action." *American Journal of Political Science* 53(1):122–138.

Sinclair, Betsy. 2012. *The Social Citizen: Peer Networks and Political Behavior*. Chicago, IL: University of Chicago.

Snyder, James M. Jr. 1990. "Campaign Contributions as Investments: The U.S. House of Representatives, 1980-1986." *Journal of Political Economy* 98(6):1195–1227.

Snyder, James M. Jr. 1992. "Long-Term Investing in Politicians; Or, Give Early, Give Often." *Journal of Law and Economics* 35(1):15–43.

Stratmann, Thomas. 1991. "What Do Campaign Contributions Buy? Deciphering Causal Effects of Money and Votes." *Southern Economic Journal* 57(3):606–620.

SUPPORTING INFORMATION

S.1 Summary statistics

Table S1: Summary statistics

Variable	Mean	Std. Dev.	Min.	Max.
2002 Election Cycle:				
Active Donor	0.474	0.499	0	1
Active Donor Republicans	0.333	0.471	0	1
Active Donor Democrats	0.291	0.454	0	1
Donations	1,789	3,506	0	27,000
Donations Republicans	913	2,165	0	20,000
Donations Democrats	856	2,258	0	16,500
Share Constrained t-1	0.322	0.42	0	1
Share Constrained t-1 Rep.	0.257	0.403	0	1
Share Constrained t-1 Dem.	0.18	0.364	0	1
Observations		1171578		
2004 Election Cycle:				
Active Donor	0.482	0.5	0	1
Active Donor Republicans	0.364	0.481	0	1
Active Donor Democrats	0.273	0.445	0	1
Donations	2,905	5,581	0	27,000
Donations Republicans	1,672	3,739	0	20,000
Donations Democrats	1,089	2,873	0	16,500
Share Constrained t-1	0.32	0.425	0	1
Share Constrained t-1 Rep.	0.223	0.389	0	1
Share Constrained t-1 Dem.	0.207	0.386	0	1
Observations		1171578		

S.2 Methods

We focus on the universe of triads $i - j - k$ where i and k are indirectly connected through j in the 2002 election cycle (the last cycle before the passage of the McCain-Feingold Act) and in the 2004 election cycle (the first cycle with the new limit).[2] We

[2]We discard all the triads where i and k are also directly connected (besides being indirectly connected through j).

estimate the following structural equation:

$$\begin{aligned} Contributions_{it} =& \alpha + \beta \cdot Contributions_{jt} + \gamma_1 \cdot ShareConstrained_{i,t-1} + \\ & \gamma_2 \cdot ShareConstrained_{j,t-1} + \gamma_3 \cdot ShareConstrained_{k,t-1} + \\ & \gamma_4 \cdot Post_t \cdot ShareConstrained_{i,t-1} + \gamma_5 \cdot Post_t \cdot ShareConstrained_{j,t-1} + \\ & \delta \cdot Post_t + \theta_{ijk} + \epsilon_{ijt}, \end{aligned} \tag{S1}$$

where $Contributions_{st}$ represents the amount contributed by directors s, for $s = i$ and j, in election cycle t; $Post_t$ is an indicator for the 2004 election cycle; $ShareConstrained_{s,t-1}$ is the share of donations that reached the $\$1,000$ limit made by director s, for $s = i$, j, and k, in the previous election cycle $t-1$; θ_{ijk} is a fixed effect specific to the triad of directors $i - j - k$.

To instrument for $Contributions_{jt}$, we estimate the following reduced form first-stage equation:

$$\begin{aligned} Contributions_{jt} =& \pi \cdot Post_t \cdot ShareConstrained_{k,t-1} + \gamma_1 \cdot ShareConstrained_{i,t-1} + \\ & \gamma_2 \cdot ShareConstrained_{j,t-1} + \gamma_3 \cdot ShareConstrained_{k,t-1} + \\ & \gamma_4 \cdot Post_t \cdot ShareConstrained_{i,t-1} + \gamma_5 \cdot Post_t \cdot ShareConstrained_{j,t-1} + \\ & \delta \cdot Post_t + \theta_{ijk} + \eta_{ijt}, \end{aligned} \tag{S2}$$

where all the variables are defined as in equation (S1), $Post_t \cdot ShareConstrained_{k,t-1}$ is the excluded instrument, and π captures the differential impact of the increase in the contributions' limit for directors whose first-degree connections were more constrained relative to directors whose first-degree connections were less constrained in their contributions in the previous election cycle. The coefficient of interest in equation S1 is β, which captures the peer-effect in campaign contributions between directly connected directors, i.e., how the impact of a $1 increase in a co-board member's total contributions affects a director's contributions.

This difference-in-differences specification allows us to eliminate any time-invariant unobservable factor that affects contributions of any triad of directors $i - j - k$, which are captured by the $i - j - k$ triad fixed effects. Moreover, since whether i, j and k are constrained might be correlated, we control for the extent to which i and j are also constrained, by including $ShareConstrained_{s,t-1}$ and $Post_t \cdot ShareConstrained_{s,t-1}$, for $s = i$ and j, as controls. Furthermore, in robustness checks, we include both fixed

effects for the industry of director i and j's firm and for the industry of director j and k's firm, interacting both sets of fixed effects with the $Post_t$ indicator.[3] By including these sets of fixed effects, we exploit only within-industry variation, addressing concerns that *industry-specific*, time-varying shocks correlated with the extent to which k is constrained confound the estimates in (S1). After the inclusion of these sets of controls, we find the identifying assumption—that the instrument affects i's contributions behavior only through its effect on j—plausible.

Note that a given director i enters the data as many times as the number of $i-j-k$ triads she is associated with. Similarly, a given director k enters the data multiple times. Therefore, to account for the fact that observations are not independent, throughout the analysis, the standard errors are adjusted for two-way clustering within director i and within director k. Moreover, to give equal weight to each director in the network independently from her number of second-degree connections, we weight each observation by $1/N_i$, where N_i is i's number of second-degree connections. Last, we winsorize the data by limiting extreme values above the 99th percentile to reduce the effect of outliers.

S.3 Background on the law

On March 27, 2002, President Bush signed into law the Bipartisan Campaign Reform Act of 2002 (BCRA), Public Law No. 107-155, commonly known as the McCain-Feingold Act. The law became effective on 6 November 2002, and the new legal limits on contributions became effective on January 1, 2003. The law amended existing regulation on the financing of political campaigns. Its key features were: regulation of the use of "soft money" in elections; definition of issue advertisement; changes to the existing contribution limit. In particular, the contribution limits for individuals and political committees to federal candidates were raised from $1,000 per election to $2,000 per election. See here https://ballotpedia.org/Bipartisan_Campaign_Reform_Act for details on the law.

[3] We use the 2-digits industry SIC code to identify industries.