

Institutional Investor Voting Behavior: A Network Theory Perspective

Law Working Paper N° 393/2018

July 2018

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Abstract

This paper shows how network theory can improve our understanding of institutional investors' voting behavior and, more generally, their role in corporate governance. The standard idea is that institutional investors compete against each other on relative performance and hence might not cast informed votes due to rational apathy and rational reticence. In other words, institutional investors have incentives to free ride, instead of "cooperating" and casting informed votes. We show that connections of various nature among institutional investors, whether from formal networks, geographical proximity or common ownership, and among institutional investors and other agents, such as proxy advisors, contribute to shaping institutional investors' incentives to vote "actively." They also create intricate competition dynamics: competition takes place not only among institutional investors (and their asset managers), but also at the level of their employees and among "cliques" of institutional investors. Employees, who strive for better jobs, are motivated to obtain more information on portfolio companies than may be strictly justified from their employer institution's perspective, and to circulate it within their network. Cliques of institutional investors compete against each other. Because there are good reasons to believe that cliques of cooperators outperform cliques of non-cooperators, the network-level competition might increase the incentives of institutional investors to collect information. These dynamics can enhance institutional investors' engagement in portfolio companies and also shed light on some current policy issues such as the antitrust effects of common ownership and mandatory disclosures of institutional investors' voting.

Keywords: Institutional Investors, Corporate Governance, Network Theory, Cliques.

JEL Classifications: G20, G28, G30, G34

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Abstract

This paper shows how network theory can improve our understanding of institutional investors' voting behavior and, more generally, their role in corporate governance. The standard idea is that institutional investors compete against each other on relative performance and hence might not cast informed votes due to rational apathy and rational reticence. In other words, institutional investors have incentives to free ride, instead of "cooperating" and casting informed votes. We show that connections of various nature among institutional investors, whether from formal networks, geographical proximity or common ownership, and among institutional investors and other agents, such as proxy advisors, contribute to shaping institutional investors' incentives to vote "actively." They also create intricate competition dynamics: competition takes place not only among institutional investors (and their asset managers), but also at the level of their employees and among "cliques" of institutional investors. Employees, who strive for better jobs, are motivated to obtain more information on portfolio companies than may be strictly justified from their employer institution's perspective, and to circulate it within their network. Cliques of institutional investors compete against each other. Because there are good reasons to believe that cliques of cooperators outperform cliques of non-cooperators, the network-level competition might increase the incentives of institutional investors to collect information. These dynamics can enhance institutional investors' engagement in portfolio companies and also shed light on some current policy issues such as the antitrust effects of common ownership and mandatory disclosures of institutional investors' voting.

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I. Introduction

How can we predict whether singers will be rewarded by a standing ovation at the end of their opera performance? The problem can be framed as a binary choice of the audience members between standing up and applauding and remaining seated. By standing or sitting, members of the audience can send a binary signal (positive or not-so-positive) that reveals members' preferences. According to standard economic theory,¹ to predict whether a standing ovation is triggered one ought to investigate the preferences of the individuals composing the audience and assess the quality of the opera. What is known in the network theory literature as the Standing Ovation Problem suggests that this approach is inadequate. Predicting the behavior of interconnected agents requires accounting for patterns of connections among them.² In other words, the networks linking audience members one to the other and to other agents are key to whether they will stand or sit, a basic intuition that can be extended to analyze a number of social settings.

This article is the first legal analysis that builds on this intuition and uses the tools of network theory to explain the incentives and behavior of one of the key players in today's corporate governance, namely institutional investors (hereinafter also institutions). More specifically, we show that network theory can help understand how institutional investors determine whether to vote with or against management.³

Pension funds, whether state-sponsored or privately sponsored, mutual funds, banks' trust departments, hedge funds, and insurance companies are today the predominant holders

¹ For a clear formulation of this standard view, see e.g. Geoffrey Brennan & Gordon Tullock, *An Economic Theory of Military Tactics: Methodological Individualism at War*, 3 J. ECON. BEHAVIOR & ORG. 225, 225 (1982) (“[t]wo aspects of economic method are relevant here. The first is the individualistic perspective...[T]he *ultimate* unit of analysis is always the individual; more aggregative analysis must be regarded as only provisionally legitimate.”[emphasis original]). For a critique, see Alessandro Romano, *Micro-Meso-Macro Comparative Law: An Essay on the Methodology of Comparative Law*, 17 CHI. KENT J. INT. & COMP. L. 1, 5-7 (2016) (discussing the limits of such approach, and how it is affected by a problem of infinite regress). To be sure, economic theory has long recognized the importance of patterns of interconnections among economic agents and firms. See e.g. Abhijit V. Banerjee, *A Simple Model of Herd Behavior*, 107 QUART. J. ECON. 797, *passim* (1992) (on herding and information cascades); Daron Acemoglu, Asuman Ozdaglar & Alireza Tahbaz-Salehi, *Systemic Risk and Stability in Financial Networks*, 105 AM. ECON. REV. 564, 564 (2015) (“Since the global financial crisis of 2008, the view that the architecture of the financial system plays a central role in shaping systemic risk has become conventional wisdom”).

² For a brief introduction to the Standing Ovation Problem see John H. Miller, & Scott E. Page, *The Standing Ovation Problem*, 9 COMPLEXITY 8 (2004).

³ Although shareholders can vote “for,” “against,” “withhold” or “abstain,” shareholder voting can be framed as a binary choice: for any practical purpose, “withhold” and “abstain” votes can be considered for or against management, depending on whether they are to be counted for quorum purposes.

of shares in US (and non-US) listed companies.⁴ Whether they stay passive or actively use their governance rights to influence portfolio companies' strategies can make an enormous difference for the prospects of capitalism in the US. This is why legal scholars and financial economists have since long enquired into how such players behave, and can be expected to behave, *qua* shareholders.⁵ We argue that the traditional atomistic focus on the incentives of *individual* institutional investors is inadequate to understand institutional investors' role in corporate governance. Like ties for audience members at the end of an opera, institutions' and their agents'⁶ interconnectedness is a key factor in shaping institutions' behavior vis-à-vis their portfolio companies and, more specifically, their voting decisions.

To give a better sense of how interconnections influence behavior, let us exploit the standing ovation analogy further.⁷ First, consider the case of someone who has never seen an opera and is in the company of acquaintances that are renowned opera experts: she might decide to stand even if she has not enjoyed the show: if the experts signal their appreciation of the show by standing, it is unlikely that she will remain seated at the risk of revealing her ignorance. That immediately shows that individuals' taste is not the only factor affecting their behavior: personal ties as well as the tastes of the individuals one is connected with can influence one's decision on whether to stand or to sit. Like connections among audience members can determine the outcome, so connections of various kinds among institutional investors can lead to different voting decisions than they would reach independently of others: think of personal links among different institutions' corporate governance teams due to affiliation to the same industry body, social club, and so on.

Second, the decision to stand might be affected by the personal ties that members of the audience have with the artists or the organizers: the fiancé of the soprano is most likely to stand no matter what, in the hope of triggering the standing ovation. Hence, not only ties with

⁴ See e.g. Jan Fichtner, Eelke M. Heemskerk & Javier Garcia-Bernardo, *Hidden Power of the Big Three? Passive Index Funds, Re-Concentration of Corporate Ownership, and New Financial Risk*, 19 BUS. & POL. 298, 298, 302-06 (2017) (presenting extensive data on institutional investors patterns of ownership).

⁵ See *infra* Part III.

⁶ Some institutions manage their assets internally, through their own employees, but in many cases (and always in the case of mutual funds), they outsource asset management to a separate asset manager, who, especially in the case of pension funds, may or may not be in charge of making the choices that are relevant for the governance of portfolio companies. While the distinction outlined here is most relevant for regulatory purposes (see John D. Morley, *The Separation of Funds and Managers: A Theory of Investment Fund Structure and Regulation*, 123 YALE L.J. 1228, *passim* (2014)), in this article, unless we specify otherwise, we refer to institutional investors to include their external agents and to their voting decisions as those made by the agent in charge thereof, be it an employee of the institution or an external asset manager.

⁷ As Miller and Page note (Miller & Page, *supra* note 2, at 9), the Standing Ovation Problem is in fact an apt metaphor for situations in which interconnected agents make binary decisions.

other members of the audience are relevant, but also connections with other agents. Like audience members' connections with artists and organizers can trigger a standing ovation, so institutions' connections and business relationships with portfolio firms, and even the mere prospect thereof, can prompt a pro-management vote.⁸

Third, when deciding whether to stand, one might take information gathered before the opera into account. Reading an article of a worldwide famous critic stating that the opera is a disgrace might induce an agent without strong preferences to sit in order to signal that his tastes are as sophisticated as the critic's. Similar to how critics' reviews can influence audience members, so can proxy advisors and activist hedge funds, in different ways, affect institutions' voting decisions.⁹

Fourth, an individual that does not have a strong opinion about the opera will be more likely to stand if she observes that many people are sending the signal "stand." From this perspective, where the individual is sitting becomes important, because it determines whose signals she can observe (and who can observe her signal). If she is sitting in the last row, she will be able to observe the signal sent by all the other crowd members, but at the same time hardly anyone will notice her signal. On the other hand, if she is sitting in the first row, all the audience members that are sitting in the back rows will observe her signal, whereas she cannot observe the signal of others without awkwardly turning back. In a similar fashion, the geographical distribution of institutional investors, whether decentralized or clustered in a given area, can affect their voting behavior.¹⁰

Last, whether a standing ovation is triggered depends on the opera house architecture.¹¹ For instance, if there are boxes, some members of the audience will be able to observe everyone else's signal, while not being as easily observed by those in the stalls. The

⁸ See e.g. Rasha Ashraf, Narayanan Jayaraman & Harley E. Ryan, *Do Pension-Related Business Ties Influence Mutual Fund Proxy Voting? Evidence from Shareholder Proposals on Executive Compensation*, 47 J. FIN. & QUANTITATIVE ANALYSIS 567, 568 (2012) (showing that funds that are connected to a corporation via business ties cast pro-management votes on executive compensation matters more often); Dragana Cvijanović, Amil Dasgupta, & Konstantinos E. Zachariadis, *Ties That Bind: How Business Connections Affect Mutual Fund Activism*, 71 J. FIN. 2933, 2934 (2016) (finding that mutual fund families that are connected via business ties with a corporation vote with the management more often in contested situations).

⁹ See *infra* note 77 and accompanying text.

¹⁰ Cf. Harrison Hong, Jeffrey D. Kubik & Jeremy C. Stein, *Thy Neighbor's Portfolio: Word-of-Mouth Effects in the Holdings and Trades of Money Managers*, 60 J. FIN. 2801, 2802 (showing that fund managers located in the same area tend to trade in a relatively similar way), and Veronika K. Pool, Noah Stoffman & Scott E. Yonker, *The People in Your Neighborhood: Social Interactions and Mutual Fund Portfolios*, 70 J. FIN. 2679, 2679 (2015) (finding that "socially connected fund managers have more similar holdings and trades"). See Section IV.C for a more detailed discussion of the relationship between the geographical location of institutional investors and their voting behavior.

¹¹ There are of course many other factors that should be taken into account, such as theater lights, but for our purposes, it is superfluous even to mention them.

structure of the opera house can be analogized to the institutional framework: rules that prohibit coordination or make it more expensive will affect the outcome.

The Standing Ovation Problem also sheds light on an important but often overlooked property of social systems, namely that sometimes the tail (of a distribution) can wag the dog.¹² Say, for instance, that *the average* perception of the opera's quality is not high enough to justify a standing ovation. Despite that, a standing ovation can still be triggered, provided that several well-connected members of the audience send a "stand" signal that is visible by many. In this vein, to increase the likelihood of a standing ovation at the end of the opera, self-confident organizers might assign front row seats to renowned experts that are likely to appreciate the show

To summarize, we argue that the voting behavior of institutional investors is affected by their connections with other institutional investors and more generally with the agents that populate their networks (e.g. proxy advisors, portfolio companies' management, etc.). Our approach to institutional investors' role in corporate governance builds upon a rich body of literature, as social scientists have long recognized that the actions of agents are shaped by their connections with other agents, by these other agents' connections, and so on. This article is grounded on the intuition that this is true also for institutional investors, an intuition that recent empirical studies corroborate.¹³ Thus, network theory becomes a natural framework for the study of institutional investors' voting behavior.

Network theory is a lively area of research which lies at the intersection of many disciplines, including economics, physics, biology, sociology and computer science. It has helped shed light on a wide range of very diverse phenomena such as criminal and terroristic organizations,¹⁴ professional communities,¹⁵ predator-prey interactions,¹⁶ and the diffusion of

¹² See Miller & Page *supra* note 2, at 9 (stating that the "tendency of social scientists to rely on means suggests that we may easily miss some key drivers of social systems—when social influences are present, the tail (of the distribution) may wag the dog").

¹³ See Alan D. Crane, Andrew Koch & Sébastien Michenaud, *Institutional Investor Cliques and Governance*, J. FIN. ECON. (forthcoming 2018); Pool, Stoffman & Yonker, *supra* note 10, *passim*.

¹⁴ See e.g. Matthew J. Salganik, & Douglas D. Heckathorn, *Sampling and Estimation in Hidden Populations Using Respondent-driven Sampling*, 34 SOC. METHODOLOGY 193 (2004) (studying networks of criminals); Valdis E. Krebs, *Mapping Networks of Terrorist Cells*, 24 CONNECTIONS 43 (2002).

¹⁵ See e.g. James Coleman, Elihu Katz & Herbert Menzel, *The Diffusion of an Innovation Among Physicians*, 20 SOCIOMETRY 253 (1957) (studying networks of physicians).

¹⁶ See e.g. Neo D. Martinez, *Constant Connectance in Community Food Webs*, 139 AM. NATURALIST 1208 (1992).

epidemics and sexually transmitted diseases.¹⁷ In the area of corporate governance and financial regulation, network theory has already been used, for example, to understand the diffusion of poison pills¹⁸ and golden parachutes¹⁹ and to analyze the effects of Security and Exchange Commission (SEC) sanctions.²⁰

Generally, network theory addresses three main questions: What is the architecture of connections among a given set of players? Why has that architecture emerged? What are the effects of the observed pattern of connections?²¹ In this paper, we focus mainly on the last question. More precisely, we show how network theory may help understand some of the dynamics that reduce institutional shareholders passivity.

To do so, Part II sets the scene by sketching out the function of shareholder voting and how information and coordination costs may be in the way of ensuring that shareholders make the “right” decisions for the corporation. Next, Part III looks into the phenomenon of voting by the predominant users of voting rights in today’s corporations, namely institutional investors. We briefly review some widely explored solutions to collective action problems affecting institutions’ propensity to cast informed votes.

In part IV, which is the core of the paper, we use network theory to frame institutional shareholders’ voting behavior at U.S. corporations²² and to identify additional ways by which institutions can address collective action problems and resolve the trade-off between minimizing the costs of becoming informed and independent decision-making. To do so, we highlight that institutional investors are embedded in a network formed by various agents, while also being connected with each other through a complex web of formal, geographical and co-ownership ties. We also show how these connections affect institutional investors’

¹⁷ See e.g. Alden S. Klov Dahl et al., *Social Networks and Infectious Disease: The Colorado Springs Study*, 38 SOC. SCI. & MED. 79 (1994); Sunetra Gupta, Roy M. Anderson & Robert M. May, *Networks of Sexual Contacts: Implications for the Pattern of Spread of HIV*, 3 AIDS 807 (1989).

¹⁸ Gerald F. Davis, *Agents Without Principles? The Spread of the Poison Pill through the Intercorporate Network*, 36 ADMIN. SCI. Q. 583, 591 (1991). In this widely cited article, beside showing that network theory can help understanding the pattern of diffusion of the poison pill defence, Davis argues that agency theory “fails to consider the broader intercorporate environment in which management acts. Agency theory implicitly relies on an atomistic or undersocialized view of managerial action as largely divorced from social context.”

¹⁹ , Gerald F. Davis & Henrich R. Greve, *Corporate Elite Networks and Governance Changes in the 1980s*, 103 AM. J. SOCIOLOGY 1, 1 (1997) (showing that the adoption of golden parachutes spreads through geographical ties).

²⁰ Eugene Kang, *Director Interlocks and Spillover Effects of Reputational Penalties from Financial Reporting Fraud*, 51 ACADEMY MGMT J. 537, 537 (2008) (showing that SEC sanctions have significant negative spillovers on innocent firms that are connected to the guilty firm via director interlocks).

²¹ SANJEEV GOYAL, CONNECTIONS: AN INTRODUCTION TO THE ECONOMICS OF NETWORKS, 1 (2012).

²² Importantly, the analysis presented here is not necessarily valid beyond the U.S. Just like an ecological network is subject to constraints and laws of interactions, the regulatory framework in which the agents operate shapes the network in which institutional investors are embedded. Thus, different laws and different social norms can produce different dynamics.

incentives and ultimately their voting behavior. It does not only take place among institutional investors, but also at a lower level among employees of institutional investors competing for better jobs, and at a higher level among groups, and more precisely cliques,²³ of institutional investors competing to outperform other cliques. The dynamics at the higher and lower level can enhance (or hinder) the level of institutional investor engagement.

Part V discusses policy implications. We show how network theory sheds light on two policy debates: (i) horizontal shareholdings and (ii) voting disclosure rules. A horizontal shareholding exists when an investor has significant stakes in firms that are horizontal competitors.²⁴ Recent studies suggest that passive institutional investors' horizontal shareholdings might lessen firms' incentives to compete.²⁵ As such shareholdings are ever more common,²⁶ the antitrust implications of horizontal shareholdings must be taken seriously.²⁷ In this vein, legal scholars have proposed radical changes of the status quo to reduce the level of horizontal shareholdings within the US economy.²⁸ Framing the problem of institutional investor involvement in corporate governance in a network perspective allows us to show that these proposals are misguided.²⁹

We also explain why the rules on voting disclosure directly affect the extent to which institutional investors monitor their portfolio companies. Preventing institutional investors from disclosing their votes might *increase* the cost that they must bear to monitor their portfolio companies, whereas extending disclose duties might do the opposite.

Importantly, as our summary conclusion (Part VI) reiterates, this is an exploratory study. It remains predominantly positive and descriptive, and we do not have the ambition to

²³ For a formal definition of cliques *see infra* note 102 and accompanying text.

²⁴ For an extensive treatment of the problem *see* Einer Elhauge, *Horizontal Shareholding*, 129 HARV. L. REV. 1267 (2016), and Fiona M. Scott Morton & Herbert J. Hovenkamp, *Horizontal Shareholding and Antitrust Policy*, YALE L.J. (forthcoming 2018).

²⁵ José Azar, Martin C. Schmalz & Isabel Tecu, *Anti-Competitive Effects of Common Ownership*, J. FIN. (forthcoming 2018) (manuscript at 3) (finding evidence that horizontal shareholding is associated with higher prices in the airline industry); *but see* Pauline Kennedy et al., *The Competitive Effects of Common Ownership: Economic Foundations and Empirical Evidence* 23 (2017), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3008331 (using a dataset comparable to Azar, Schmalz and Tecu's and finding that horizontal shareholding does not lead to higher prices). Additional evidence relates to the banking sector. *See* José Azar, Sahil Raina & Martin C. Schmalz, *Ultimate Ownership and Bank Competition* 4 (2016), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2710252.

²⁶ *See infra* note 55.

²⁷ Elhauge, *supra* note 24, at 1268 ("There is every reason to think that the problem of horizontal shareholding is pervasive across our economy because institutional investors like BlackRock, Vanguard, Fidelity, and State Street now own around 80% of all stock in S&P 500 corporations").

²⁸ The main proposals have been advanced by Elhauge, *supra* note 24, *passim* and Eric A. Posner, Fiona M. Scott Morton & E. Glen Weyl, *A Proposal to Limit the Anti-Competitive Power of Institutional Investors*, ANTITRUST L.J. (forthcoming). We discuss these proposals in more detail in Part V.

²⁹ *See infra* Section V.A.

understand every nuance of the network in which institutional investors are embedded. This network is immensely complex, populated as it is by a vast array of different actors with different characteristics and incentives. Uncovering all its facets and dynamics would be for a much more ambitious and longer-term research project. Our purpose is more modestly to open a window on a promising way to frame a core corporate governance issue and suggest that scholars and policymakers abandon the atomistic focus on individual institutional investors, which most of them have been clinging on for decades.

II. Setting the Scene: Corporate Governance and Informed Voting

One of the main goals of corporate governance and corporate law is to maximize the benefits of two of a corporation's core features: delegation of management and investor ownership.³⁰ Delegated management allows for decisions to be taken by specialized agents who may not have the financial means to own the company.³¹ Investor (or shareholder) ownership ensures that a relatively homogenous category of stakeholders has ultimate control over the company.³²

Reaching that goal, in turn, implies minimizing the agency costs arising from management delegation as well as the costs of having investors (shareholders) exercise their prerogatives as owners.³³ Agency costs arise from directors' and managers' conflicts of interest, misaligned incentives, and from their biases or incompetence. The costs of shareholder engagement stem from the need to circulate information to shareholders (and therefore the public at large) and to have them process it despite their collective action problems, their necessarily lower degree of company-specific knowledge, and, often, their conflicts of interest.³⁴ We dub these "voting costs," because throughout the paper we focus mainly on shareholder voting as an essential and recurrent form of shareholder engagement.

Shareholder voting is justified for matters that would give rise to higher delegation costs if left to boards or managers. Intuitively, that will be the case for matters in which the

³⁰ See e.g. John Armour, Henry Hansmann & Reinier Kraakman, *Agency Problems and Legal Strategies*, in JOHN ARMOUR, LUCA ENRIQUES ET AL., *THE ANATOMY OF CORPORATE LAW* 29, 29-31 (3d ed. 2017).

³¹ See e.g. ROBERT C. CLARK, *CORPORATE LAW* 23 (1986).

³² See e.g. HENRY HANSMANN, *THE OWNERSHIP OF THE ENTERPRISE* 62-3 (1996).

³³ *Id.* at 35-44; Zohar Goshen & Richard Squire, *A New Theory for Corporate Law and Governance*, 117 *COLUM. L. REV.* 767, 796 (2017); John Armour, Luca Enriques, Henry Hansmann & Reinier Kraakman, *The Basic Governance Structure: The Interests of Shareholders as a Class*, in ARMOUR, ENRIQUES ET AL., *supra* note 30, 49, 49.

³⁴ Nowadays, the out-of-pocket expenses and the opportunity costs of casting votes at a shareholder meeting have become trivial thanks to the use of information and communication technology.

interests of managers and shareholders inherently conflict or may lead to shareholder disenfranchisement, such as when it comes to the very selection of board members. In addition, there can be matters whose impact on the company's value may be better evaluated by a large number of detached, unbiased shareholders than by managers, who may have more access to hard-to-convey or commercially sensitive private information but at the same time are more likely prone to confirmation bias, hyperopia, and echo-chamber phenomena.³⁵

When publicly available information is not skewed or misleading and shareholders can use it in a decision-making process similar to the one they use to decide whether to invest in a given stock, their collective decision-making via voting can lead to better outcomes than a board's decision. That is an application of Condorcet's Jury Theorem (CJT), according to which, so long as each individual in a group has a higher than 50 percent chance of being right, the probability that a decision taken by a majority of that group is right approaches one as the number of group members tends to infinity.³⁶

The CJT works on a few assumptions: voters need to be informed, rational (able to reach the logical conclusion on how to vote based on the information they have), and sincere.³⁷ Moreover, the ability of the group to make the right decision depends on whether its members vote independently one from the other.³⁸ This condition only rarely holds in real life, as in most cases there are pre-voting communications among group members. In itself, this fact alone does not impair the applicability of the CJT, because groups outperform individuals even when there is strong dependence among voters.³⁹ However, it is important at this stage to remark that the effect of this pre-voting information flow is twofold. On the one

³⁵ See e.g. Robert B. Thompson & Paul H. Edelman, *Corporate Voting*, 62 VAND. L. REV. 129, 149-50 (2009); see also Luca Enriques, Ronald J. Gilson & Alessio M. Paces, *The Case for an Unbiased Takeover Law (with an Application to the European Union)*, 4 HARV. BUS. L. REV. 85, 94 (2014) (discussing managers' cognitive dissonance and hyperopia).

³⁶ See e.g. David Austen-Smith & Jeffrey S. Banks, *Information Aggregation, Rationality, and the Condorcet Jury Theorem*, 90 AM. POL. SCI. REV. 34, 34 (1996).

³⁷ See e.g. Michael C. Schouten, *The Mechanisms of Voting Efficiency*, 2010 COLUM. BUS. L. REV. 763, 773.

³⁸ *Ibid.* More precisely, the probability of making the correct choice does not approach one when the group size tends to infinity if the votes are not independent. See Shmuel Nitzan & Jacob Paroush, *Collective Decision Making and Jury Theorems*, in 1 OXFORD HANDBOOK OF LAW AND ECONOMICS 494, 503-504 (Francesco Parisi ed. 2017).

³⁹ See Sven Berg, *Condorcet's Jury Theorem Revisited*, 9 EUR. J. POL. ECON. 437, 438-39 (1993) (noting that this is subject to additional conditions that make this statement not universally valid) More generally, to iterate, the CJT is subject to a number of caveats. For instance, it is generally postulated that the members of the group have the same competences (i.e. the same probability of being right). If this hypothesis is relaxed, it can happen that the best members of the group outperform the group as a whole, or even that increasing the size of the group reduces accuracy (Nitzan & Paroush *supra* note 38, at 496-7). However, and this is the most relevant point, the group still outperforms the *average* member of the group. Note also that even when the competences of group members are heterogeneous, the accuracy of the group tends to one when the size of the group tends to infinity (*Id.* at 496).

hand, it increases the competencies of the group members and improves their information set.⁴⁰ On the other hand, pre-voting communication decreases the probability that the group comes to the right decision due to psychological factors that reduce the independence of group members' votes.⁴¹

Intuitively, mechanisms that reduce voting costs are an important component of an effective corporate governance system. Chief among voting costs is the cost of becoming informed, that is, of acquiring, processing and assessing the implications of relevant information. Such costs are borne by each shareholder, but the benefits of their informed voting accrue to all pro rata. That creates a collective action problem: absent some form of coordination, each shareholder will have an incentive to free ride on other shareholders' investment in information. And assuming free riding away for a moment, it is easy to see that, with thousands of shareholders in a listed corporation, if each of them becomes informed independently of others, the multiplication of individual efforts will lead to a waste of resources. In this case as well, the only alternative is some form of coordination.

Yet, if shareholders coordinate in the process of gathering and assessing information, the outcome will be a loss in voters' independence. As we have seen, that might reduce the ability of the group to make the right choice.⁴² There can thus be a trade-off between the goal of overcoming collective action problems and minimizing information gathering and processing costs, on the one hand, and independent decision-making on the other: if information is gathered and processed by one on behalf of all, let alone when the decision itself on how to vote is delegated, formally or informally, to one individual or a small group, then information costs are minimized, but the advantage from having a large number of scattered shareholders making the decision may vanish.

An additional, often overlooked factor is that the CJT considers the information set of the individuals as exogenous. However, individuals have less incentive to collect information when the size of the group is large:⁴³ in other words, there is also a trade-off between group size and agents' information:⁴⁴ in larger groups it is possible to aggregate information

⁴⁰ Nitzan & Paroush, *supra*, note 38, at 503-4.

⁴¹ *Id.* at 503 ("social pressures, false persuasive arguments, threats, influential power or leadership charisma enhance conformity").

⁴² In fact, even if groups remain superior to individual decision makers when the votes are not independent, positive correlation of the votes does reduce group accuracy. See Berg, *supra* note 39, at 444.

⁴³ Bryan C. McCannon & Paul Walker, *Endogenous Competence and a Limit to the Condorcet Jury Theorem*, 169 PUB. CHOICE 1, 1 (2016) ("if individual competence is endogenous, then increases in the group size encourage free riding. This trades off with the value of information aggregation").

⁴⁴ *Id.*

independently collected by more individuals, which increases the likelihood that the group reaches the correct decisions. Other things equal, though, members of larger groups have less incentive to collect information, thus reducing the likelihood that the group reaches the correct decision. There are therefore complex interactions between information, coordination and duplication costs, on the one hand, and the number and kind of agents involved in a decision and the amount of information that they produce and process, on the other. These interactions are mediated by pre-voting communications and, clearly, by the channels through which information flows. The rest of the paper aims to cast new light on how pre-voting communications and the channels through which information can flow affect these trade-offs in the context of shareholder voting. In particular, we focus on the incentives of institutional investors to “improve” their information set (that is, to gather information in order to cast an informed vote). By applying network theory to the voting dynamics of institutional investors, we show that the patterns of connections among institutional investors and between institutional investors and other agents populating their network have a significant impact on these trade-offs, and ultimately on institutional investors’ voting behavior.

III. Explaining voting by institutional investors: the atomistic approach

Corporate voting only makes sense if shareholders can be expected to vote on an informed basis, that is, having gathered the information that is necessary to make oneself an idea of whether approval of a given shareholder meeting proposal will increase the value of the company. If this condition is unfulfilled, there is no reason to expect that the majority of shareholders will get it right any more than if a coin were flipped. Yet, it is far from obvious that shareholders in a corporation have sufficient incentives to cast informed votes. In fact, what went on for decades at US companies was that shareholders, whether individuals or institutions, overwhelmingly voted with management or did not bother voting at all.⁴⁵ Such “shareholder passivity,”⁴⁶ was informed by rational apathy: becoming informed on how to vote was (and is) costly; with ownership widely dispersed, the likelihood of one’s vote being pivotal was extremely low; and the benefits from successfully casting an informed vote would be shared pro-rata with all other shareholders. It was therefore rational to do nothing or, if anything at all was done, to vote with managers.⁴⁷

⁴⁵ See e.g. CLARK, *supra* note 31, at 94 (1986).

⁴⁶ *Id.*

⁴⁷ See e.g. Edward B. Rock, *The Logic and (Uncertain) Significance of Institutional Investor Activism*, 79 GEO. L.J. 445, 453-57 (1991).

Formally, rational apathy can be explained as follows: to cast an informed vote, a shareholder A holding a fraction of shares w_i in company i has to bear a cost c_i to acquire, process, and evaluate all the relevant information. Whoever casts an informed vote does so because she expects thus to increase the value of the portfolio company. Let b_i denote the aggregate expected benefits (the increase in market capitalization) of an informed vote.⁴⁸ If $c_i > w_i b_i$, A will not collect information. Instead, when $c_i < w_i b_i$, A would be inclined to become informed and obtain an expected payoff of $w_i b_i - c_i > 0$.⁴⁹

With the concentration of ownership in the hands of institutional investors that has taken place in the last sixty years,⁵⁰ incentives would seem to play against informed voting even more than in the past. That is because institutional investors compete on *relative* performance,⁵¹ *i.e.* on how well they do compared to their competitors: incurring costs to improve performance at a portfolio company will worsen an individual institutional investor's performance compared to others'.⁵² In our previous illustration, if A is an institutional investor, it might decide not to invest in information even when $c_i < w_i b_i$, so long as its competitors, such as institutional investors B and C, hold a comparable (or for simplicity, the exact same) percentage of shares in company i . In fact, B and C's payoff would equal $w_i b_i$. If A decides to invest in information, B and C would gain a competitive advantage over A, in the form of a higher return on its investment in i , because $c_i > 0$. That is what Gilson and Gordon call rational reticence.⁵³ Clearly, stakes are not always similar across institutional investors, and when an institutional investor holds a disproportionately large w compared to its peers, rational reticence is less likely.⁵⁴ Despite this, rational

⁴⁸ Note that a shareholder can expect *her vote* to increase the value of a company (*i.e.* $b_i > 0$) only when it is pivotal, *i.e.* when it affects the voting outcome. For instance, assume that A is against a given management proposal, but knows for sure that the proposal will be passed despite her opposition. In that case, the benefit of casting an informed vote is 0. The same is true if it is certain that the management proposal will be rejected even without A's opposition. In other words, the lower the likelihood of being pivotal, the lower the incentives to become informed and cast one's vote.

⁴⁹ Most recently, *see e.g.* Lucian A. Bebchuk, Alma Cohen & Scott Hirst, *The Agency Problems of Institutional Investors*, 31 J. ECON. PERSP. 89, 95-96 (2017). For a more formal treatment, *see* Bernard S. Black, *Shareholder Passivity Reexamined*, 89 MICH. L. REV. 520, 585-7 (1990).

⁵⁰ *See e.g.* Bebchuk, Cohen & Hirst, *supra* note 49, at 91-93.

⁵¹ *See* Ronald J. Gilson & Jeffrey N. Gordon, *The Agency Costs of Agency Capitalism: Activist Investors and the Revaluation of Governance Rights*, 113 COLUM. L. REV. 889-90 (2013) (explaining that institutional investors have a desire to "deliver competitively superior performance for their beneficiaries (pension funds) or shareholders (mutual funds) while minimizing costs. This competitive pressure will lead institutions to focus externally and internally on relative performances").

⁵² *See id.* at 889-95. *See also* Rock, *The Logic*, *supra* note 47, at 473-75. For the sake of simplicity, we assume here that the institutional investor can charge higher fees such that its clients bear the full amount of c_i .

⁵³ *See* Gilson & Gordon, *supra* note 51, at 867.

⁵⁴ *See e.g.* Peter Iliev & Michelle Lowry, *Are Mutual Funds Active Voters?*, 28 REV. FIN. STUD. 446, 447 (2015) (showing that mutual funds with higher net benefits from voting are less likely to passively follow proxy

reticence remains crucial, especially in light of the unrelenting trend towards passive (indexed) investment.⁵⁵ In fact, all passive institutional investors do not overweigh their investment in specific stocks, but rather replicate indexes like all their peers and almost exclusively compete on reducing costs.

Despite this gloomy theoretical picture, in the last three decades things seem to have considerably moved away from the rational apathy/reticence model of shareholder passivity. Nowadays, voting turnout at US companies shareholder meetings is high⁵⁶ and shareholders are far less inclined to rubberstamp managers' proposals than in the past.⁵⁷

What happened? Changes in ownership patterns, the emergence of new information intermediaries such as proxy advisors and activist hedge funds, political pressures, and regulatory initiatives all have contributed to the outcome.

Ownership is much more concentrated in the hands of institutions, as opposed to individuals, than in the prototypical Berle and Means corporation.⁵⁸ But is a larger average w sufficient to explain the increase in informed voting that we observe? Even ignoring rational reticence for a moment, a higher average w does imply a higher likelihood of being pivotal and a larger benefit for the individual institution. Yet, most of the benefits accrue to an institutional investor's beneficial owners/clients, not to those, be they its employees or an external asset manager, in charge of making the voting decisions: for instance, in the case of separation between asset owners and managers, only a small fraction of the benefits will go,

advisors. They use various proxies to test this idea, including the percentage of firm equity held by the fund). See also Bernard S. Black & John C. Coffee Jr., *Hail Britannia?: Institutional Investor Behavior under Limited Regulation*, 92 MICH. L. REV. 2048 (1994) (noting that institutional investors are not necessarily passive when they are "overweighted" in a stock, that is, when they "own[] a greater share of the specific company than ... [they] own[] of the market generally").

⁵⁵ See e.g. Ian R. Appel, Todd A. Gormley & Donald B. Keim, *Passive Investors, Not Passive Owners*, 121 J. FIN. ECON. 111, 112 (2016) (showing that in 2014 U.S. passive mutual funds represented 33.5 percent of mutual fund assets and 8 percent of total U.S. market capitalization, approximately four times than in 1998). There is widespread consensus that the trend towards passive investing is bound to continue. See e.g. Bebchuk, Cohen & Hirst, *supra* note 49, at 94.

⁵⁶ See e.g. Dragana Cvijanovic, Moqi Groen-Xu & Konstantinos E. Zachariadis, *Free-Riders and Underdogs: Participation in Corporate Voting* 19 (2017), <https://ssrn.com/abstract=2939744> (reporting an average voting participation of 77 per cent at Russell 3000 firms between 2003 and 2013).

⁵⁷ See e.g. Stuart L. Gillan & Laura Starks, *Corporate Governance Proposals and Shareholder Activism: The Role of Institutional Investors*, 57 J. FIN. ECON. 275, 277 (2000) (finding an increase in the number of votes cast in favor of shareholder proposals between 1987 and 1994); Joseph A. McCahery, Zacharias Sautner & Laura T. Starks, *Behind the Scenes: The Corporate Governance Preferences of Institutional Investors*, 71 J. FIN. 2905, 2913 (2016) (finding that more than half of the large institutional investors they surveyed had voted against management at a portfolio company in the previous five years); Cvijanovic, Groen-Xu & Zachariadis, *supra* note 56, at 20 (finding that management-sponsored proposals obtain an average of 60 percent of votes in favor).

⁵⁸ See e.g. Gilson & Gordon, *supra* note 51, at 886-88.

in the form of higher asset under management-based fees, to the asset managers themselves.⁵⁹ In addition, asset managers will also bear any share of the costs that they are unable to transfer on owners or clients in the form of higher fees.⁶⁰

Nevertheless, size alone might still help explain part of the behavior of the largest institutional investors, such as BlackRock, Vanguard, American Funds, and State Street, who tend to develop autonomous voting policies and not to follow proxy advisors blindly.⁶¹ These institutions are simply too-big-to-be-passive:⁶² it would be politically unacceptable if their humongous voting power was *de facto* exercised by an external advisor with no direct or indirect stake in the company.⁶³ Existing regulations ensure public awareness about such institutions' voting policies by mandating their disclosure.⁶⁴

In addition, information costs have considerably gone down. One of the main factors contributing to the reduction of information cost is the surge of proxy advisors. The core function of proxy advisors is to offer institutional investors relatively cheap suggestions on how to vote portfolio companies' shares. Mechanically following proxy advisors' voting recommendations has become the voting policy of at least some institutional investors. That allows them to keep the cost of processing the relevant information very low, namely equal to the (contained) fee they pay the proxy advisor.

Proxy advisors simply did not exist until the mid-1980s and became prominent only one decade later,⁶⁵ also following policy measures that came very close to mandating the

⁵⁹ Cf. Investment Advisers Act of 1940, Ch. 686, 789, 852 § 205(a)(1) (codified as amended at 15 U.S.C. § 80b-6 (2012)) (prohibiting "compensation to the investment adviser on the basis of a share of capital gains upon or capital appreciation of the funds").

⁶⁰ See e.g. Bebchuk, Cohen & Hirst, *supra* note 49, at 96 (also noting that mutual fund managers "are not permitted to collect incentive fees on increases in the value of their portfolio").

⁶¹ See Stephen Choi, Jill Fisch & Marcel Kahan, *Who Calls the Shots? How Mutual Funds Vote on Director Elections*, 3 HARV. BUS. L. REV. 35, 61-63 (reporting voting independence in director elections for Vanguard, Fidelity and American Funds); Ryan Bubb & Emiliano Catan, *The Party Structure of Mutual Funds*, especially at 3, 14 & 23 (2018) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3124039. For BlackRock and State Street see also *infra* note 76.

⁶² For other reasons we do not need to focus on here, they are also too-big-to-be-activist. See John D. Morley, *Too Big to Be Activist* (2018) (unpublished manuscript, on file with the authors).

⁶³ To be sure, institutional investors also have a minimal economic exposure to their portfolio companies (see Bernard S. Sharfman, *Mutual Fund Advisors' 'Empty Voting' Raises New Governance Issues*, OX. BUS. L. BLOG, 10 August 2017, <https://www.law.ox.ac.uk/business-law-blog/blog/2017/08/mutual-fund-advisors-empty-voting-raises-new-governance-issues>), and it is open to debate whether a corporate governance department at a large institutional investor has better incentives than proxy advisors' staff in deciding how to vote.

⁶⁴ See *infra* note 67.

⁶⁵ To the best of our knowledge, the first scholarly article to record the widespread use of proxy advisory services is Alan R. Palmiter, *Mutual Fund Voting of Portfolio Shares: Why Not Disclose?*, 23 CARDOZO L. REV. 1419, 1430 (2002). Ten years before, John Coffee argued for mandating the use of a proxy advisor by institutional investors. At the time, their position in the market was so marginal that, advancing the proposal, Coffee added: "such a professional already exists, and the market for its services is growing." John C. Coffee

exercise of voting rights by some categories of institution: that was first the case for pension funds, pursuant to the Department of Labor's Avon Letter, in 1988, and then for mutual funds, following a 2003 SEC rule. The former qualified voting rights as pension plan assets to be voted in accordance with the plan trustee's fiduciary duties.⁶⁶ The latter required mutual funds and other investment companies registered under the Investment Company Act to (1) adopt and disclose the policies and procedures that they use to determine how to vote proxies relating to securities held in their portfolios and (2) annually disclose voting records.⁶⁷

These requirements, while stopping short of mandating voting,⁶⁸ are a powerful nudge in that direction for all institutions to which they apply. Smaller institutions, to reduce the costs involved, have a strong incentive to just follow proxy advisors' recommendations.⁶⁹ The SEC rules themselves have pushed in that direction, in that they specify that a mutual fund manager "could demonstrate that the vote was not a product of a conflict of interest if it voted client securities, in accordance with a pre-determined policy, based upon the recommendations of *an independent third party*,"⁷⁰ such as a proxy advisor.

Nowadays, virtually all institutional investors buy services from proxy advisors. Many of them just purchase the untailed voting recommendation service, which is based on proxy advisors' own general policies and analyses. Because institutional investors are their patrons, proxy advisors' general policies tend to reflect institutional investors own widely shared corporate governance preferences, or at least the preferences of the largest and the

Jr., *Liquidity versus Control: The Institutional Investor as Corporate Monitor*, 91 COLUM. L. REV. 1277, 1353 (1991).

⁶⁶ See Letter from US Department of Labor to Mr. Helmuth Fandl, Chairman of the Retirement Board of Avon Products, Inc, at 3 (Feb 23, 1988), reprinted in 15 Pension Reporter (BNA), No 9, 391 (Feb 29, 1988).

⁶⁷ See SEC Final Rule: Proxy Voting by Investment Advisers, 68 Fed. Reg. 6585 (2003), Rule 206(4)-6.

⁶⁸ As the SEC clarified in 2014: see SEC, Proxy Voting: Proxy Voting Responsibilities of Investment Advisers and Availability of Exemptions from the Proxy Rules for Proxy Advisory Firms, Staff Legal Bulletin No. 20 (IM/CF) (2014), <https://www.sec.gov/interps/legal/cfslb20.htm>.

⁶⁹ In fact, even relatively large institutions (with assets under management in the hundreds of million dollars) do not shy away from declaring that they follow proxy advisors' recommendations as a matter of voting policy, albeit sometimes in limited circumstances. For instance, American Money Management LLC, an investment company with \$239 million of assets under management (see <https://www.brightscope.com/financial-planning/firm/27992/American-Money-Management-LLC/>), declares in its proxy voting policy that it "has delegated responsibilities for decisions regarding proxy voting for securities held by the Funds to ISS. ISS will vote such proxies in accordance with its proxy policies and procedures" (American Money Management LLC Proxy Voting Policies and Procedures, on file with the authors). An example of partial blind reliance on proxy advisors is in the proxy voting policy of Schroders (with \$447 billion assets under management: see Schroders Annual Results 2017 Date Pack, downloadable at <http://www.schroders.com/en/investor-relations/results-and-reports/results-reports-and-presentations/>), which declares that "where a fund has widely diversified holdings that, in aggregate with other funds controlled by Schroders, would only represent a minimal percentage of a company's share capital the interests Schroders control will be voted in accordance with the recommendations of a third party (currently ISS)" (see Schroders, UK Stewardship Code, <http://www.schroders.com/en/ch/asset-management/fund-centre/esg/uk-stewardship-code/>).

⁷⁰ SEC Final Rule, *supra* note 67, at 6588 (emphasis added).

most strong-minded among them. This is a clear case where information costs reduction comes at the price of a loss in voters' independence: all such votes are most likely based on the same analysis and cast in the same direction.⁷¹

To make things slightly less worrisome, ISS, the leading proxy advisory firm, develops separate voting policies, which cater to the preferences of different subsets of institutional investors.⁷² Hence, they are less likely to provide *all* their clients with exactly the same voting recommendations.

More importantly, not all institutional investors have simply outsourced their voting decisions to proxy advisors: as hinted, many of them, including the largest ones, have devised their own voting policies and set up their own corporate governance departments which make their own final decisions on how to vote on individual resolutions.⁷³ Yet, to lower voting costs, even investors with their own voting policies avail themselves of proxy advisory firms.⁷⁴ In this case, the proxy advisor's task is to process company-specific information relating to individual votes in order to find out how an institutional investor client, based on

⁷¹ See Schouten, *supra* note 37, at 828-29.

⁷² See Stephen Choi, Jill E. Fisch & Marcel Kahan, *The Power of Proxy Advisors: Myth or Reality?*, 59 EMORY L.J. 869, 883 (2010). For instance, ISS, in addition to its U.S., European, and International "Benchmark" policies, has United States Taft-Hartley U.S. Voting Guidelines, Public Fund U.S. Voting Guidelines, Socially Responsible U.S. Voting Guidelines, Faith-Based U.S. Voting Guidelines, and Sustainability U.S. Voting Guidelines. See <https://www.issgovernance.com/policy-gateway/2017-policy-information/>.

⁷³ See e.g. Edward B. Rock, *Institutional Investors and Corporate Governance*, in OXFORD HANDBOOK OF CORPORATE LAW & GOVERNANCE 363, 368-71 (Jeffrey N. Gordon & Wolf-Georg Ringe eds. 2018). To be sure, some scholars have argued that such governance departments are seriously understaffed. See e.g. Bebchuk, Cohen & Hirst, *supra* note 49, at 100; Dorothy Shapiro Lund, *The Case Against Passive Shareholder Voting* J. CORP. L. (forthcoming 2018) (manuscript at 23). However, the size of such teams has been steadily increasing, at least at the largest institutions: see Morningstar, *Passive Fund Providers Take Active Approach to Investment Stewardship* 19 (2017), <http://www.morningstar.com/lp/passive-providers-active-approach> (reporting that BlackRock's team has grown from 20 in 2014/15 to 33 in 2017 and Vanguard's from 10 to 21 in the same period). In addition, not all large investment management firms centralize their voting decisions within governance departments, which may rather play the role of "safeguard[ing] the reputation of the firm as a whole", e.g. by preventing individual portfolio managers from issuing "public statement[s] on a corporate governance dispute unless the rest of the management[] company's clients ... agree to take the same position as well (Morley, *supra* note 62, at 10-11). At BlackRock, for instance, the Investment Stewardship team "of over 30 specialists operates as an integral part of the firm's investment function. Their decisions in monitoring portfolio companies and voting proxies are made in collaboration with the firm's 125 investment teams, whether the holding is in active or passive portfolios." John C. Wilcox, *Getting Along with BlackRock*, HARV. L. SCH. F. ON CORP. GOVERNANCE & FIN. REG. (Nov. 6, 2017), <https://corpgov.law.harvard.edu/2017/11/06/getting-along-with-blackrock/>. See also Jill Fisch, Assaf Hamdani & Steven Solomon Davidoff, *Passive Investors* 26 (2018) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3192069 (providing explanations for the seemingly low number of employees in Corporate Governance Departments at large passive institutional investors).

⁷⁴ See ISS, *Best Practice Principles for Providers of Shareholder Voting Research & Analysis*. ISS Compliance Statement 3 (2017), <https://www.issgovernance.com/file/duediligence/best-practices-principles-iss-compliance-statement-april-2017-update.pdf> (reporting that "ISS manages and applies over 400 custom policies for clients" and that "over 75% of our top clients subscribe to at least one custom research policy service from ISS").

its voting policies, should vote.⁷⁵ But, especially for contested votes, such investors' corporate governance departments still evaluate the proxy advisor's recommendation on contentious matters and therefore maintain a certain degree of autonomy in voting decisions.⁷⁶

The empirical evidence on the role of proxy advisors confirms, though, that a significant fraction of the shares held by institutional investors are voted mechanically following proxy advisers' advice. ISS alone is able to swing around one fifth of the votes in the direction of its recommendations,⁷⁷ with over 25 percent of mutual funds indiscriminately voting in line with ISS according to one study.⁷⁸ Yet, that influence is likely to be overstated, because there is no way of telling whether any of those voting according to ISS recommendations would have voted any differently without it.⁷⁹ Proxy advisors are bound to devise voting policies and recommend votes that are in line with the tastes of their clients to begin with.⁸⁰

⁷⁵ See e.g. Paul H. Edelman, Randall S. Thomas & Robert B. Thompson, *Shareholder Voting in an Age of Intermediary Capitalism*, 87 S. CAL. L. REV. 1359, 1400-01 (2014).

⁷⁶ See Shapiro Lund, *supra* note 73, at 23 ("BlackRock reports that its governance team relies on ISS and Glass Lewis to help summarize proxy statements and devotes close analysis only when those services have identified an issue"); for State Street, see State Street Global Advisors, 2017 Global Proxy Voting and Engagement Principles 3 (2017), <https://www.ssga.com/global/en/about-us/asset-stewardship.html> (reporting that State Street completely delegates voting based on its Guidelines to ISS as regards "most routine proxy voting items (e.g., ratification of auditors), but in other cases will have its Corporate Governance Team "evaluate the proxy solicitation to determine how to vote based on facts and circumstances"). For empirical evidence supporting these claims see Michael C. Schouten, *Do institutional Investors Follow Proxy Advice Blindly?*, 1 (2012), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1978343 (finding that "funds tend to deviate from voting recommendations more often when they hold a large stake in the portfolio firm, when the firm performs relatively poorly and when the proposal has potentially significant value implications"). To be sure, there is the risk that the proxy advisor will do a bad job gathering and processing information or, worse, may selectively convey it to (each of) its customized services clients. See Choi, Fisch & Kahan, *supra* note 72, at 882. But as the authors note (*ibid.*), quite apart from product market pressures (which may be weak, because of the concentration in the industry and the barriers to entry stemming from the fact that, in order to gain clients from incumbents, one has to cover a high number of issuers from the start), "the company itself has a strong incentive to correct [proxy advisors'] inaccuracies, and the media is likely to report any substantial errors". Yet, if the bias is pro-management due to conflicts of interest, competition would seem to be the necessary constraint. See Tao Li, *Outsourcing Corporate Governance: Conflicts of Interest Within the Proxy Advisory Industry*, 2016 MGMT SCI. 1, 2.

⁷⁷ See e.g. Jie Cai, Jacqueline L. Garner & Ralph A. Walkling, *Electing Directors*, 64 J. FIN. 2389, 2404 (2009) (19 percent for director elections); Jennifer E. Bethel & Stuart L. Gillan, *The Impact of the Institutional and Regulatory Environment on Shareholder Voting*, 31 FIN. MANAGEMENT, 29, 46 (13.6 to 20.6 percent, depending on the proposal); Robert M. Daines, Ian D. Gow & David F. Larcker, *Rating the ratings: How good are commercial governance ratings?*, 98 J. FIN. ECON 439, 460 (2010) (16 percent).

⁷⁸ Iliiev & Lowry, *supra* note 54, at 454. For a survey of the empirical literature on proxy advisors' influence over voting in uncontested elections, see Randall S. Thomas & Patrick C. Tricker, *Shareholder Voting in Proxy Contests for Corporate Control, Uncontested Director Elections and Management Proposals: A Review of the Empirical Literature*, 70 OKLA. L. REV. 9, 60-61 (2017).

⁷⁹ Choi, Fisch & Kahan, *supra* note 72, at 883-85.

⁸⁰ See Fisch, Hamdani & Solomon Davidoff, *supra* note 73, at 24.

Another source of reduction in information costs comes from hedge fund activism.⁸¹ Activist hedge funds, with their powerful incentive compensation arrangements and heavily overweighted investment in target companies, unearth information that is meant to undermine incumbent management's record and support an alternative strategy, which they propose to implement often by submitting a short slate of candidates for the board.⁸² Unlike proxy advisors, hedge funds act as partisan information processors, whose credibility is backed by their heavy investment in the target and their track record.

At the core of their campaigns there is usually a strategic decision, such as whether to merge with another company, find a buyer for the company or some of its divisions, or increase leverage. The effects of such changes on a company's share price are bound to be huge, hence leading to institutional investors' attention on the merits of the campaign.⁸³ Further, the fact itself that an alternative strategy is on the table makes it possible for institutional investors to reconsider managers' record: without a readily available alternative, a negative vote on the CEO (when it is binding) would be a self-inflicted wound, because it would leave the company without a guide and a strategy until a replacement is found. In other words, hedge funds make alternatives to the status quo viable, thus reducing the cost of a vote against management.

Yet, if an institutional investor has reason to doubt that its competitors will similarly engage with the activist hedge fund, rational reticence would be the dominant strategy for the individual institutional investor considering, in isolation from the others, whether to invest in information. While a lot of information may have been unearthed by the activist, the incumbent management will put forward its own views, scenarios, estimates, and facts. Assessing and comparing the two will be costly for the individual institutional investor.⁸⁴ Hence, hedge funds alone should not be able to prompt an institution to become informed when rational reticence is at work.

The presence of corporate governance intermediaries such as proxy advisors and hedge funds has reduced the cost of informed voting by institutional investors. At the same time, overweighting and sheer size may explain why institutional investors appear to exercise

⁸¹ See especially Gilson & Gordon, *supra* note 51, at 896-902.

⁸² John C. Coffee Jr. & Darius Palia, *The Wolf at the Door: The Impact of Hedge Fund Activism on Corporate Governance*, 41 J. CORP. L. 545, 560 (2016).

⁸³ Gilson & Gordon, *supra* note 51, at 897 and n116.

⁸⁴ Cf. Shapiro Lund, *supra* note 73, at 2 (evaluating activists' proposals is costly, especially for passive funds with little familiarity with individual investee companies).

their voting rights in an informed way. But more is at play to explain why collective action problems do not paralyze investors.

One possibility is that institutions worry about their clients' perception of their corporate governance record. So long as clients (beneficial owners) have a preference for a pro-active stance on the part of their asset managers, the latter will be active, lest they lose clients to competition. Yet, an individual institution's clients, whether retail or institutional themselves, are also rationally apathetic and no less reticent: while collectively, as a class, they would gain from informed voting, they are better off switching to other institutions and free riding on active institutions' efforts.⁸⁵

Some of the institutional asset owners that outsource asset management services to investment advisors may well not conform to this description: *union* and *public* pension funds, unlike *corporate* ones, do often have strong views about corporate governance issues and may expect their asset managers to vote accordingly. But, again, such clients may find that the best way to combine an independent view of investee companies management's record and strategies with costs control is for their asset managers to follow (tailored) proxy advisors' recommendations, especially because those pension funds' views on corporate governance issues are likely to be one-size-fits-all. Still, there might be a subset of institutional clients that always prefer informed voting as an expression of responsible investment/ownership and therefore prize truly informed voting in its own right.⁸⁶ Pressures from such clients may explain the move away from shareholder passivity by some institutions as a marketing strategy to retain those clients and possibly expand the client base among others with similar views.

In addition to market factors, policy developments have had a role in pushing institutional investors in the direction of active voting. We have seen already that policymakers have nudged some categories of institutions into voting their shares by making voting virtually mandatory.⁸⁷ Further, measures have been enacted in the last 25 years that have reduced (informed) voting costs and greatly facilitated communications among shareholders.

The expansion of mandatory disclosures has made it less costly for institutional investors, financial analysts and proxy advisors to have information available that enables

⁸⁵ Bebchuk, Cohen & Hirst, *supra* note 49, at 98.

⁸⁶ See Shapiro Lund, *supra* note 73, at 36 (actively voting shares may "help funds attract assets and clients, especially from pension funds or other groups that view governance as a priority").

⁸⁷ See *supra* notes 65-68 and accompanying text.

them to form an opinion about a company's management and strategy.⁸⁸ In addition, the prohibition on selective disclosures⁸⁹ has made institutions less dependent on access to managers for material information about portfolio companies.⁹⁰

Finally, while rules still exist that stifle shareholders' coordinated action to affect voting outcomes, such as those providing a broad definition of "group" for the purposes of ownership disclosure and insider trading rules,⁹¹ simple exchanges of information and contacts among shareholders have ceased to be relevant for the purposes of proxy voting regulations since 1992.⁹² Intuitively, the extent to which institutional investors can communicate with each other without triggering costly regulatory burdens is key for their ability to cooperate with other agents in the network.⁹³

In this part, we have discussed a number of factors that have arguably contributed to the partial shift from passivity to informed voting by (many) institutional investors and shown how proxy advisors, while contributing to a reduction in the voting costs, also lead to less independent voting. In the next part, after introducing network theory, we show how the network of relationships institutional investors are embedded in provides additional mechanisms to address the trade-off between duplication costs avoidance and voting independence.

IV. How connections affect institutional investor voting dynamics

We now investigate how connections among institutional investors influence their incentives to collect information and their voting behavior. We argue that, because (i) institutional

⁸⁸ See e.g. Jeffrey N. Gordon, *The Rise of Independent Directors in the United States, 1950-2005: of Shareholder Value and Stock Market Prices*, 59 STAN. L. REV. 1465, 1548-53 (2007) (detailing the increase in scope and depth of U.S. mandatory disclosures).

⁸⁹ Regulation Fair Disclosure, 17 CFR 243.100-243.103.

⁹⁰ See e.g. Zohar Goshen & Gideon Parchomovsky, *The Essential Role of Securities Regulation*, 55 DUKE L.J. 711, 746 (2006).

⁹¹ Section 13(d)(3), Securities Exchange Act of 1934. See e.g. Coffee & Palia, *supra* note 82, at 562-3 & 568-70 (noticing how the interpretation of the group concept has narrowed throughout the years, but still arguing that a broader interpretation would be more in line with the regulation's legislative intent). McCahery et al.'s survey of asset managers shows that institutions do worry about these constraints. See McCahery, Sautner & Starks, *supra* n 57, at 2922. According to Ed Rock, this is the reason why many of the largest institutional investors and never consult other institutions in order to decide on how to vote (Edward B. Rock, oral communication, May 26, 2017). See also Morley, *supra* note 76, at 22-24 (discussing how Section 13(d) affects institutional investors). See also *infra* note 96.

⁹² For an overview, see e.g. Coffee & Palia, *supra* note 82, at 559-61 & 568-70. See also *id.* at 553-58 & 570-72, for an account of other legal changes that, by empowering shareholders, spurred hedge fund activism, which in turn facilitated informed voting (see *supra* text accompanying and following notes 81-83).

⁹³ Part IV discusses how institutional investors can coordinate and how being part of a network can shape their voting strategies.

investors are embedded in a complex network of connections, and (ii) these connections influence their payoffs and behavior, network theory is a natural framework to study the behavior of institutional investors. More precisely, we suggest that network theory can help explain how cooperative behavior can emerge among such institutions and be sustained.⁹⁴

Let us define “cooperation” among institutional investors as casting an informed vote at a portfolio company when they can be expected to be rationally reticent,⁹⁵ that is, when investing in information on a portfolio company benefits other institutional investors holding shares in that portfolio company more than the informed institutional investor itself, because competitors do not bear the costs of becoming informed but reap the benefits of the increased value associated with the informed vote.⁹⁶

A burgeoning literature on social networks shows that cooperative behavior that benefits others can be sustained even if it harms the cooperator, provided that the population of agents is sufficiently interconnected.⁹⁷ Therefore, the level of free riding does not depend only on the size of the potential group of cooperators,⁹⁸ but also on the existing connections among group members. In other words, highly interconnected groups are more likely to display cooperative behavior. And, given that institutional investors are increasingly interconnected,⁹⁹ this insight might help explain why they are casting informed votes more frequently. In fact, an institutional investor that is gathering information when it should be

⁹⁴ As previously hinted, our analysis is merely qualitative: we do not attempt to prove, let alone quantify, how (much) of the cooperation we observe is due to institutional investor connections.

⁹⁵ Institutional investors can invest resources in many ways to engage with their portfolio companies. As noted by McCahery, Sautner and Starks, much of the activity takes place behind the scenes (*see* McCahery, Sautner & Starks, *supra* note 57, at 2905). However, in this article we focus on voting because, as then Chairwoman of the SEC Mary Shapiro put it, “[t]he proxy is often the principal means for shareholders and public companies to communicate with one another, and for shareholders to weigh in on issues of importance to the corporation.” *See* SEC Votes to Seek Public Comment on U.S. Proxy System (2010), at <https://www.sec.gov/news/press/2010/2010-122.htm>.

⁹⁶ Cooperation as defined here should not be confused with the kind of coordination underlying the definition of “group” for securities regulation purposes. According to section 13(d)(3) of the Securities Exchange Act of 1934, “[w]hen two or more persons act as a partnership, limited partnership, syndicate, or other group for the purpose of acquiring, holding, or disposing of securities of an issuer, such syndicate or group shall be deemed a ‘person’” (15 U.S.C. § 78m(d)(3) (2012)). This definition, however vague, presupposes coordinated action with respect to a given issuer. Instead, cooperation as we define it merely implies that one institutional investor collects information despite the free-riding and rational reticence problems. Cooperation might imply that the cooperator shares information with other shareholders. Communication of this kind, in any event, is no longer relevant for the purposes of proxy voting regulations (*see supra* note 92 and accompanying text), and, *per se*, insufficient to qualify communicating institutions as members of a “group.” *Cf.* Coffee & Palia, *supra* note 82, at 569 (“if sophisticated parties independently reach the same investment strategy, no group arises, *even if they actively discuss* their investment strategy for the company among themselves” (emphasis added)).

⁹⁷ Bin Wu et al., *Evolution of Cooperation on Stochastic Dynamical Networks*. 5 PLOS ONE e11187, 1 (2010).

⁹⁸ *See supra* notes 43-44, at 1.

⁹⁹ *See* Jose Azar, *A New look at Oligopoly: Implicit Collusion Through Portfolio Diversification* 3 (2011) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1993364.

paralyzed by rational reticence is – at a first glance – engaging in cooperative behavior that increases the fitness of its competitors at the cost of its relative performance.¹⁰⁰ In line with the literature on social networks, we argue that connections among institutional investors and between institutional investors and other agents involved in the voting process help explain this behavior.

In its bare form, a network can be represented as a series of points connected by lines. In the social sciences literature, the points (“nodes” or “vertices”) represent the *actors*, whereas the lines are called *ties* (or edges). The term actor is used for both individual agents and organizations. Following this terminology, below we refer to institutional investors, hedge funds, proxy advisors, and portfolios firms’ management as actors. When a tie connects two actors, we refer to them as “neighbors.”¹⁰¹ The largest group of actors each having ties with all other actors is known as a “clique” (see Fig. 1, left panel).¹⁰² In our context, institutional investors form a clique when they are thus interconnected. When two actors are not directly connected we refer to them as “non-neighbors.”

¹⁰⁰ The parallelism between biology and economic theory has long been recognized. Many biological models use the concept of “Individual as Maximising Agent” (IMA) that is a close relative of the homo oeconomicus. See e.g. Stuart A. West, Claire El Mouden & Andy Gardner, *Sixteen Common Misconceptions About the Evolution of Cooperation in Humans*, 32 EVOLUTION & HUM. BEHAVIOR 231, 233 (2011) (“individuals should appear as if they have been designed to maximize their inclusive fitness”).

¹⁰¹ Note that in network theory the idea of neighbors is not necessarily connected with geographical proximity. For instance, two actors can be connected via the internet, and hence be considered “neighbors” even if they are located thousands of kilometers away from each other.

¹⁰² See ROBERT A. HANNEMAN & MARK RIDDLE, INTRODUCTION TO SOCIAL NETWORK METHODS 174 (2005). A more formal definition of clique is “a maximal subset of the vertices in an undirected network such that every member of the set is connected by an edge to every other.” MARK E. J. NEWMAN, NETWORKS: AN INTRODUCTION 193-94 (2010).

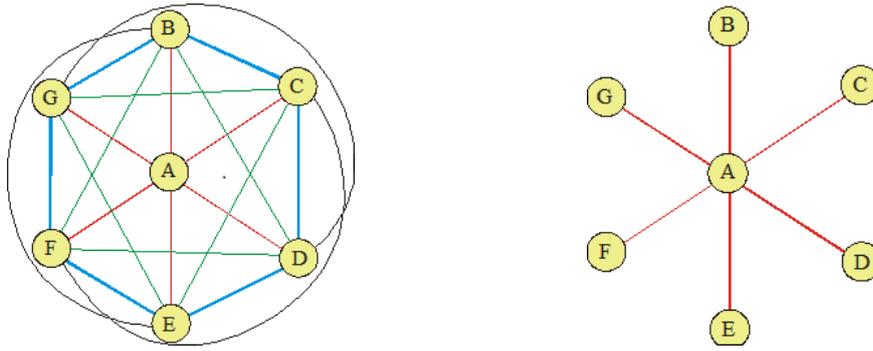


Figure 1: Example of sub-networks

The left panel represents a clique. The right panel does not.

In this article, we focus on four kinds of ties: formal networks, geographical proximity, employee connections, and co-ownership. Two institutions are connected via a formal tie if they belong to the same formal network (section IV.B), via a geographical tie if they are located in the same area (section IV.C), and via a co-ownership tie if they both own a stake in the same portfolio company (section IV.E). In addition, institutional investors’ employees may have incentives of their own to communicate with other members of the investment community and spread their “voting ideas” (section IV.D).

A. Inter-Institutional Connections

The literature on social networks offers a comprehensive set of analytical tools to understand the complex dynamics and the constant interplay among the various agents that contribute to shape the voting strategies of institutional investors. In particular, network theory helps shed light on how patterns of connections affect the interplay between group size, free-riding, information and coordination costs, and the amount of information collected by agents before a vote.

Institutional investors can be connected with each other in a number of ways. In this article, we focus on four kinds of ties: formal, geographical, employee and co-ownership ties. We leave aside other ties, such as through proxy advisors, hedge fund activists, and portfolio firms’ management. Such actors can all be seen as acting as connections among institutions prior to shareholder meetings.¹⁰³ The reason for omitting these ties from our analysis is not

¹⁰³ Technically, they act as “bridges.” See *infra*, text accompanying notes 164-168.

that they are less consequential than the ones we focus on, but rather that their role in molding voting decisions has already been widely analyzed in the literature.¹⁰⁴ And while such literature does not rely on network theory, how such theory is a useful lens to understand these phenomena should by now be intuitive to the reader.

A standard finding of social network theory is that cooperation is more likely in networks with a high clustering coefficient.¹⁰⁵ The clustering coefficient of a network measures the degree to which the nodes in the network tend to cluster together, and can be defined as “the probability that two neighbours of a given node share also a connection between them.”¹⁰⁶ In our setting, this translates into the idea that cooperative behavior might be sustained when institutional investors are embedded in a highly clustered network. When such a network exists, we can predict a tendency to invest in information rather than to free ride on other institutional investors.¹⁰⁷ One intuitive reason for this is that the likelihood that one institutional investor’s investment in information will be pivotal (i.e., affect the voting outcome) is higher if the investor is part of a network and can use its ties and influence to persuade other nodes to vote in the same direction.

B. Formal Networks

Institutional investors are often connected via formal channels. Associations of institutional investors of various kinds and with different goals are mushrooming in the United States and in the rest of the world.¹⁰⁸ One prominent example is the Council of Institutional Investors (hereinafter, CII), which is not only a forum to develop and discuss corporate governance best practices and an effective advocacy group for public and labor pension funds, but also a

¹⁰⁴ See e.g. Stephen Choi, Jill E. Fisch & Marcel Kahan, *Directors Elections and the Role of Proxy Advisors*, 82 S. CAL. L. REV. 649 (2009) (proxy advisors); *id.*, *supra* note 72 (same); Bubb & Catan, *supra* note 61 (same); Gilson & Gordon, *supra* note 51 (hedge funds); Brian R. Cheffins & John Armour, *The Past, Present, and Future of Shareholder Activism by Hedge Funds*, 37 J. CORP. L. 51 (2011) (same); Fisch, Hamdani & Solomon Davidoff, *supra* note 73, at 17 (highlighting that activist hedge funds regularly engage in a dialogue with the large passive investors); The Shareholder Forum, Survey on Investor Communication Priorities for Voting Decisions 4 (2010) (http://www.shareholderforum.com/e-mtg/Program/20101006_report.htm) (finding high demand among investors for informal meetings of managers and investors prior to shareholder meetings).

¹⁰⁵ See Assenza, Gómez-Gardeñes, & Latora, *supra* note 105 at 4 (“[a] significant enhancement of cooperation is shown when the clustering coefficient of the network is high”). For a formal definition of clustering coefficient and how it relates to the number of triangles in a network, see MARK E. J. NEWMANN, NETWORKS: AN INTRODUCTION 198-201 (2010).

¹⁰⁶ See Assenza, Gómez-Gardeñes, & Latora, *supra* note 105, at 1.

¹⁰⁷ See Crane, Koch & Michenaud, *supra* note 13, at 14-18. See also *infra* Section IV B.

¹⁰⁸ See e.g. Danyelle J. Guyatt, *Mobilising Collaborative Opportunities between Pension Funds* (2012), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2033516 (studying over 30 networks of institutional investors of various kinds).

facilitator of interactions among members and asset management industry players.¹⁰⁹ Currently, the CII has more than 120 members with combined assets of over US\$3 trillion.¹¹⁰ A number of empirical studies have analyzed whether the action of the CII has an impact on the value of the companies that are in its members' portfolios. Most of these studies concentrate on the effects of the CII "Focus List" of underperforming companies.¹¹¹ The goal of the CII is to get its members to engage in collaborative efforts to induce managers of Focus List firms to improve performance.¹¹² Two studies out of three conclude that CII's action increases the value of portfolio companies.¹¹³

Another example is the British Local Authority Pension Fund Forum (LAPFF), which claims to be "one of the leading voices in corporate governance and responsible investment in the UK."¹¹⁴ LAPFF routinely engages in proxy voting matters, favoring coordination among its 71 members. More specifically, one of its core functions is issuing "voting alerts" that provide non-binding advice to its members on how to vote at the annual general meeting of a portfolio company.¹¹⁵ Two obvious questions are why these institutions are created and why institutional investors are willing to bear a cost to become members. We address these questions in Section IV.F.

C. Geographically Linked Networks

¹⁰⁹ COUNCIL OF INSTITUTIONAL INVESTORS, <http://www.cii.org/members> (last visited Feb. 6, 2018) (also describing the advantages of "Associate Membership," which is open to market players, such as investment advisers, other than public and union pension funds).

¹¹⁰ *Id.*, http://www.cii.org/general_members (last visited Feb. 6, 2018).

¹¹¹ Over the years, giants like IBM, Kodak and Sears were included in CII's focus list. See Tim C. Opler & Jonathan S. Sokobin, *Does Coordinated Institutional Activism work? An Analysis of the Activities of the Council of Institutional Investors*, 2 (Dice Center For Research In Fin. Econ., Working Papers Series 95-5 1995), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=7604.

¹¹² Gary L. Caton, Jeremy Goh & Jeffrey Donaldson, *The Effectiveness of Institutional Activism*, 57 FIN. ANALYSTS J. 21, 21 (2001) ("CII's intent is that the attention will lead to a collaborative effort by members to compel company managers to step up efforts to improve performance").

¹¹³ *Id.* at 21 (finding that for underperforming companies that have the potential to improve their performances inclusion in the focus list is followed by significant positive stock returns); Opler & Sobokin *supra* note 111, at 2 (finding that "[i]n the year after being [included in the focus list], these firms experienced an average share price increase of 11.6% above the S&P 500. Given that the mean equity market value of Council listed firms was \$3.42 billion we estimate a total abnormal dollar gain of these firms of \$39.7 billion. This increase is broadly consistent with the view that coordinated institutional activism creates shareholder wealth"). But see Wei-Ling Song & Samuel H. Szewczyk, *Does Coordinated Institutional Investor Activism Reverse the Fortunes of Underperforming Firms?*, 38 J. FIN. & QUANTITATIVE ANALYSIS 317, 320-21 (2003) (finding no evidence that the shareholder activism triggered by the focus list is effected).

¹¹⁴ See <http://www.lapffforum.org/about-us/history-of-lapff/> (last visited Feb. 6, 2018).

¹¹⁵ Local Authority Pension Fund Forum, Annual Report 2016 18, <http://www.lapffforum.org/wp-content/uploads/2017s/03/LAPFF-Annual-Report-2016.pdf>.

Black and Coffee suggest that during the 1990s British institutional investors might have become more active voters also to prevent American institutions from determining the outcome of British companies' shareholders meetings.¹¹⁶ This strategy required cooperation, as otherwise the institutional investors that actively voted would have become less competitive than their domestic competitors that would remain passive.¹¹⁷ That suggests that institutional investors can also cooperate when they operate in the same geographical area. This is because cooperation might be easier among geographically proximate institutional investors, as information can circulate more easily via informal channels.

Economists have gone beyond anecdotal evidence and produced a number of studies showing that the spatial distribution of institutional investors affect their behavior.¹¹⁸ Pool, Stoffman and Yonker find that when funds are located in the same area their employees have more frequent occasions of meeting in both formal and informal settings, thus building personal relationships that help information circulate across institutions.¹¹⁹ Further, Iliev and Lowry provide additional support for the idea that information travels across geographical ties. They show that funds located in a Metropolitan Statistical Area in which funds concentration is high are significantly less likely to be passive voters.¹²⁰ This suggests that information on how to vote circulates via geographical networks, inducing institutional investors that are clustered in a given area to become more active voters.

D. Employees' Personal Networks and Career Concerns

Competition does not take place only among individual institutional investors, but also among their employees. In a nutshell, at the employer level the institutional investor compares the expected increase in the value of the holding from casting an informed vote with the expected cost of becoming informed. Instead, the employee compares the anticipated

¹¹⁶ Black & Coffee, *supra* note 54, at 2040 (“British institutions have observed the American voting practices and also realize that if they do not vote, the votes of American institutions, who own a significant fraction of British equities, could dictate the outcome of shareholder votes.” They also list other facts that could explain the greater activism of British institutional investors at the time of their writing. Most notably, their increased stakes and the self-regulatory rules introduced by the Institutional Fund Managers’ Association).

¹¹⁷ *Id.*, at 2002 (“the world of British institutional investors is close-knit. Communication among them is easy and unregulated. This reduces the coordination costs and free rider problems that plague collective action in the United States”).

¹¹⁸ See Hong, Kubik & Stein, *supra* note 10, at 2801 (showing that “[a] mutual fund manager is more likely to buy (or sell) a particular stock in any quarter if other managers in the same city are buying (or selling) that same stock”); Pool, Stoffman & Yonker, *supra* note 10, at 2679 (2015) (finding that managers residing in the same neighborhood have more similar holdings and trades).

¹¹⁹ See Pool, Stoffman & Yonker, *supra* note 10, at 2680.

¹²⁰ Iliev & Lowry, *supra* note 54, at 455.

effect of her behavior on her career prospects with the personal cost of becoming informed.¹²¹ Clearly, the reality is way more nuanced than this, and the distinction between employer and employee incentives is more blurred.¹²² However, introducing an artificial bright-line distinction between employers and employees helps emphasize that also in this context the tail may wag the dog. Even in a situation where no institutional investor has incentives to collect information, a vote against management departing from the suggestion of proxy advisors might be cast if an employee of an institutional investor triggers an information cascade.

The argument presented in this section is composed of two separate claims. First, career concerns can shape the behavior of funds' employees that are in charge of voting shares held by their employer (hereinafter, "stock voters"). For instance, stock voters might decide to go the extra-mile and invest personal resources, such as their free time, to investigate a portfolio company. Second, this information produced at the employee level can circulate within the network and affect the behavior of other institutional investors. After separately analyzing these two claims, we discuss the reliability of information produced at the employee level.

First, while there are no empirical studies that focus explicitly on stock voters, there is significant evidence that career concerns shape the behavior of actively managed funds' managers (hereinafter "stock pickers"), and of other actors within institutional investor networks. Chevalier and Ellison focus on the portfolio choices of fund managers and find that the probability of being terminated increases when their returns are lower.¹²³ Hong, Kubik and Solomon report similar findings with regards to financial analysts.¹²⁴ Moreover, Hong and Kubik find that analysts issuing accurate forecasts are more likely to be promoted or to move to a more prestigious employer than analysts issuing inaccurate forecasts.¹²⁵ These results show that stock pickers and financial analysts have incentives to work harder to outperform – or at least not be outperformed by – their peers. Although these findings do not

¹²¹ We remark that there is no reason to postulate that the cost-benefit calculus of the employer and of the employee will always point to the same direction.

¹²² In fact, some of the arguments and empirical evidence presented in this section overlap with the ones discussed in Section IV.E on geographical ties.

¹²³ Judith Chevalier & Glenn Ellison, *Career Concerns of Mutual Fund Managers*, 114 Q. J. ECON. 389, 391 (1999). According to the Authors, a manager is "terminated" if he loses his jobs and is hired by a smaller fund or abandons fund management.

¹²⁴ Harrison Hong, Jeffrey D. Kubik & Amit Solomon, *Security Analysts' Career Concerns and Herding of Earnings Forecasts*, 31 RAND J. ECON 121,123 (2000).

¹²⁵ Harrison Hong & Jeffrey D. Kubik, *Analyzing the Analysts: Career Concerns and Biased Forecasts*, 58 J. FIN. 313, 315-16 (2003).

directly relate to stock voters, this evidence still seems a sufficiently solid ground to build upon. Stock voters operate in the same environment as stock pickers and it is safe to assume that they are as interested in their career as anybody else. It is thus reasonable also to assume that their actions are shaped by career concerns. Someone working in the governance department of a fund manager might be interested in moving to a larger asset management company or in moving to a different and higher-paid job within the asset management industry or in other areas of finance. Discussing ideas on how to handle a given controversial issue at an informal meeting appears to be a good opportunity for an employee to impress potential employers. The possibility of a better career might provide incentives to investigate a portfolio company even when it would not be expected to produce an immediate monetary return for the employee or her employer.¹²⁶ Thus, as stated above, stock voters' career concerns might be sufficient to induce them to collect information and communicate it.

We now turn to the second claim and investigate whether information produced by employees is likely to move across the network. An employee cannot hope to derive career benefits from information privately produced unless it discusses it with some potential employers.¹²⁷ At the same time, employers might find it cheaper to receive already processed information, instead of having to collect it.¹²⁸

A last piece of the puzzle would be how information circulates among individuals working in different funds. The literature has found that information can be passed via different kinds of ties. For instance, information can circulate through educational networks¹²⁹ and geographical networks of employers¹³⁰ or employees.¹³¹

In sum, competition among stock voters is very likely to affect their behavior, giving them incentives to seek information and transmit it to other agents in the network via various forms of connections, such as geographical proximity and educational ties.

An important question is whether the information produced due to competition among employees improves or deteriorates the quality of information that circulates in the network

¹²⁶ This might not be true in those cases in which the potential employer can assess whether the behavior of the stock voter is also in the interest of his current employer. The potential employer might not be interested in hiring someone who is wasting the human resources of his current employer. We remain agnostic on how often the potential employer would be able to assess this.

¹²⁷ Recall that we are focusing on information on how to vote shares and not on information relative to stock trading.

¹²⁸ The empirical evidence supporting this claim is inevitably similar to the one discussed in Section IV.C on geographical ties.

¹²⁹ Lauren Cohen, Andrea Frazzini & Christopher Malloy, *The Small World of Investing: Board Connections and Mutual Fund Returns*, 116 J. POL. ECON. 951, *passim* (2008).

¹³⁰ Pool, Stoffman & Yonker, *supra* note 10, *passim*.

¹³¹ Hong, Kubik & Stein, *supra* note 10, *passim*.

of institutional investors. This chiefly depends on whether: (i) employees have incentives to collect and communicate *reliable* information and (ii) other agents have an incentive to listen and process that information. If an employee discloses unreliable information and other agents, ignoring their own information, follow the employee's lead, the quality of information within the network is reduced. On the contrary, if the employee truthfully communicates valuable information and the recipients do not uncritically endorse it, but rather process and evaluate it independently, then the quality of information within the network likely improves.

To frame this problem, it is useful to compare the incentives of the employees with those of proxy advisors, another very relevant source of information. To begin with, employees face much more competition in their labor market than ISS or Glass Lewis in the proxy advisory services market.¹³² At first glance, this seems to suggest that stock voters are more likely than proxy advisors to collect the relevant information rather than adopting one-size-fits-all heuristics.¹³³ However, exactly because the stock voters face higher competitive pressures, they have stronger incentives to conform to the priors of their potential employer. For example, if it is known that a potential employer's boss has strong environmental concerns, a stock voter might have more chances of being hired by forcefully criticizing an oil company management for underinvesting in alternative sources, irrespective of whether greater investment now is that company's best strategy from a strict shareholder value standpoint. Although proxy advisors similarly have an incentive to cater to the priors of their customers,¹³⁴ they might be in a better position to resist this temptation both because they face less competitive pressure and because their clients base is wider than the set of potential employers for the stock voter. Therefore, from this perspective proxy advisors might be a more reliable source of information. In short, it is hard to predict the quality of information produced by the employees, even relative to the information generated by other sources like proxy advisors.

¹³² It could be argued that the employees of ISS and Lewis might have similar incentives. However, for the employee of a proxy advisor it could be more problematic to circulate information for the simple reason that proxy advisors are paid to have and communicate their opinions to others on each and any shareholder meeting resolution. Assume, for instance, that ISS suggested to vote "for" a given proposal, while an employee finds out that voting "against" would be better from a shareholder perspective. By disclosing this information, the employee would be openly contradicting her employer, something which potential employers, independently of the value of new information, are unlikely to consider positively for recruiting purposes.

¹³³ For evidence in support of the fact that proxy advisors issue blanket recommendations *see* Iliev & Lowry *supra* note 54, at 448 (proxy advisors issue blanket recommendations when "they uniformly recommend for or against certain governance or compensation policies across all companies").

¹³⁴ *See supra* notes 71 and accompanying text.

In a similar way, it is hard to make generalized predictions on the behavior of the recipients of the message. While it might be wise for them to evaluate the information received from employees working for competitors, there are also good reasons to expect the recipients to herd. First, there is ample empirical evidence that stock pickers and financial analysts herd, especially younger ones,¹³⁵ and it is hard to see why stock voters might behave differently. Second, there is evidence that stock analysts at heavily diversified firms herd more, because they face a more complex task.¹³⁶ In this vein, it is plausible to expect stock voters to sometimes herd, given that they deal with a vast portfolio of firms operating in different sectors.

Regardless of its quality, information spread by institutional investors' employees is an inherent and inevitable characteristic of the network in which institutional investors are embedded. To conclude, an institutional investor's voting decisions can be affected not only by large and visible sources of information such as proxy advisors, but also by the behavior of other institutional investors' employees. Especially when institutional investors have a weak private signal, they might decide to ignore their private information and herd. In these cases, the tail will wag the dog and the information produced by an individual based on a private cost-benefit calculus will affect institutional investors' voting behavior.

E. Intra-Clique Cooperation and Inter-Clique Competition: Co-Ownership Ties

Networks of institutional investors created by co-ownership ties only recently started attracting the attention of economists. Some recent articles focus on co-ownership ties and show that these connections are relevant to understand institutional investor behavior. For instance, Bajo, Croci, and Marinelli show that institutional investors that are more connected via co-ownership ties create more value (as measured by Tobin's Q).¹³⁷ They argue that occupying a special position in a network can increase the status and the reputation of an agent.¹³⁸ In this vein, institutional investors that are central and better connected can be

¹³⁵ See Hong, Kubik & Solomon, *supra* note 124 at 123.

¹³⁶ See Chansog Kim & Christos Pantzalis, *Global/Industrial Diversification and Analyst Herding*, 59 FIN. ANALYSTS J. 69, 69 (2003).

¹³⁷ See Emanuele Bajo, Ettore Croci & Nicoletta Marinelli, *Institutional Investors Networks and Firm Value*, 1 (2017) ("we document that when a more central institutional investor owns a firm stake, the firm value is higher"), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2633541. Tobin's Q is a standard measure of firm value introduced by the Nobel Prize winner economist James Tobin.

¹³⁸ *Ibid.*

assumed to have a better reputation, and can therefore provide a certification of the quality of a company when they acquire its shares.¹³⁹

Crane, Koch and Michenaud identify roughly 20 cliques of institutional investors¹⁴⁰ and show that members of the same clique tend to use voice more often and to vote together on proxy items.¹⁴¹ This finding supports the hypothesis that institutional investors form a highly clustered population and that the presence of cliques of institutional investors connected by co-ownership ties increases the likelihood of cooperation.

The fundamental question then becomes why interconnected competitors should cooperate. One possible explanation is the idea – standard in sociobiology – that cooperators fare less well than defectors within a group, but that groups of cooperators fare better than groups of defectors.¹⁴² To see why this logic would apply to institutional investors' voting let us return to the example described in Part II. Let us now introduce companies j and k . Let us further assume that A and B own a fraction $w_{i,A} = w_{i,B}$ of company i shares, A and C own a fraction $w_{j,A} = w_{j,C}$ of company j shares and B and C own a fraction $w_{k,B} = w_{k,C}$ of company k shares. For the sake of simplicity, we consider $w_{i,A} = w_{j,A} = w_{k,B}$.¹⁴³ Using network terminology, in this example, A, B and C form a triangle in which the vertices (the institutional investors) are connected by co-ownership ties.¹⁴⁴ We assume that institutional investors D, E and F form a similar triangle connected by co-ownership ties in *other* portfolio companies (*i.e.* they do not own shares in A, B and C). Further, we assume that D, E and F do not cooperate, and hence they do not cast an informed vote, which, again by assumption, translates into a payoff of 0.

C might consider investing c_j to acquire information only if an informed vote can increase the value of j by b_j , so that $c_j < w_j b_j$.¹⁴⁵ However, C faces a trade-off. Investing in information would make it more competitive vis-à-vis institutional investors that do not hold

¹³⁹ *Ibid.*

¹⁴⁰ Crane, Koch & Michenaud, *supra* note 107, at 2 & 9-10. Identifying cliques in large networks pose significant methodological problems. Crane et al. rely on the Louvain algorithm to perform the task, *Ibid.*

¹⁴¹ *Ibid.*

¹⁴² See *e.g.* David S. Wilson & Edward O. Wilson, *supra* note **Fehler! Textmarke nicht definiert.**, at 327 (“Selfish individuals might out-compete altruists within groups, but internally altruistic groups out-compete selfish groups”).

¹⁴³ As noted above, asymmetric stakes might ameliorate the collective action problem. See *supra* note 54 and accompanying text.

¹⁴⁴ The number of triangles in a network is a key determinant of its clustering coefficient. See *supra* note 105 and corresponding text.

¹⁴⁵ Clearly, C applies a similar logic when deciding whether to invest in i , while A also considers investing in j , and so on. We present this more stylized version to simplify exposition.

shares in j (B, D, E and F) by $w_j b_j - c_j > 0$, but less competitive vis-à-vis its neighbor A by c_j . Similarly, B will investigate company k if it might increase its share value by b_k , so that $c_k < w_k b_k$. Also in this case, B might decide not to invest even with $c_k < w_k b_k$, if it considers that becoming less competitive vis-à-vis its neighbor C is more relevant than the gains vis-à-vis institutional investors that do not hold shares in k (A, D, E and F). If A, B and C decide not to invest in information their payoff will be equal to 0 and therefore they will not outperform D, E and F.

Let us now assume that A, B and C acknowledge that they form a triangle and cooperate so that A collects information on i , B collects information on k , and C gathers information on j . A's payoff would be equal to $w_i b_i + w_j b_j - c_i$, B's payoff would be $w_i b_i + w_k b_k - c_k$, and C's would equal $w_j b_j + w_k b_k - c_j$. Assuming for the sake of simplicity that the costs of collecting information are similar across the three portfolio companies for A, B and C, then they will increase their performance relative to their non-neighbors without becoming less competitive *vis-à-vis* their neighbors.

Therefore, under the necessary assumption that informed voting by institutional investors increases value, cliques of cooperators (A, B, and C) will outperform cliques of defectors (D, E, and F). This finding can explain why clique members decide to cooperate and, correspondingly, engage in competition vis-à-vis other cliques.

The idea that costly cooperation among some of the competing firms can make them more competitive *vis-à-vis* the rest is standard in both the economic and the management literature on research collaboration among firms. For instance, two competing firms sharing technology and know-how become more competitive vis-à-vis all the firms not involved in the exchange.¹⁴⁶ There are similarities between the two settings: in both cases firms make costly investments in research and share the output with some of their competitors (neighbors) to gain an advantage over the rest of the competitors (non-neighbors). We argue that the same dynamic applies to institutional investors' voting behavior: the presence of cliques might help explain why institutional investors sometimes use their voice despite rational reticence.¹⁴⁷

We can draw three inferences from this stylized illustration. First of all, the network structure affects the relationship between group size and free-riding as discussed in the CJT

¹⁴⁶ See GOYAL, *supra* note 21, at 245-66.

¹⁴⁷ See Crane, Koch & Michenaud, *supra* note 13, at 3 (discussing the relation between clique ownership and voice and finding that belonging to the same clique leads institutional investors to use voice more often).

literature.¹⁴⁸ Remember that in the CJT framework, incentives to free ride increase with group size.¹⁴⁹ Network theory shows that connections among members can help overcome free riding. Thus, apart from group size, also the existing patterns of connections among group members influence the levels of cooperation, and ultimately whether institutional investors cast informed votes. Second, “higher” level competition among cliques of institutional investors defined by co-ownership ties might explain Crane and others’ result that clique members tend to use voice more often.¹⁵⁰ Third, cliques allow for division of labor among institutional investors and each clique member will concentrate its monitoring efforts on a subset of companies in its portfolio. It seems reasonable to hypothesize that each institutional investor will concentrate on companies for which it has a comparative advantage in terms of investigation costs. Notably, leaving aside antitrust concerns, division of labor among a clique’s members is also welfare-improving.¹⁵¹ In fact, absent cooperation, the sum of the payoffs of all players is 0 if A, B and C defect.¹⁵² Instead, if A, B and C cooperate, the aggregate welfare will be higher.¹⁵³

However, one could argue that this result only applies to the specific example above, and that it has no general validity. In the example, we have implicitly assumed that institutional investors can process information received by other clique members without incurring any cost. This assumption is unreasonable, unless one further assumes that clique members blindly follow their clique peers. However, if that is the case, the efficiency of cooperation can be questioned on the basis of the CJT. If institutional investors blindly follow other members of their clique, then cooperation might crowd out information production by institutional investors. Or, to put it differently, cooperation would prevent efficient aggregation of private information, leading shareholders to take the wrong decision more frequently. That is unconvincing.

To begin with, although the cost of processing information received by other clique members (define it as $\alpha_i, \alpha_j, \alpha_k$, respectively) is positive, it remains strictly smaller than the cost of *collecting* and processing it anew.¹⁵⁴ Thus, even relaxing the assumption that processing information is costless, cooperation remains a more efficient alternative to the

¹⁴⁸ McCannon & Walker, *supra* note 43, *passim*.

¹⁴⁹ See *supra*, text preceding note 43.

¹⁵⁰ Crane, Koch & Michenaud, *supra* note 13, at 3.

¹⁵¹ Although, to be sure, this is merely our working assumption.

¹⁵² We recall that the payoffs of D, E and F equal 0 in every scenario.

¹⁵³ In particular, $2w_j b_j + 2w_k b_k + 2w_i b_i - c_i - c_j - c_k > 0$.

¹⁵⁴ Gilson & Gordon, *supra* note 52, *passim*. In our framework, $c_i > \alpha_i, c_j > \alpha_j$ and $c_k > \alpha_k$.

duplications of costs associated with the scenario in which each institutional investor independently collects information on each portfolio company. Clearly, however, cooperation will not *always* be the best strategy. For instance, when the benefits are lower than the costs, passivity will be preferable.

Let us now turn to the second part of the counterargument, namely that institutional investors might blindly follow other clique members. The problem would be that, by crowding out the production of private information, cooperation also entails a cost. More precisely, cooperation of this kind would reduce the likelihood that the shareholder meeting makes the “right” (*i.e.*, the value-maximizing) decision. This cost is borne by the shareholders themselves, and in our example it would translate into lower b_i, b_j and b_k . At the same time, compared to the scenario in which each institutional investor must investigate every portfolio company independently, cooperation allows institutional investors to save on information costs. More precisely, the institutional investor C saves $(c_k - \alpha_k) > 0$. Clique members will therefore have to make a choice between the reduced probability of getting the right voting outcome and the cost savings. Clique members will only cooperate when the cost savings ensured by cooperation more than compensate for the reduced probability of making the right decision. In other words, institutional investors engage in intra-clique cooperation only when it gives a benefit to clique members *vis-à-vis* other institutional investors. Thus, clique members would simply have no incentives to engage in cooperation when the reduction in b_i, b_j and b_k outweighs the costs savings from cooperation.

F. Can Cooperation emerge and be sustained?

The fact that cooperation might be beneficial for network members does not automatically imply that it will emerge and be sustained. In previous sections, though, we have seen both examples of real-world formal networks and reported empirical evidence of behavior consistent with intra-network cooperation in the presence of geographical and co-ownership ties. In this section, we provide some intuitions for why such cooperation does emerge and can be sustained.

1. Formal Networks. As we noted in section IV.B, cooperation can be mediated and facilitated by formal institutions. Two questions that we left unanswered there are, first, why

these institutions emerge and, second, why institutional investors are willing to pay fees to become members.¹⁵⁵ Network theory can help answer both questions.

We have seen that cooperation can increase the payoffs of the institutional investors that are invested in the same company. However, patterns of cooperative behavior might collapse due to imperfect monitoring or ineffective sanctions for free riders. Thus, if the potential gains from cooperating are large enough, the relevant players might decide to invest resources in the creation of a public monitoring institution that increases the chances that those patterns of cooperative behavior are sustained across time.¹⁵⁶ The decision taken in 1985 to create the CII can also be seen as an attempt to introduce such a monitoring institution.¹⁵⁷

An objection would be that common portfolio investments are not permanent. Although many institutional investors hold shares for a relatively long time,¹⁵⁸ their portfolios are bound to evolve over time.¹⁵⁹ In this vein, one may wonder why an institutional investor should invest resources for the creation of a monitoring institution together with other investors with which it might not share co-ownership ties in the future. This is a very standard problem in network theory, because networks are often very complex and agents have limited knowledge about the characteristics, or even the identity, of their present and future neighbors.¹⁶⁰

Institutional investors have at least four reasons to form a monitoring institution despite their imperfect information about the future structure of the network. First, although an institutional investor cannot know which institutional investors it will be connected to in, say, ten years time, it knows that it will most likely have *some* connections. When an

¹⁵⁵ For instance, CII membership fees range between \$3,000 and \$30,000, depending on institutional investor size. See Guyatt, *supra* note 108, at 94.

¹⁵⁶ See Maximilian Mihm, Russell Toth & Corey Lang, *What Goes Around Comes Around: A Theory of Indirect Reciprocity in Networks* 31 (CAE Working Paper No. 09-07, 2009), <https://www.econstor.eu/handle/10419/70450> (last visited Feb. 6, 2018): “players may be willing to pay up to 60% of the benefit from a maintained relationship for a public monitoring institution that supports network enforcement.” The percentage that they derive is clearly dependent on the characteristics of the model and the effectiveness of the supervising institution. However, the gist of the argument is that players might be willing to bear a cost in order to ease cooperation.

¹⁵⁷ For a brief overview of the history of CII see COUNCIL OF INSTITUTIONAL INVESTORS, http://www.cii.org/cii_history (last visited Feb. 6, 2018).

¹⁵⁸ See *infra* note 185.

¹⁵⁹ The same logic applies to other kind of ties, such as geographical and formal ties. In fact, institutional investors might move some of their offices or join (quit) a formal network.

¹⁶⁰ Cf. GOYAL *supra* note 21, at 49 (noting that “firms located in research networks or scientists in coauthor networks typically have fairly limited information on the networks”). Another example are technologies like a phone app or the internet, as their utility clearly depends on the number of adopters (*i.e.* agents in the network), yet it is often impossible to know this number in advance.

individual decides whether to invest time and resources in learning a language, she does not know with whom (or with how many people) she will speak that language during her life. Yet, in most cases she knows that she will be able to speak the new language with *some* people, and she might even have a rough estimate of their number. This is often sufficient to justify the investment. An institutional investor is in a similar position. It does not know who its neighbors will be, yet it might still have an interest in creating a multilateral platform to communicate with its neighbors because it will most likely have *some* neighbors.¹⁶¹

Second, in relative terms the cost that each institutional investor bears to set up a monitoring institution is likely to be minuscule compared to the value of its portfolio. Therefore, if cooperation (*i.e.* informed voting) increases the value of portfolio assets, however marginally, the benefits derived from cooperation would most likely outweigh the costs borne by each investor to establish the monitoring institution.¹⁶²

Third, a monitoring institution might have a significant impact on the likelihood of cooperation. Although it is now possible to observe all the votes cast by each mutual fund, this form of ex-post monitoring is still imperfect. Cooperation might collapse if institutional investors are not able to identify with sufficient accuracy the instances in which other neighbors cast an informed vote. From this perspective, pre-voting communication might greatly improve the ability of neighbors to detect deviations. By discussing portfolio companies matters with other members of the clique, it should often be possible to infer whether others have done their “homework” or rather know nothing about any of their portfolio companies and merely plan to rubberstamp managers’ proposals or blindly follow proxy advisors’ recommendations.¹⁶³

Finally, from a pure network perspective founding or joining the monitoring institution at an early stage can allow the institutional investor to obtain a better position in

¹⁶¹ Organizations like the CII are also established to facilitate lobbying. To some extent all institutional investors share similar preferences in terms of lobbying, and it is therefore clear why they want to unite forces. However, to the extent that some of their goals are affected by the composition of their portfolio or their management style (*e.g.*, whether active or passive), their preferences on some issues might be heterogeneous. In the latter case, the analogy with learning a language works also with respect to lobbying: why would any institutional investors create a lobbying association, given that their interests are fluid and depend at least in part on their management styles and the companies that they have in their portfolio at any given moment? The answer is that an institutional investor will most likely share similar goals with *some* other institutional investors at each point in time. Thus, it might still have an interest in creating a multilateral platform to communicate with other institutional investors.

¹⁶² Given how negligible the fees are, this is most likely true even accounting for the fact that the majority of the benefits from an increase in the value of the portfolio do not accrue to the fund manager, but to its clients.

¹⁶³ Notably, a network can sustain cooperation even when there are uncooperative fringes, provided that cooperative players are sufficiently patient and closely connected. *See* Matthew Haag & Roger Lagunoff, *Social Norms, Local Interaction, and Neighborhood Planning*, 47 INT’L. ECON. REV. 265, 268 (2006).

the network. It is a standard finding of the literature on networks that one actor's payoff depends on her position within the network.¹⁶⁴ In particular, it has been shown that *ceteris paribus* firms bridging structural holes generally perform better than other firms.¹⁶⁵ A firm bridges structural holes when it connects firms that would otherwise be unconnected. In Fig. 2, firms A and E occupy a structural hole, because in their absence firms B, C, D, F and G would not be connected.

¹⁶⁴ GOYAL *supra* note 21, at 143 (“we observed that individuals occupying certain positions in a network have access to substantial advantages”).

¹⁶⁵ See RONALD S. BURT, *STRUCTURAL HOLES: THE SOCIAL STRUCTURE OF COMPETITION* 5 (1992):

Connecting across structural holes increases the risk of productive accident—the risk of encountering a new opinion or practice not yet familiar to colleagues, the risk of envisioning a new synthesis of existing opinion or practice, the risk of finding a course of action through conflicting interests, the risk of discovering a new source for needed resources. Bridging structural holes creates a vision advantage in detecting and developing productive opportunities. The advantage is manifest in standard performance metrics.

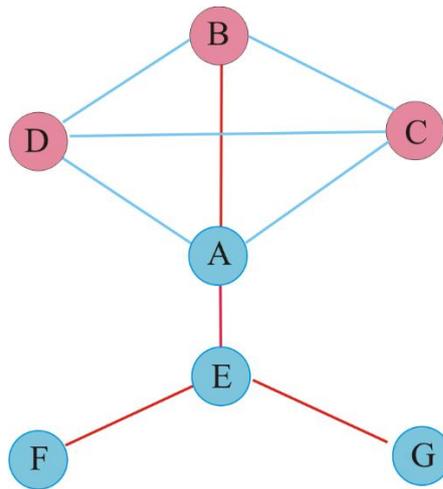


Figure 2: Bridge firms A and E connect firms B, C, D to firms F and G

In our context, an institutional investor A joining a formal network would bridge structural holes between its pre-existing neighbors and the institutional investors, like E, that are part of the formal network but are not connected to A’s neighbors. Institutions bridging structural holes might outperform other institutions for two reasons. First, they have a wider access to information, and therefore potentially to more innovative ideas and know-how.¹⁶⁶ This factor is crucial for mutual fund managers and similar institutional investors.¹⁶⁷ Second, institutions may hesitate to cast a vote against management due to fear of retaliation.¹⁶⁸ An institution that is part of a group that together votes against the management faces a lower risk of retaliation from managers.¹⁶⁹ In line with this hypothesis, Matvos and Ostrovsky find evidence of a strong peer effect in fund managers’ voting decisions.¹⁷⁰ Funds are more likely to oppose management if their peers are also opposing it.¹⁷¹ Bridging structural holes allows

¹⁶⁶ Akbar Zaheer & Geoffrey G. Bell, *Benefiting from Network Position: Firm capabilities, Structural Holes, and Performance*, 26 STRATEGIC MANAGEMENT JOURNAL 809, 811 (2005).

¹⁶⁷ *Ibid.* (noting that while at first glance one might conclude that for funds this factor may not be that relevant, “mutual fund companies rely to a great extent on innovative new products and services to distinguish themselves from their competition.” The gist of their argument is that new products and services cannot be patented, and therefore funds are constantly looking for opportunities to differentiate themselves from their competitors).

¹⁶⁸ Gerald F. Davis & E. Han Kim, *Business Ties and Proxy Voting by Mutual Funds*, 85 J. FIN. ECON. 552, 552 (2007) (showing that funds that “[a]ggregate votes at the fund family level indicate a positive relation between business ties and the propensity to vote with management”).

¹⁶⁹ Gregor Matvos & Michael Ostrovsky, *Heterogeneity and Peer Effects in Mutual Fund Proxy Voting*, 98 J. FIN. ECON. 90, 91-92 (2010) (noting that it is harder for the management to retaliate against a larger number of funds).

¹⁷⁰ *Id.*

¹⁷¹ *Id.*

one to be part of more groups and this, in turn, reduces the risk of retaliation against voting choices.¹⁷²

An obvious corollary is that the level of interconnection of a network is not the only factor that matters: it is also the case that agents' location within the network influences their payoffs and incentives and therefore affects the overall amount of information that circulates within the network as well as the cost at which it is produced.

2. *Information sharing.* One might argue that an institutional investor will have insufficient incentives to share valuable information with competitors. In addition, should information be shared, the recipient might decide not to trust it, given that it comes from a competitor. For sure, an asset manager that has strong reasons to believe that the price of a stock will increase in the coming months might have some incentives to conceal this information from its competitors so as not to improve their relative performance. Similarly, its competitors may question the truthfulness of the voting-related information if she decides to disclose it. However, the trust problem among asset managers is routinely overcome when they have frequent interactions. In fact, Pool et al. show that information travelling through informal personal relationships affect the investment decisions of managers that live in the same area.¹⁷³ This result can be obtained only if there is some degree of trust among asset managers living in the same area, even if they work for competing institutional investors. There is no sound theoretical reason to argue that this dynamic applies to stock trading but not to stock voting. If anything, the value of information on voting strategies increases when it spreads around, because greater diffusion makes it likelier that a majority shares the position of the active institutional investor. Thus, an institutional investor that has collected information on how to vote on a given company has all the incentives to share it with competitors.

¹⁷² Assume that a first pair of institutional investors, A and B, are both invested in company *i*, whereas a second pair, C and D, are both invested in company *j*. Assume further that institutional investor E acts as a bridge among these two pairs, having invested in both *i* and *j*. Now, suppose that A and B want to vote against management at portfolio company *i*, whereas C and D want to vote against management at portfolio company *j*. As E is connected to both pairs (A–B and C–D), it will always be part of a coalition of three institutional investors if it decides to vote against management at either *i* or *j*. Instead, A, B, C and D might find themselves in a coalition of two if E does not endorse their strategy. As retaliation from management is harder when opposition comes from a larger coalition, bridging structural holes allows more freedom in voting against management.

¹⁷³ See Pool, Stoffman & Yonker *supra* note 10, at 2679 (“socially connected fund managers have more similar holdings and trades”).

Let us go back to our example in section IV.E¹⁷⁴ and, for simplicity, let us assume that company i issues 100 shares and both A and B (but not C, D, E, and F) hold 30 percent of them ($w_i = 0.3$). Let us further assume that the cost of acquiring information $c_{i,A} = c_{i,B} = 50$. By investing $c_{i,A}$, A discovers that if the management proposal is rejected, the company's value will increase by 300 ($w_{i,A}b_{i,A} = 90$).¹⁷⁵

There are three possible scenarios:

- (1) Firm A does not invest in information. The relative performances of the funds will not change. However, A will forego the possibility to gain 40 *vis-à-vis* the funds that do not own shares in company i .
- (2) Firm A invests in information and shares it with firm B. B is persuaded and votes with A. Therefore, the strategy is implemented. In this case, A gains 40 *vis-à-vis* C, D, E and F, while B gains 90 and A loses 50 relative to B: A and B reap the same benefits, but only A has borne the costs.
- (3) Firm A invests in information, doesn't share it with B, and B votes with management. In this case, assuming that a majority of the other shareholders also vote with management, A's preferred strategy is not implemented. In this scenario, A foregoes the possibility of gaining 40 *vis-à-vis* C, D, E and F. In addition, it loses 50 relative to every competitor.

While the choice between (1) and (2) depends on the information *ex ante* available to A on who its closest competitors are, and on whether A and B are part of a clique that cooperates, it is clear that scenario (2) dominates scenario (3).¹⁷⁶ Thus, once an institutional investor has voting-related information that is likely to improve the performance of a portfolio company, it has very direct and clear incentives to share it with other shareholders.¹⁷⁷

From this perspective, an institutional investor that obtains information acts as an imperfect surrogate of an activist hedge fund *à la* Gilson-Gordon.¹⁷⁸ According to Gilson and Gordon, hedge funds have the role of formulating proposals and presenting them to

¹⁷⁴ See *supra* notes 142-146 and corresponding text.

¹⁷⁵ For the sake of simplicity, in this example we are assuming that A expects its vote to be pivotal.

¹⁷⁶ The only exception would be when the cost of informing B exceeds the weighted benefits of the strategy. However, were communication so costly, Hong, Kubik & Stein, *supra* note 10, would not have observed the word of mouth effect among stock pickers.

¹⁷⁷ We explore elsewhere in this article some of the reasons that might prompt the institutional investor to acquire information in the first place, such as informational cascades triggered by employees (section IV.D) and inter-clique competition (section IV.E).

¹⁷⁸ Gilson & Gordon, *supra* note 51, at 896-902.

institutional investors so that the latter only have to respond to a proposal, instead of having to come up with one. Here, an institutional investor would act as an imperfect surrogate of a hedge fund, because it would give other institutional investors a recommendation on how to vote, allowing them to merely process the information they receive instead of having to search for it.¹⁷⁹ Clearly, the key word here is “imperfect.” Institutional investors have no interest in embarking in an expensive campaign to persuade other shareholders and, unlike hedge funds, they are generally unwilling to put an alternative strategy on the table. Therefore, their action might not be as strong and as persuasive as that of an activist hedge fund. However, institutional investors investing in voting-related information do have the incentives to share it – directly or indirectly – with other institutional shareholders. In turn, that reduces the cost of casting an informed vote for the other institutional shareholders and *ceteris paribus* increases the level of active voting.

Having established that there can be sufficient incentives to circulate information within the network, let us focus on whether intra-clique cooperation specifically is sustainable. Recent works on network theory show that cooperative strategies are sustainable in the presence of highly interconnected networks.¹⁸⁰ In other words, the presence of clusters within the network increases the likelihood of cooperative behavior. Given that the density of the network of institutional investors is rapidly increasing, that should be the case also in our setting.¹⁸¹

In addition, the rate of cooperation significantly increases when the game is repeated,¹⁸² even more so when the game is repeated among experienced players.¹⁸³ That is, when players are experienced, the prospect of future rounds has a stronger effect on

¹⁷⁹ *Id.*

¹⁸⁰ See Crane, Koch & Michenaud, *supra* note 13, at 8; Assenza, Gómez-Gardeñes, & Latora, *supra* note 105, at 4.

¹⁸¹ Network density is related to the clustering of a network because it expresses the ratio between the existing ties and all potential ties. For our purpose, it is important to note that the density of the institutional investor network defined in terms of co-ownership ties is rapidly growing. For instance, it has more than tripled between 2000 and 2010. See Azar, *supra* note 99, at 3. Technically speaking, if institutional investors are large enough to own shares in an extremely high number of firms, one might end up with a single gigantic clique. Realistically, however, a minimum level of co-investment may be needed in order for co-ownership ties to be relevant for coordination purposes. While it cannot be ruled out that there will be ever more concentration within the asset industry market in the future, the multi-decade trend has been the opposite, according to Crane, Koch & Michenaud, *supra* note 13, at 2, and there are natural limits to aggregate passive investment (see e.g. Howard Marks, Investing Without People, Memo to Oaktree Clients, downloadable at <https://www.oaktreecapital.com/insights/howard-marks-memos>).

¹⁸² Pedro Dal Bó, *Cooperation Under the Shadow of the Future: Experimental Evidence from Infinitely Repeated Games*, 95 AM. ECON. REV. 1591, 1591 (2005) (finding strong evidence that the probability of continuing the game greatly affects cooperation rates).

¹⁸³ Pedro Dal Bó & Guillaume R. Fréchette, *On the Determinants of Cooperation in Infinitely Repeated Games: A Survey*, 56 J. ECON. LIT. 60, 66-67 (2018).

cooperation rates than with inexperienced players.¹⁸⁴ From this perspective, it must be noted that mutual fund managers and other institutional investors often hold shares in portfolio companies for a relatively long time.¹⁸⁵ This gives them the opportunity to repeat the game multiple times while keeping cliques relatively stable. In addition, because most institutional investors hold shares in a very high number of companies, their stock voters can quickly gain a significant experience on how to play the game. As the voting game is repeated a high number of times and played by experienced players, collaboration is likely to emerge.

Consider also that, while until 2003 institutional investors could not observe how any other institution voted in each portfolio company, after the SEC required mutual funds to disclose their votes,¹⁸⁶ public monitoring of this subset of institutions has become possible. That, in turn, entails a significant increase in the likelihood of cooperation.¹⁸⁷

Finally, some large institutional investors make their voting intentions available to the public *prior* to shareholders meetings.¹⁸⁸ This can be seen as an attempt to give credibility to their commitments. Casting a different vote after their voting intention has been made public would most likely carry a significant reputational hit. Thus, if institutional investors implicitly or explicitly agree to cooperate and gather information, they can then signal that

¹⁸⁴ *Id.* at 68 (also stating that, “[h]ence, having repeated interactions with an uncertain horizon has an important impact on the ability of subjects to support cooperation once they have gained experience”).

¹⁸⁵ Passive funds are by definition quasi-permanent shareholders. For instance, the CEO of Vanguard once stated that “[o]ur favorite holding period is forever. We’re going to hold your stock when you hit your quarterly earnings target. And we’ll hold it when you don’t. We’re going to hold your stock if we like you. And if we don’t. We’re going to hold your stock when everyone else is piling in. And when everyone else is running for the exits.” F. William McNabb III, *Getting to Know You: Sharing Practical Governance Viewpoints*, University of Delaware, John Weinberg Center for Corporate Governance, speech on October 30, 3 (2014) <https://pdfs.semanticscholar.org/2366/e4b11532afcf6d43bb71557a61db817fc074.pdf>. Active mutual funds might have a somewhat shorter time horizon. However, large funds tend to be simultaneously connected via many co-ownership ties, thus keeping the core of the cliques relatively stable. For instance, it is implausible to expect Fidelity to suddenly sell all its shares of firms in which also Vanguard is a shareholder.

¹⁸⁶ See *supra* notes 66-67 and accompanying text.

¹⁸⁷ Dal Bó & Fréchette, *supra* note 183, at 63 and 64; Masaki Aoyagi, Venkataraman Bhaskar & Guillaume R. Fréchette, *The Impact of Monitoring in Infinitely Repeated Games: Perfect, Public, and Private*, AM. ECON. J.: MICROECONOMICS (forthcoming 2018) (manuscript at 10) (“the lack of common knowledge of histories becomes a major obstacle for cooperation”).

¹⁸⁸ For example, the California Public Employees’ Retirement System (CalPERS) attempts to publish its voting decisions prior to shareholder meetings. See *CalPERS Discloses Proxy Votes in Advance of Meetings*, CORPGOV.NET (Dec. 22, 2015), <https://www.corpgov.net/2015/12/calpers-discloses-proxy-votes-in-advance-of-meetings/>. CalPERS is not the only institutional investor to behave this way. Domini Social Investment posts “its votes approximately two weeks prior to each company’s annual meeting.” See *Domini Social Investments Continues Push for Increased Corporate Accountability*, DOMINI (Mar. 21, 2002) <https://www.domini.com/responsible-investing/making-difference/domini-social-investments-continues-push-increased-corporate>. Similarly, the Florida State Board of Administration “discloses all proxy voting decisions once they have been made, typically seven to ten calendar days prior to the date of the shareowner meeting”. See *Corporate governance principles*, FLA. STATE BOARD OF ADMIN. (2016), https://www.sbafla.com/fsb/Portals/FSB/Content/CorporateGovernance/ProxyVoting/2016_SBACorpGovPrinciplesProxyVotingGuidelines.pdf.

they do not intend to passively rubber-stamp management’s proposals or blindly follow proxy advisors’ recommendations by declaring their voting intentions.

V. Policy implications

In the previous sections we have shown how network theory can help understand institutional investor voting behavior. It is now time to ask whether these insights have any normative implications.¹⁸⁹ We venture in this direction with some hesitance, though, for at least two reasons.

First of all, we have been so far quite agnostic as to the fundamental question of whether institutional investors’ engagement with portfolio companies is welfare-improving or, otherwise put, whether policymakers should craft rules pushing them in the direction of either more or less involvement in portfolio companies’ governance. Our admittedly cautious starting point was that, so long as rules require shareholders to vote, it is intuitively better if their voting is informed rather than uninformed (Part II). We do not depart from our cautiously neutral stance in this Part.

Second, the main contribution of this article is to propose network theory as an appropriate tool to study the voting behavior (and more generally the corporate governance role) of institutional investors. While we advance many arguments to explain why a new door should be opened, we cannot predict with certainty what lies across it. To put it differently, fine-grained policy recommendations built on network theory can only be developed after a significant number of careful empirical studies has been carried out. This article is an attempt to stimulate more of these studies.

Until more such studies are carried out, we must be very cautious in drawing policy conclusions. Hence, we refrain from extending our normative analysis to policy areas where network theory might be thought to provide new insights, such as in defining the ties that may cement a “group” for the purposes of ownership disclosure rules or in evaluating current policies on shareholder communications. Suffice it to say that our framework highlights the absolute centrality of these policy issues.

With these caveats in mind, we restrict our focus on two recent policy proposals pertaining to institutional investors’ shareholdings, namely the proposal that common

¹⁸⁹ The practical implications, which we leave aside here, are self-evident: network theory can support management, activists, and their advisors in identifying key nodes in a company’s shareholder base, *i.e.* those institutional investors with the greatest potential for influencing their peers due to their position in the network.

shareholdings within concentrated industries should be regulated out of antitrust concerns and the recommendation for greater disclosure over institutional investors' voting.

A. Antitrust and Horizontal Shareholding

A recent strand of literature has discussed the alleged anticompetitive effects of the presence of the same institutional investors as the largest shareholders of companies within concentrated industries.¹⁹⁰ The basic argument is simple. Given that large institutional investors hold some of the largest stakes in virtually all listed firms, they often own shares in all firms competing on the same market.¹⁹¹ The phenomenon is known as “horizontal shareholding.”¹⁹² Horizontal shareholding can harm competition because the horizontal shareholder's interest might be in maximizing the joint surplus of the horizontal competitors, instead of encouraging fierce competition among them (hereinafter, the horizontal shareholding hypothesis).¹⁹³

To clarify the point, Elhauge discusses the example of two restaurants, R_1 and R_2 , located in the same area.¹⁹⁴ If R_1 and R_2 have different owners, they will be competing to attract new customers. For instance, R_1 might lower its prices to steal some of R_2 customers. If enough costumers switch from R_2 to R_1 , then R_1 will increase its profits even if the margin per costumer goes down following the reduction in prices. Elhauge argues that the situation changes dramatically when R_1 and R_2 have a similar shareholder base. In this scenario, the shareholders of the two restaurants will have an incentive to maximize the joint value of R_1 and R_2 . The horizontal shareholders would dissuade R_1 and R_2 managers from competing and instead induce them to maximize their joint profits by raising prices. Eventually, managers will understand that this is what their shareholders want with no need for the latter to express their preference for a cartel-like behavior among competitors. There is some empirical evidence supporting the horizontal shareholding hypothesis. In particular, Azar,

¹⁹⁰ For a survey of this literature, see Martin C. Schmalz, *Common-Ownership Concentration and Corporate Conduct*, 10 ANN. REV. FIN. ECON. (forthcoming).

¹⁹¹ Einer Elhauge, *The Growing Problem of Horizontal Shareholding*, 3 ANTITRUST CHRONICLES 1, 2 (2017) (“[t]he evidence also shows that in recent decades the level of institutional shareholding passed a tipping point, such that the probability that two competing firms have a common shareholder holding at least 5 percent of each has increased from 16 percent in 1999 to 90 percent by the end of 2014”).

¹⁹² *Id.*

¹⁹³ See e.g. Azar, Schmalz & Tecu, *supra* note 25, at 1.

¹⁹⁴ Elhauge *supra* note 24, at 1269.

Schmalz and Tecu find that horizontal shareholding in the airline industry is associated with higher prices at the route level.¹⁹⁵

Building on this, Posner, Morton and Weyl have proposed that institutional investors be required to hold shares only in one firm in each oligopolistic market, with two exceptions.¹⁹⁶ First, they would be allowed to own shares in horizontal competitors provided that they abide to a very stringent cap (no more than 1 percent of the total size of the industry). Second, they would be allowed to commit to never vote their shares or to vote them in proportion to the votes cast by other shareholders.¹⁹⁷ Posner and his coauthors argue that, with such rules in place, most large institutional investors would prefer to hold shares in a single firm in each market.¹⁹⁸

Elhauge's suggestion is rather to rely on the Clayton Act § 7 to limit horizontal shareholdings: when horizontal shareholdings exceed a certain threshold, institutional investors should be exposed to antitrust liability.¹⁹⁹ According to Elhauge, because the efficiency gains associated with an increase in horizontal shareholdings above the threshold he identifies would almost never be sufficient to compensate for their anticompetitive effects,²⁰⁰ the only way for institutional investors to be entirely safe from antitrust claims would be to refrain from horizontal investments.²⁰¹

Thus, both proposals would largely have the same effect: inducing institutional investors to concentrate their assets in one single firm in each oligopolistic market. Another important similarity between the two proposals is that they would apply to all oligopolistic markets in exactly the same way. In other words, both Elhauge and Posner, Morton and Weyl propose a one-size-fits-all approach for all oligopolistic markets.

Before discussing the problems associated with these proposals, it is important to note that horizontal shareholding relies on a key assumption: managers and institutional investors do not need to communicate, as managers know that horizontal shareholders prefer higher

¹⁹⁵ Azar, Schmalz & Tecu, *supra* note 25, at 3. *But see* Pauline Kennedy et al., *supra* note 25, at 23 (using the same dataset as Azar, Schmalz and Tecu and finding that horizontal shareholdings do not lead to higher prices).

¹⁹⁶ Posner, Morton & Weyl *supra* note 28, at 33 (whereby further qualifications).

¹⁹⁷ *Id.*

¹⁹⁸ *Id.* at 10 (arguing that institutional investors would not frequently opt for the safe harbor of pure passivity).

¹⁹⁹ *see* Elhauge *supra* note 24, at 1302-04.

²⁰⁰ *Id.* at 1303 (“The grounds for challenging horizontal shareholdings are in one important sense stronger than the grounds for challenging mergers. A true merger creates integrative efficiencies that might offset any anticompetitive effect from increasing concentration. In contrast, stock acquisitions that create horizontal shareholdings generate no such offsetting integrative efficiencies. There is thus little reason to allow horizontal shareholdings if they have any significant anticompetitive potential”).

²⁰¹ *Id.* at 1314-16.

prices.²⁰² In fact, if institutional investors and managers explicitly agreed to reduce quantities and increase prices, horizontal shareholding would be no different from any cartel, and therefore *per se* illegal. In turn, this presupposes another hidden and very strong assumption: All (sufficiently large) institutional investors prefer higher prices in *all* markets. Otherwise, if institutional investors preferred less competition only in some, managers would need some signals to know which markets they should reduce competition in. As one of us argues at greater length elsewhere based on insights from network theory, this assumption is unreasonable.²⁰³

The assumption that horizontal shareholders want higher prices in all markets holds if and only if institutional investors consider individual products and services markets the fundamental unit of analysis around which to devise their strategies.²⁰⁴ Yet, institutional investors clearly have no reason to do so.

In the restaurants example, the horizontal shareholder's interest is to maximize the joint value of R_1 and R_2 , and therefore to charge higher prices. The ability to raise prices is constrained by the elasticity of demand. If prices are too high, the potential customers might decide to do grocery and eat at home, or they might prefer a fast food chain (F_1). However, if the horizontal shareholder is a large institutional investor such as BlackRock, the constraint imposed by demand elasticity assumes a very different meaning.²⁰⁵ As BlackRock owns shares in a very high number of firms, it will most likely have significant stakes also in fast food and supermarket chains. Thus, unlike traditional monopolists, BlackRock can recapture consumers across markets. In this vein, instead of maximizing the joint value of the firms within a single market (in this example R_1 and R_2), BlackRock has every reason to take inter-market spillovers into account and attempt to maximize the overall value of its portfolio.

In addition, because institutional investors compete on relative performance, they are affected by the composition of their competitors' portfolios. Assume that at t_0 institutions A and B own relatively larger stakes in R_1 than in R_2 and F_1 . Assume further that institution C owns relatively more shares in R_2 and F_1 than in R_1 . In such a case, A and B might have an

²⁰² See Einer Elhauge, *New Evidence, Proofs, and Legal Theories on Horizontal Shareholding*, 1 (2018) https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3096812 (“[t]he new economic proofs show that, without any need for coordination or communication, horizontal shareholding will cause corporate managers to lessen competition to the extent they care about their vote share or reelection odds and will cause executive compensation to be based less on firm performance and more on industry performance” [emphasis added]).

²⁰³ Alessandro Romano, *Horizontal Shareholding: The End of Markets and the Rise of Networks?* (manuscript with the author)

²⁰⁴ *Id.*

²⁰⁵ *Id.* (discussing a similar example involving the airline industry).

incentive to induce R_1 to compete aggressively and steal customers from R_2 and F_1 . This would allow A and B to improve their relative performance *vis-à-vis* C, given that the latter has a larger stake in R_2 and F_1 and a smaller stake in R_1 . However, assume now that at t_1 A and B buy a large stake in another fast food chain (F_2).²⁰⁶ This might change their behavior also in the restaurants market: by lowering prices at R_1 , they would also harm F_2 . How could a manager know that A and B prefer R_1 to compete aggressively at t_0 and not at t_1 without any communication from the two institutional investors? As hinted, if institutional investors explicitly informed their portfolio firms managers operating in a given market that they must raise prices and reduce output, this would be a traditional cartel. To put it differently, institutional investors have incentives to consider the effects of a given strategy on firms operating in various markets. As in this simplified example, one institutional investor might prefer more aggressive competition in some markets and higher prices in others depending on the web of ownership ties.

The structure of co-ownership ties is also relevant: it is costly for an institutional investor to find out which strategy maximizes the value of a portfolio company, and in an atomistic world they would rarely incur this cost. In the previous example, for instance, A would not invest in monitoring of R_1 and F_2 , because that would worsen its performance relative to B. In fact, the latter would reap the benefits from A's costly effort without incurring any cost itself. However, network theory puts things in a different light. On the one hand, if A and B belong to the same clique, they can divide labor and split the burden of monitoring R_1 and F_2 .²⁰⁷ On the other hand, the strategy that A prefers for R_1 and R_2 might be different from that of another institutional investor that owns stakes in those companies but is part of a different clique and has a different portfolio composition. Therefore, network effects are important to understand institutional investors' preferences over competition choices.²⁰⁸

In this article, we have focused on the structure of the network in which institutional investors are embedded and showed that it is an important determinant of their behavior *qua* shareholders. In particular, we have highlighted four kinds of ties that are likely to affect how and when institutional investors use their voice: (i) formal networks, (ii) geographical ties,

²⁰⁶ Note also that BlackRock and Fidelity might have an incentive to cooperate and split the costs of monitoring R_1 and F_2 .

²⁰⁷ See *supra*, section IV.E.

²⁰⁸ Romano *supra* note 203 (showing that Posner et al.'s proposal might paradoxically result in *more* collusion across markets).

(iii) connections among employees and (iv) co-ownership ties. These four kinds of ties, which are just meant to be illustrations of how networks can affect behavior, are largely independent of the boundaries of the portfolio firms' markets. There is no reason to think that formal networks are joined by institutional investors based on the market in which their portfolio firms compete. Geographical ties and connections among employees favor the diffusion of information and increase the likelihood of cooperation among institutional investors. Also in this context market boundaries appear to play a very limited role. Finally, co-ownership ties need not involve firms operating in the same markets, and cliques can be formed also via connections to portfolio firms operating in different markets.

Because institutional investors cannot generally be assumed to devise their preferences over portfolio firms' competition strategies based on industry boundaries, they cannot be assumed to prefer higher prices in all markets in which their portfolio firms operate either. In this vein, reforms focusing on market structure are ill-advised, especially if they hit all the oligopolistic markets in the same way.²⁰⁹ If structural reforms aimed at preventing the anticompetitive effects of horizontal shareholding are at all needed, they should account for the structure of the network in which institutional investors are embedded. In this vein, relevant factors for policymakers to focus on would be issues such as the symmetry and number of co-ownership ties between institutional investors within and across markets, the stability of connections and cliques over time, the presence and the characteristics of formal networks, and so on. Admittedly, current knowledge appears to be insufficient to understand how accounting for such factors would justify one policy solution or the other. Indeed, one contribution of this article is to lay out network theory as an appropriate tool to study the governance behavior of institutional investors and stimulate additional empirical studies also to support policymakers' agenda.

B. Voting Disclosure

Some leading scholars worry not that institutional investors may wield too much influence on management, as implicitly postulated by those advocating the horizontal shareholding hypothesis, but rather that they have too little.

²⁰⁹ *Id.*

Most notably, Bebchuk, Cohen and Hirst have suggested increasing disclosure duties of institutional investors in two directions.²¹⁰ First, currently only mutual funds are required to disclose how they vote. They suggest extending this requirement to other institutional investors. Second, they call for mandating more extensive disclosures, including on business ties between investment managers and the corporations in which they invest.²¹¹ In turn, this would increase public awareness of agency problems.²¹² In the traditional view mandating disclosure can be an effective disciplining device only to the extent that investors (clients) vote with their feet, and walk away from institutional investors that either passively follow proxy advisors and management or vote in conflict of interest. Yet, there are good reasons to believe that investors will rarely vote with their feet.²¹³ On the one hand, due to collective action problems, they might prefer staying on with passive managers to switching to a more active one correspondingly charging higher fees.²¹⁴ On the other hand, at least retail investors are unlikely to read, process, and then act upon, such disclosures.²¹⁵

If one places great emphasis on the stewardship role that institutional investor can play, a network perspective offers a more convincing rationale for requiring all institutional investors to disclose their vote: facilitating shareholder cooperation within a formal network, a geographic area or a clique. As stated above, public disclosure introduces public monitoring in the game played by institutional investors.²¹⁶ Given that cooperation is much more likely when the game involves also public monitoring, mandating disclosure to all institutional investors could facilitate cooperation and increase monitoring.

Clearly, if one believes that cooperation should be discouraged the opposite logic applies. Institutional investors should be required *not* to disclose how they vote, in order to remove public monitoring from the game.

V. Conclusion

During the last decades, institutional investors have increasingly become key players in US corporate governance. Key to their influence upon portfolio companies is institutional

²¹⁰ Bebchuk, Cohen & Hirst, *supra* note 49, at 108.

²¹¹ *Id.*

²¹² *Id.*

²¹³ See *supra* text accompanying note 86 for the qualification that some pension funds and other similarly governance-sensitive intermediate owners may actually do so.

²¹⁴ Cf. Bebchuk, Cohen & Hirst, *supra* note 49, at 98 (showing that investors are rather likely to vote with their feet when asset managers do expend resources to monitor portfolio companies). See also *supra* text preceding note 85.

²¹⁵ See generally JOHN ARMOUR ET AL., PRINCIPLES OF FINANCIAL REGULATION 218 (2016).

²¹⁶ See *supra* notes 186-187 and accompanying text.

investors' exercise of voting rights. Empirical evidence shows that patterns of connections affect institutional investors' behavior, including in the exercise of voting rights: an atomistic focus is therefore insufficient fully to understand their governance role. This Article has moved in the direction of shedding light on institutional investor voting behavior by using network theory, which is *the* methodology to analyze settings in which patterns of connections are relevant. Because ours is an exploratory study, we have stopped short of capturing every nuance and have limited ourselves to the more modest task of uncovering some relevant insights. In particular, we have shown that competition takes place at multiple levels (inter-employees, inter-firm, and inter-cliques), and that connections at each of these levels can shape institutional investors' interactions and decisions, including on how to vote.

From within individual institutions, employees compete for better jobs, and by doing so obtain relevant information on portfolio companies and spread it through their network. However, we have also seen that this information is not necessarily always reliable and can trigger undesirable information cascades.

Institutional investors also compete against each other. The literature has traditionally focused on this level of competition. The key problem is that, even when institutional investors have an incentive to obtain information on their portfolio companies, they might be paralyzed by rational reticence and rational apathy. Inter-clique competition might help explain why the problems of rational reticence and rational apathy are at times overcome. While an individual institution that invests in monitoring (*i.e.* a cooperator) might become less competitive *vis-à-vis* institutions that do not (*i.e.* defectors), a clique of cooperators might outperform a clique of defectors. Therefore, this kind of network dynamic might increase the incentives of institutional investors to cast informed votes at portfolio companies.

Adopting network theory to study the voting behavior of institutional investors has also allowed us to derive normative implications on two topical debates: (*i*) horizontal shareholdings and (*ii*) voting disclosure rules.

First, a network approach shows that the reforms proposed by either Elhauge or Posner and his coauthors to address the anticompetitive concerns caused by horizontal shareholdings are ill-advised. Both reforms would push institutions towards concentrating their ownership in one firm in each industry. However, reforms targeting all oligopolistic markets in the same way would be justified only under the assumption that institutional investors devise their portfolio strategies based on products and services markets boundaries, which is unrealistic. Instead, the analysis presented in this article shows that institutional investors' payoffs and the incentives are affected by their connections with other institutional

investors and with the other agents that populate their networks (proxy advisors, portfolio companies' management, etc.). As these connections transcend market boundaries, regulators should abandon a market-centric view in favor of one more cognizant of network effects. To be clear, we do not advocate invasive structural reforms based on network theory to address the anticompetitive concerns that might be associated with diffuse institutional ownership. On the one hand, tailored reforms might be more effective when there is evidence of harm in a given context.²¹⁷ On the other, current knowledge of the network of institutional investors does not allow to craft detailed network-based structural reforms. Nevertheless, if policymakers intend to take the path of structural reforms, they should take network effects into account.

Second, network theory helps elucidate the real function of voting disclosure mandates: by reducing the costs of intra-network monitoring, they can work as a tool to facilitate inter-institutional cooperation.

²¹⁷ See Romano, *supra* note 203 (proposing to open the US airline market to foreign competitors).

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