



Internalizing governance externalities: The role of institutional cross-ownership[☆]

Jie (Jack) He^a, Jiekun Huang^{b,*}, Shan Zhao^c

^a Terry College of Business, University of Georgia, Athens GA, 30602, USA

^b Gies College of Business, University of Illinois at Urbana-Champaign, Champaign IL, 61820, USA

^c Department of Economics and Finance, City University of Hong Kong, Kowloon Tong, Hong Kong

ARTICLE INFO

Article history:

Received 28 March 2018

Revised 26 June 2018

Accepted 31 July 2018

Available online 25 March 2019

JEL classification:

G23

G32

G34

Keywords:

Corporate governance

Externalities

Cross-ownership

Proxy voting

Institutional investors

ABSTRACT

We analyze the role of institutional cross-ownership in internalizing corporate governance externalities using granular mutual fund proxy voting data. Exploiting within-proposal and within-institution variation, we show that an institution's holdings in peer firms are positively associated with the likelihood that the institution votes against management on shareholder-sponsored governance proposals. We further find that high aggregate cross-ownership positively predicts management losing a vote. Overall, our results provide evidence that cross-ownership incentivizes institutional investors to play a more active monitoring role, suggesting that institutional cross-ownership serves as a market-based mechanism to alleviate the inefficiency induced by governance externalities.

© 2019 Elsevier B.V. All rights reserved.

[☆] We are grateful for helpful comments from an anonymous referee, Heitor Almeida, Matt Billet, Jie Cai, David Dicks, Rüdiger Fahlenbrach, Paul Gao, Stu Gillan, Edith Ginglinger, Itay Goldstein, Todd Gormley, Simon Gueguen, Jarrad Harford, Harald Hau, Gerard Hoberg, John Hund, Peter Iliev, Tim Johnson, Sehoon Kim, Mathias Kronlund, Ugur Lel, Kai Li, Tao Li, Pedro Matos, Harold Mulherin, Jeff Netter, Annette Poulsen, Anjana Rajamani, Edward Rice, Laura Starks, David Stolin, Yuehua Tang, Stijn Van Nieuwerburgh, Scott Weisbenner, Josh White, Moqi Xu, Jun Yang, Xiaoyun Yu, and seminar participants at the 2018 European Finance Association meetings, the 2018 Washington University Corporate Finance conference, the 2018 Financial Management Association meetings, the 2017 Western Finance Association meetings, the 2017 China International Conference in Finance, the 2017 Wabash River conference, the 2018 SGF Conference, Second French Workshop on Corporate Governance, University of Georgia, Toulouse School of Economics, University of Warwick, Southwestern University of Finance and Economics, EDHEC, and ESSEC. We are solely responsible for any remaining errors.

* Corresponding author.

E-mail addresses: jiehe@uga.edu (J. He), huangjk@illinois.edu (J. Huang), zhsh333@yahoo.com (S. Zhao).

"The significance is not the three or four laggards you catch—it's that you get the herd to run."

– John H. Biggs, the chairman and CEO of TIAA-CREF (*Wall Street Journal*, 1993)

1. Introduction

Corporations' governance structure does not exist in a vacuum: the governance choice of one firm can impose externalities on other firms. The theoretical literature argues that corporate governance externalities can arise because firms interact with each other through various types of relationships. For example, one type of interfirm interaction is the competition for managerial talents. In the theory of Acharya and Volpin (2010), when a firm's competitors in the managerial labor market adopt a low level of governance and thus allow their managers to extract large private benefits, the outside options of the firm's

managers become more valuable, which in turn forces the firm to choose a low level of governance to retain its managers. Since firms, as independent decision-makers, do not fully internalize this externality, Acharya and Volpin (2010) predict that in equilibrium, the chosen level of governance in the economy can be inefficiently low.¹ In this paper, we examine the role of a market-based mechanism for internalizing governance externalities that has not been explored in the literature, namely, cross-ownership by institutional investors.

Institutional cross-ownership has witnessed a substantial growth over the past few decades and become a widespread and economically important phenomenon (e.g., Matvos and Ostrovsky, 2008; Harford et al., 2011; He and Huang, 2017). The objective of institutional cross-owners, i.e., institutions that own equity in multiple firms that interact with one another extensively, is to maximize the combined value of their portfolio holdings. Therefore, relative to institutions that only invest in one of these firms, cross-owners have a stronger incentive to internalize corporate governance externalities among their portfolio companies. This difference arises because, for the same marginal cost of improving governance in one company, cross-owners are poised to reap a higher marginal benefit.² Specifically, for each additional unit of monitoring effort exerted on a company, the cross-owner can benefit not only from an improvement in governance in the company itself, but also from the ensuing improvement in governance in the company's peers that are in its portfolio. Thus, relative to non-cross-holding shareholders, cross-owners should play a stronger monitoring role, particularly when the potential for governance externalities is high.³

In this paper, we analyze the corporate governance role of cross-holding institutions by examining their voting behavior on governance-related proposals. One unique advantage of the proxy voting setting is that it allows us to directly observe an important monitoring action taken by institutional investors, i.e., voting against management on proposals for which the interests of shareholders and man-

agers are in conflict (McCahery et al., 2016). In contrast, common firm-level governance measures such as board attributes and antitakeover provisions provide only indirect proxies for the monitoring effort exerted by the institutions and are influenced by many unobservable firm and industry characteristics. Thus, we focus on the relation between cross-ownership and institutions' tendency to vote against management on shareholder-sponsored governance proposals for which the interests of shareholders and management tend to diverge. If cross-ownership induces an institution to play a stronger monitoring role, cross-ownership should positively predict the likelihood that the institution votes against management on such proposals.

To test the above prediction, we use a large sample of votes on shareholder-sponsored governance proposals cast by institutional investors for the period from 2003 through 2012. We aggregate votes by individual funds to the level of fund family. Our sample includes more than 169,000 votes at the proposal-family level. The granular nature of the voting data enables us to include a rich set of fixed effects, such as proposal fixed effects and family-time fixed effects, thereby allowing us to identify the effect of cross-ownership on institutional monitoring by exploiting the variation in cross-ownership across institutions within a given proposal and the variation in cross-ownership across firms within a given institution's portfolio at a given time.

We find that institutional shareholders with larger ownership stakes in peer firms (i.e., same-industry firms with similar size) are more likely to vote against management on shareholder-sponsored governance proposals. This result is obtained after controlling for the above-mentioned fixed effects as well as the institution's holdings in the focal firm itself. The economic magnitude is large as well. For example, according to the most stringent specification, a one-standard-deviation increase in the continuous measure of cross-ownership in peer firms is associated with an increase of 2.4 percentage points in the likelihood of voting against management. This magnitude is economically meaningful given that the standard deviation of the likelihood of voting against management is 47.0 percentage points. Since shareholder-sponsored governance proposals, which management almost always opposes, are intended to reduce managerial rents and improve shareholder value (e.g., Cuñat et al., 2012), our results suggest that cross-ownership induces institutions to play a valuable monitoring role.

Since the increased monitoring incentive of cross-holding institutions is likely driven by corporate governance externalities, their tendency to vote against management should increase with the potential for such externalities. Recent theories suggest that managerial labor market competition can give rise to corporate governance externalities (e.g., Acharya and Volpin, 2010; Dicks, 2012), which predicts that the governance effects of cross-ownership should be stronger for firms whose managers face more outside opportunities. Using the industry homogeneity measure of Parrino (1997) and the number of peer firms in the industry as proxies to capture managers' outside options, we find evidence consistent with this prediction. These results provide suggestive evidence that managerial labor market competition is an important

¹ A large literature on the monitoring role of institutional investors is built on the notion that corporations choose an inefficiently low level of governance, which necessitates monitoring by institutional shareholders. See, e.g., Gillan and Starks (2003) for an excellent review of the literature.

² Monitoring is costly because institutions need to conduct costly information production to evaluate the firm and decide on the appropriate course of action. Also, actively monitoring institutions may run the risk of jeopardizing their relationship with the firm, such as losing pension business ties (Cvijanović et al., 2016) or selective access to management (e.g., Bushee et al., 2017).

³ Anecdotal evidence suggests that institutional investors, especially those that own shares in a wide spectrum of companies, indeed take governance externalities into serious consideration when conducting their monitoring activities. For example, commenting on passive institutions' role in corporate governance, a *Financial Times* (2014) article argues that because such institutions "are invested across the entire market, [they] have an interest in raising standards everywhere, not just in individual companies." As another example, TIAA-CREF, a pension fund with a diversified portfolio, sent letters to all companies in which it held stock to promote sound corporate governance practices. Its former chairman and chief executive officer, John H. Biggs, likens the fund's corporate governance policy to "a lion chasing a herd of wildebeests" by saying that "[t]he significance is not the three or four laggards you catch—it's that you get the herd to run" (*Wall Street Journal*, 1993).

economic force that gives rise to corporate governance externalities, which in turn provide institutional cross-owners stronger incentives to internalize externalities and improve governance.

It is worth noting that the various sets of fixed effects in our baseline specifications effectively control for confounding variation such as the differences in the proposals being voted on, differences in information asymmetry across firms, and differences in informational advantages and monitoring capabilities across institutions. For example, our family \times industry \times time fixed effects mitigate the concern that institutions' industry-specific governance expertise drives our results. Also, time-varying traits of institutions (such as funding liquidity, investment skills, and governance preferences) cannot explain our results either, because our institution \times time fixed effects absorb observed and unobserved time-varying heterogeneity across institutions. Our results are also robust to the inclusion of institution \times firm fixed effects.

While the inclusion of a large set of fixed effects enables us to rule out alternative interpretations based on proposal-specific factors, time-varying characteristics of firms or fund families, and time-invariant factors that are specific to institution-firm pairs, it remains possible that omitted variables, e.g., time-varying factors that are specific to pairs of institutions and firms, drive both cross-ownership and voting decisions. To address these potential endogeneity concerns, we exploit a quasi-natural experiment of financial institution mergers using a difference-in-differences (DiD) approach (following He and Huang, 2017). When two institutions merge, the acquirer institution is likely to experience an increase in the holdings of peer firms after the completion of the merger simply because the target institution holds these peer firms in its portfolio before the merger. Thus, a larger increase in cross-ownership induced by the merger should lead to a higher likelihood that the acquirer institution votes against management. We find evidence consistent with this prediction. These results allow us to get closer to a causal interpretation of the relation between cross-ownership and institutional monitoring.

The results on the voting behavior at the institution level raise a natural question: do cross-holding institutions have aggregate effects on actual vote outcomes? To explore this question, we construct cross-ownership measures at the firm level by aggregating cross-ownership by individual institutions. We find that institutional cross-ownership positively predicts that management loses to shareholders in a proxy vote. The economic magnitude is large: A one-standard-deviation increase in firm-level cross-ownership is associated with an increase of 12.8 percentage points in the likelihood that management loses a vote. This result provides suggestive evidence that institution-level voting behavior observed above has aggregate effects on governance outcomes.

Finally, to strengthen the interpretation that corporate governance externalities are a mechanism for our results, we examine the stock returns of peer firms surrounding close-call votes on shareholder-sponsored governance proposals at focal firms. We find that peer firms' stock prices react positively to the passage of close-call votes at focal

firms, suggesting that shocks to the governance practices of the focal firm can impose externalities on peer firms and that the market price rationally reflects such externalities. More important, we find that the positive stock price reaction is particularly pronounced when the focal and peer firms share strong ownership ties through cross-holding institutions, suggesting that the market correctly anticipates the influence of institutional cross-holders on governance externalities.

Our paper makes several contributions to the literature. First, our paper identifies a positive effect of cross-ownership on institutional investors' monitoring of corporations, complementing the study by Matvos and Ostrovsky (2008) that examines the effect of cross-ownership on the monitoring of acquisitions. Our results highlight institutional cross-ownership as an important market-based mechanism in reducing the inefficiency induced by governance externalities. The finding that cross-ownership is associated with a stronger disciplining role played by institutional investors in proxy voting contributes to the literature on the monitoring role of institutional investors (e.g., Gillan and Starks, 2000, 2003; Chen et al., 2007). Second, while much of the existing literature on cross-ownership focuses on various outcomes at the portfolio firms (such as their product market behavior), it is still largely unknown *how* institutional cross-owners exert influence on corporate decision-making. By investigating the voting behavior of institutional cross-owners, our study sheds light on a specific channel through which these investors affect corporate policies. Third, while recent studies (e.g., Appel et al., 2016, 2018) show that passive institutions, e.g., index funds, play an active role in corporate governance, it remains unclear *why* these institutions care about good governance in the first place. Our paper suggests one possible reason for passive institutions' active involvement in corporate governance, namely, their cross-holding positions that induce them to exert monitoring efforts to internalize governance externalities.

Our study has important policy implications. The finding that cross-ownership induces institutional investors to play a stronger monitoring role suggests a "bright side" of cross-ownership, which provides an important alternative perspective to the current policy debate that centers on the potential anticompetitive effects of cross-owners (e.g., *New York Times*, 2016). Our results also have implications for regulatory policies that seek to address corporate governance externalities. One motivation for corporate governance regulations such as the Sarbanes-Oxley Act of 2002 is to reduce negative externalities (Acharya and Volpin, 2010; Dicks, 2012). Market-based solutions to governance externalities, however, are largely unexplored. Given that institutional cross-owners are uniquely positioned to collect and produce information about firms and incentivized to internalize governance externalities, cross-ownership, as a market-based mechanism, can play an important role in addressing governance externalities.

The rest of the paper is organized as follows. Section 2 discusses the related literature. Section 3 describes sample selection and reports summary statistics. Section 4 examines the relation between institutional cross-ownership and the likelihood of voting against

management. Section 5 examines the relation between firm-level aggregate cross-ownership and vote outcomes as well as stock returns of peer firms around close-call votes at focal firms. Section 6 concludes.

2. Related literature

Our paper is related to three strands of literature. The first is the recent literature that examines the role of institutional investors in corporate governance through the lens of voting behavior. A number of studies show that mutual funds' proxy voting decisions are influenced by considerations such as business and social connections to management (Davis and Kim, 2007; Butler and Gurun, 2012; Ashraf et al., 2012; Cvijanović et al., 2016), peer institutions (Matvos and Ostrovsky, 2010), capital gains lock-in (Dimmock et al., 2018), and the reliance on proxy advisory firms (Iliev and Lowry, 2015).⁴ Our paper adds to this literature by investigating the implications of cross-ownership for institutions' proxy voting behavior.

The second literature our paper is connected to is the one on corporate governance externalities. Acharya and Volpin (2010) and Dicks (2012) argue that managerial labor market competition generates corporate governance externalities.⁵ Several studies provide evidence consistent with these theories. For example, Acharya et al. (2016) find evidence that managerial labor market competition leads some firms to choose a lower level of corporate governance. John and Kadyrzhanova (2008), Albuquerque et al. (2019), and Foroughi et al. (2016) find evidence of spillovers of governance practices from one firm to another. In the context of executive compensation, Bizjak et al. (2008), Bizjak et al. (2011), Faulkender and Yang (2010), and Bereskin and Cicero (2013) find that a firm's CEO compensation is significantly positively affected by that of its peer firms. Our paper contributes to this literature by highlighting cross-ownership as a market-based mechanism to internalize corporate governance externalities.

The third literature our paper is related to is the burgeoning literature on cross-ownership. Hansen and Lott (1996) provide a theory whereby cross-owners maximize their portfolio values by inducing their portfolio firms to internalize externalities. Recent studies examine the role of institutional cross-owners in various settings such as acquisitions (Matvos and Ostrovsky, 2008; Harford et al., 2011), product market performance and strategies (He and Huang, 2017), product pricing in the airline industry

(Azar et al., 2018), and the informational efficiency of stock prices (Edmans et al., 2018). However, none of these papers consider corporate governance externalities among portfolio firms. Our paper thus fills the gap in the literature by exploring the implications of governance externalities for cross-owners' monitoring incentives. Notably, with the exception of Matvos and Ostrovsky (2008), the existing studies in this literature mostly focus on outcomes at portfolio firms (such as product market performance, governance outcomes, or the pricing of products). In contrast, our paper examines *actions* by institutional investors (similar to Matvos and Ostrovsky, 2008), thus providing direct evidence on the influence of cross-owners.⁶

3. Data, sample, and variable construction

3.1. Data and sample

We obtain mutual fund voting data for the period from 2003 through 2012 from the Institutional Shareholder Services (ISS) Voting Analytics database. The detailed voting information becomes available following the Securities and Exchange Commission (SEC) ruling requiring all mutual funds registered in the U.S. to report their proxy votes using Form N-PX starting from April 2003. For each proposed agenda item (i.e., proposal) voted on by each mutual fund, the data report the firm that receives the proposal, the date of the shareholder meeting at which the proposal is considered, the issue being voted on (e.g., board declassification or the elimination of poison pills), the sponsor of the proposal, management's recommendation, the ISS recommendation, and the fund's vote.

We obtain data on the aggregate votes cast for or against a given proposal as well as the voting result (i.e., "pass" or "fail") from the ISS Voting Outcome data set. Proposals can be sponsored by shareholders or management. Following prior literature (e.g., Davis and Kim, 2007; Cuñat et al., 2012), we mainly focus on shareholder-sponsored proposals, which are more likely to be motivated by an attempt to reduce managerial agency problems.⁷ To identify proposals on governance-related issues, we adopt the same classification scheme as that in Cuñat et al. (2012) by including those related to antitakeover provisions, executive compensation, board structure, and voting.

We merge the voting data with Thomson Reuters Institutional Holdings (13F) database. Because there is no common identifier for institutions across the two databases, we use a name-matching procedure to match the voting

⁴ Other studies that examine institutional investors' governance role through the proxy process include Gillan and Starks (2000), Morgan and Poulsen (2001), Morgan et al. (2011), and Keswani et al. (2017).

⁵ In their models, a firm needs to find an optimal combination of managerial compensation and corporate governance to solve the agency problem between shareholders and managers. Strong governance reduces a manager's expected private benefits from misbehaving, which decreases the optimal level of pay that the firm needs to offer to the manager to induce effort. This suggests that a firm with weak corporate governance has to offer high pay to its managers, which increases the outside option of its rival firms' managers. As a result, its rivals have to offer higher pay to their managers and adopt weaker governance, leading to negative corporate governance externalities.

⁶ Existing evidence on the effect of cross-ownership on firm-level governance outcomes is indirect and mixed. For instance, Anton et al. (2016) and Kwon (2016) examine the relation between cross-ownership at the industry level and executive compensation structure, but find conflicting results. Neither of these papers directly examines the actions taken by institutional cross-owners.

⁷ For example, Cuñat et al. (2012) show that the passing of shareholder-sponsored governance proposals has a positive effect on firm value, even though firm management almost always opposes such proposals. In addition, Cvijanović et al. (2016) contend that management has significant control and influence over management-sponsored proposals (e.g., by withdrawing or modifying proposals that are likely to be contested), which implies less uncertainty about the outcome of such proposals and hence a lesser need for institutional investors to exert monitoring efforts.

data with 13F. We are able to identify 332 fund families in the voting database that are 13F institutions. These fund families cast about 95% of the votes covered by the voting database during our sample period. We aggregate votes at the fund-family level. The unit of observation in the final data set is a proposal-fund family.

3.2. Variable construction

Since mutual fund families often adopt voting guidelines at the family level and have family-level governance teams that cast votes on behalf of their affiliated funds, we focus on the voting decision at the fund-family level.⁸ We follow the literature to define our main dependent variable, $VoteAgainstMgmt_{i,s,f,t}$, as the fraction of votes against management by funds affiliated with fund family i on shareholder-sponsored proposal s of firm f at time t . Specifically,

$$VoteAgainstMgmt_{i,s,f,t} = \frac{\sum_{n=1}^N (FundVoteAgainstMgmt_{n,i,s,f,t})}{N}, \quad (1)$$

where $FundVoteAgainstMgmt_{n,i,s,f,t}$ is a dummy variable that equals one if fund n from family i votes against management recommendation on proposal s at firm f 's shareholder meeting at time t , and N is the total number of funds in family i voting on that proposal.⁹

We construct two measures of cross-ownership. The first is an equal-weighted measure, $HoldingPeers_{i,f,t}^{EW}$, which is the sum of fund family i 's fractional ownership in the peers of firm f at the quarter-end immediately before the shareholder meeting that occurs at time t . The second is a value-weighted measure, $HoldingPeers_{i,f,t}^{VW}$, which is the sum of fractional ownership of fund family i in firm f 's peer firms, weighted by the peers' market capitalization, at the quarter-end immediately before the shareholder meeting that occurs at time t . We discuss the conceptual framework that motivates these two empirical measures in the Appendix.

We use several alternative industry definitions to identify the set of peer firms that are likely to interact directly with the focal firm. In our baseline tests, we follow Bizjak et al. (2008) to define a firm's peers as those that are in the same two-digit Standard Industrial Classification (SIC) industry and with similar size (i.e., sales revenue between 50% and 200% of that of the focal firm). Same-industry firms with similar size are commonly used as peer firms when setting executive compensation. For example, Bizjak et al. (2008) show that "most peer groups appear to be based on firms of similar size (usually based on revenues) and in similar industries." Thus, our peer-group definitions

are likely to capture extensive interfirm interactions reasonably well.¹⁰

In our analysis of vote outcome at the proposal level, we construct firm-level cross-ownership measures by aggregating cross-holdings by individual institutions. Specifically, we first calculate, for a given institutional investor in a firm, the product of the fractional ownership by the institution in the firm and the ownership by the institution in peer firms. We then take the sum of these products across all institutions holding shares in the firm as our measure of aggregate cross-ownership at the firm level. Specifically, the firm-level cross-ownership measure for firm f at time t is defined as:

$$HoldingPeers_Firm_{f,t} = \sum_{i=1}^I HoldingOwn_{i,f,t} \times HoldingPeers_{i,f,t}, \quad (2)$$

where $HoldingOwn_{i,f,t}$ is the fractional ownership of fund family i in firm f at time t ; $HoldingPeers_{i,f,t}$ is the firm-fund family level cross-ownership measure; and I is the total number of fund families holding shares in firm f at time t . We construct two versions of the aggregate cross-ownership measure corresponding to the equal- and value-weighted versions of $HoldingPeers$.

Panel A of Table 1 reports the summary statistics. We start with the sample of votes by fund families used in our baseline ordinary least squares (OLS) tests of voting behavior. The upper portion of the panel shows that the fraction of votes against management, i.e., $VoteAgainstMgmt$, has a mean of 0.581 and a standard deviation of 0.470. The equal-weighted cross-ownership measure ($HoldingPeers^{EW}$) has a mean of 0.036 and a standard deviation of 0.116.¹¹ The corresponding numbers for $HoldingPeers^{VW}$ are 0.031 and 0.103, respectively. The average fractional ownership of fund families in the focal firm ($HoldingOwn$) is 0.4%.

The lower portion of Panel A of Table 1 reports the summary statistics at the proposal level for the sample used in our analysis of vote outcome. $MgmtLosesVote$ is a dummy variable that equals one if the vote outcome is different from the management recommendation, and zero otherwise. Management loses about 28.9% of the votes in our sample. The firm-level equal-weighted cross-ownership measure has a mean of 0.112 and a standard deviation of 0.136. The numbers for the value-weighted measures are 0.102 and 0.124, respectively. This panel also shows the summary statistics for the control variables used in the vote outcome regressions, including an indicator that equals one if ISS and management recommendations are the same ($ISSWithMgmt$), the total fractional ownership by institutional investors in the firm ($InstOwn$), the natural logarithm of one plus the number of blockholders in the firm ($LnNumBlocks$), etc.

⁸ For example, Iliev and Lowry (2015) show that in over 96% of the cases, funds within a given family vote in the same direction on governance-related proposals. Nevertheless, we obtain qualitatively similar results when we conduct the analysis at the fund level (see Table IA-2 of the Internet Appendix).

⁹ While a proposal is uniquely identified by s , we keep the subscripts f (for each firm) and t (for each period) because, as will be described below, we construct our cross-ownership measures at the firm-quarter level for each institution.

¹⁰ Moreover, prior studies on managerial labor markets highlight industry-specific knowledge/experience (Parrino, 1997; Cremers and Grinstein, 2014) and firm size (Gabaix and Landier, 2008) as important considerations in the matching between firms and managers.

¹¹ Unless otherwise noted, the cross-ownership measures use two-digit SIC codes to define industries.

Table 1

Summary statistics.

This table presents the summary statistics for our sample of votes cast by fund families on shareholder-sponsored governance proposals from 2003 to 2012. We obtain mutual fund voting data from the ISS Voting Analytics database and the data on voting results from the ISS Voting Outcome database. We merge the ISS voting data with Thomson Reuters Institutional Holdings (13F) database and identify 332 fund families in the voting database that are 13F institutions. The upper portion of Panel A provides summary statistics at the proposal-fund family level for the sample used in our baseline OLS tests of voting behavior. *VoteAgainstMgmt* is the fraction of votes against management cast by the funds affiliated with the fund family. *HoldingPeers^{EW}* is the sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.1). *HoldingPeers^{VW}* is the market cap-weighted sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.2). *HoldingOwn* is the fund family's fractional ownership in the focal firm (in percentage terms). The lower portion of Panel A provides summary statistics at the proposal level for the sample used in our analysis of vote outcome. *MgmtLosesVote* is a dummy variable that equals one if management loses a vote and zero otherwise. *HoldingPeers_{Firm}^{EW}* and *HoldingPeers_{Firm}^{VW}* are firm-level cross-ownership measures as given in Eq. (2). *ISSWithMgmt* is a dummy variable that equals one if ISS and management recommendations are the same and zero otherwise. *InstOwn* is the fractional ownership by institutional investors in the firm. *LnNumBlocks* is the natural logarithm of one plus the number of blockholders in the firm. The panel also provides summary statistics for various firm characteristics, including the natural logarithm of book assets (*LnAssets*), return on assets (*ROA*), past stock returns (*StockReturn*), Tobin's *Q* (*TobinQ*), leverage (*Leverage*), capital expenditures over assets (*CapexAt*), cash flow over assets (*CashFlowAt*), and whether the firm is included in the S&P 500 index (*SP500*), as well as CEO and board characteristics, including the natural logarithm of the age of the CEO (*LnCEOAge*), the natural logarithm of CEO tenure (*LnCEOTenure*), the fraction of independent directors serving on the board (*PercentIndep*), the natural logarithm of one plus the number of directors on the board (*LnBoardSize*), fractional ownership by the top five executives in the firm (*Top5ExecutiveOwn*), and CEO-chairman duality (*Duality*). For expositional purposes, we multiply the cross-ownership variables by 100. Panel B provides summary statistics on the top ten most frequent proposal types in our sample. For each proposal type, we report the number of proposals, the mean of *VoteAgainstMgmt*, and the mean of *MgmtLosesVote*. The mean of *VoteAgainstMgmt* is calculated first by averaging *VoteAgainstMgmt* across fund families that vote on each proposal and second by averaging these proposal-level averages across proposals within each proposal type category.

Panel A: Summary statistics for main variables and controls

| Variable | Mean | P25 | Median | P75 | S.D. | N |
|--|--------|--------|--------|--------|--------|---------|
| Proposal-family level | | | | | | |
| <i>VoteAgainstMgmt</i> | 0.581 | 0.000 | 1.000 | 1.000 | 0.470 | 169,533 |
| <i>HoldingPeers^{EW}</i> ($\times 100$) | 3.621 | 0.000 | 0.033 | 1.335 | 11.554 | 169,533 |
| <i>HoldingPeers^{VW}</i> ($\times 100$) | 3.093 | 0.000 | 0.020 | 1.032 | 10.263 | 169,533 |
| <i>HoldingOwn</i> (in%) | 0.406 | 0.000 | 0.006 | 0.188 | 1.241 | 169,533 |
| Proposal level | | | | | | |
| <i>MgmtLosesVote</i> | 0.289 | 0.000 | 0.000 | 1.000 | 0.454 | 2087 |
| <i>HoldingPeers_{Firm}^{EW}</i> ($\times 100$) | 11.210 | 2.455 | 5.623 | 15.123 | 13.621 | 2087 |
| <i>HoldingPeers_{Firm}^{VW}</i> ($\times 100$) | 10.195 | 2.204 | 5.378 | 13.675 | 12.359 | 2087 |
| <i>ISSWithMgmt</i> | 0.151 | 0.000 | 0.000 | 0.000 | 0.359 | 2087 |
| <i>LnAssets</i> | 9.973 | 8.871 | 9.971 | 10.786 | 1.636 | 2087 |
| <i>InstOwn</i> | 0.730 | 0.645 | 0.736 | 0.824 | 0.139 | 2087 |
| <i>LnNumBlocks</i> | 0.881 | 0.693 | 1.099 | 1.386 | 0.549 | 2087 |
| <i>ROA</i> | 0.127 | 0.079 | 0.123 | 0.177 | 0.075 | 2087 |
| <i>StockReturn</i> | 0.117 | -0.070 | 0.106 | 0.278 | 0.342 | 2087 |
| <i>TobinQ</i> | 1.662 | 1.067 | 1.324 | 1.904 | 0.935 | 2087 |
| <i>Leverage</i> | 0.210 | 0.115 | 0.194 | 0.294 | 0.134 | 2087 |
| <i>CapexAt</i> | 0.046 | 0.016 | 0.036 | 0.064 | 0.046 | 2087 |
| <i>CashFlowAt</i> | 0.084 | 0.046 | 0.082 | 0.128 | 0.075 | 2087 |
| <i>SP500</i> | 0.766 | 1.000 | 1.000 | 1.000 | 0.424 | 2087 |
| <i>LnCEOAge</i> | 4.026 | 3.951 | 4.025 | 4.094 | 0.097 | 2087 |
| <i>LnCEOTenure</i> | 1.655 | 1.099 | 1.792 | 2.197 | 0.809 | 2087 |
| <i>PercentIndep</i> | 0.814 | 0.750 | 0.833 | 0.900 | 0.101 | 2087 |
| <i>LnBoardSize</i> | 2.468 | 2.398 | 2.485 | 2.565 | 0.171 | 2087 |
| <i>Top5ExecutiveOwn</i> | 0.012 | 0.001 | 0.002 | 0.007 | 0.034 | 2087 |
| <i>Duality</i> | 0.712 | 0.000 | 1.000 | 1.000 | 0.453 | 2087 |

Panel B: Top 10 most frequent proposal types

| Rank | Proposal | # of proposals | Mean (<i>VoteAgainstMgmt</i>) | Mean (<i>MgmtLosesVote</i>) |
|------|--|----------------|---------------------------------|-------------------------------|
| 1 | Declassify the board of directors | 380 | 0.786 | 0.661 |
| 2 | Require a majority vote for the election of directors | 322 | 0.666 | 0.394 |
| 3 | Require independent board chairman | 299 | 0.427 | 0.037 |
| 4 | Advisory vote to ratify named executive officers' compensation | 249 | 0.639 | 0.153 |
| 5 | Restore or provide for cumulative voting | 186 | 0.507 | 0.027 |
| 6 | Amend articles/bylaws/charter – call special meetings | 178 | 0.688 | 0.382 |
| 7 | Performance-based and/or time-based equity awards | 120 | 0.463 | 0.083 |
| 8 | Company specific-governance related | 98 | 0.604 | 0.357 |
| 9 | Submit shareholder rights plan (poison pill) to shareholder vote | 96 | 0.722 | 0.573 |
| 10 | Stock retention/holding period | 86 | 0.463 | 0.000 |

Panel B of Table 1 provides summary statistics for the top ten most frequent proposal types in our sample. For each proposal type in our sample, we report the number of proposals, the mean of *VoteAgainstMgmt*, and the mean of *MgmtLosesVote*. For example, the most frequent type of proposals in our sample is board declassification, on which mutual fund families on average oppose management in 78.6% of the cases and management loses in 66.1% of the cases.

4. Cross-ownership and voting behavior

4.1. Baseline results

We run OLS regressions to test the relation between the tendency to vote against management and cross-ownership.¹² The main regression takes the following form,

$$\text{VoteAgainstMgmt}_{i,s,f,t} = \alpha + \delta_s + \delta_i + \beta \times \text{HoldingPeers}_{i,f,t} + \varepsilon, \quad (3)$$

where *VoteAgainstMgmt* is the fraction of votes against management at the fund-family level; δ_s is the proposal fixed effects; δ_i is the fund-family fixed effects; *HoldingPeers* is one of the two cross-ownership measures as of the quarter-end immediately before the shareholder meeting. We cluster standard errors at the fund-family level to account for possible correlation in errors within fund families.¹³

Panel A of Table 2 presents the regression results. In Columns 1 and 4, we use both proposal fixed effects and fund-family fixed effects. With proposal fixed effects, the identification comes from variations across fund families with different cross-ownership for a given proposal. These fixed effects control for any observed or unobserved heterogeneity across proposals (e.g., issues being voted upon and recommendations by proxy advisors) as well as that across firms at which the proposals are being voted on, such as prior performance, ownership structure, governance quality, and stock liquidity (e.g., Back et al., 2018). These fixed effects enable us to rule out differences in proposals and time-varying firm attributes as potential explanations for our results. Fund-family fixed effects control for time-invariant fund-family level heterogeneity (e.g., whether the fund family is an activist or passive indexer and whether the family votes with or against management in general). We find that the coefficient of *HoldingPeers* is positive and significant at the 1% level, indicating that fund families with greater cross-ownership are more likely to vote against management at the focal firm.

The specifications in Columns 2 and 5 are more restrictive: In addition to proposal fixed effects, we include

fund family \times year fixed effects. With fund family \times year fixed effects, identification comes from variations in cross-ownership across proposals within a fund family-year. An advantage of this specification is that we are able to control for both time-invariant and time-varying fund-family unobservable heterogeneity such as fund families' general governance preferences, funding liquidity, and investment skills. As with our previous specifications, we find that cross-ownership in peers has a positive and significant effect on the fund family's tendency to vote against management.

We present the most restrictive specifications in Columns 3 and 6, which include fund family \times year \times industry fixed effects in addition to proposal fixed effects. Thus, identification in this specification comes from variations in cross-ownership across proposals within a fund family \times year \times industry triplet. Including these fixed effects enables us to rule out alternative explanations such as time-varying industry specialization of fund families (e.g., fund families with large holdings in an industry may be better positioned to monitor managers in that industry). The coefficients of cross-ownership continue to be positive and significant at the 1% level, suggesting that our results are not driven by fund families with industry-specific informational advantages and/or governance expertise being more likely to discipline management (as documented in Kang et al., 2018). In terms of economic significance, Column 6 suggests that a one-standard-deviation increase in the value-weighted cross-ownership measure (0.103) is associated with an increase of 2.4 percentage points in the fraction of votes against the focal management by fund families, which is nontrivial considering that the fraction of votes against management has a standard deviation of 47.0 percentage points.¹⁴

Panel B reports the results when we add *HoldingOwn* as a control. The coefficients on our cross-ownership measures become slightly larger and continue to be highly significant. Consistent with the findings in Iliev and Lowry (2015), Cvijanović et al. (2016), and Schwartz-Ziv and Wermers (2017), the coefficient of *HoldingOwn* is negative and significant.¹⁵

Overall, our baseline results in Table 2 show that institutions with larger total equity holdings in the peers of a focal firm are more likely to vote against management on governance-related shareholder proposals at the focal firm, consistent with the view that cross-holding

¹² Following Cvijanović et al. (2016), we use OLS rather than limited dependent variable models because OLS has the advantage of producing consistent estimates with a large number of fixed effects under less restrictive assumptions (Wooldridge, 2010) and yielding results that are easier to interpret.

¹³ We note that clustering at the fund-family level produces more conservative standard errors than clustering at the fund family-year level, the latter of which is used in previous studies on mutual fund voting behavior (e.g., Cvijanović et al., 2016; Dimmock et al., 2018).

¹⁴ To put this number in perspective, Dimmock et al. (2018) show that a one-standard-deviation increase in the accrued capital gains in a stock is associated with an increase of about 1.2 percentage points in the likelihood that a fund votes against management.

¹⁵ There are at least three reasons why fund families with larger ownership stakes in a focal firm may be less likely to vote against management of the firm. First, institutional investors are likely to be attracted to firms with effective and competent management and, as a result, tend to support management. Second, institutions that have business ties with a firm may simultaneously hold large equity stakes in the firm and vote with management (Cvijanović et al., 2016). Third, large institutional shareholders may have access to alternative venues to exert influence, e.g., behind-the-scenes negotiations with management, reducing the need to govern through voting (Schwartz-Ziv and Wermers, 2017).

Table 2

Cross-ownership and voting behavior: Baseline results.

This table reports OLS regression analysis of the relation between the tendency to vote against management and cross-ownership. The dependent variable is *VoteAgainstMgmt*, defined as the fraction of votes against management cast by the funds affiliated with the fund family. *HoldingPeers^{EW}* is the sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.1). *HoldingPeers^{VW}* is the market cap-weighted sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.2). *HoldingOwn* is the fund family's fractional ownership in the focal firm. The unit of observations in the regressions is a proposal-fund family. The numbers in parentheses are *t*-statistics based on standard errors that are clustered at the fund-family level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

| Panel A: Without additional controls | | | | | | |
|--|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Dep. variable | <i>VoteAgainstMgmt</i> | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> | 0.119*** (3.693) | 0.134*** (3.640) | 0.203*** (3.234) | | | |
| <i>HoldingPeers^{VW}</i> | | | | 0.128*** (4.204) | 0.148*** (4.118) | 0.230*** (3.871) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family FEs | Yes | No | No | Yes | No | No |
| Fund family × Year FEs | No | Yes | No | No | Yes | No |
| Fund family × Year × Ind FEs | No | No | Yes | No | No | Yes |
| Observations | 169,533 | 169,487 | 160,860 | 169,533 | 169,487 | 160,860 |
| R-squared | 0.497 | 0.548 | 0.628 | 0.497 | 0.548 | 0.628 |
| Panel B: Controlling for <i>HoldingOwn</i> | | | | | | |
| Dep. variable | <i>VoteAgainstMgmt</i> | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> | 0.140*** (4.281) | 0.145*** (4.023) | 0.210*** (3.475) | | | |
| <i>HoldingPeers^{VW}</i> | | | | 0.149*** (4.832) | 0.158*** (4.550) | 0.235*** (4.096) |
| <i>HoldingOwn</i> | −1.013*** (−3.356) | −0.896*** (−3.480) | −0.894*** (−3.426) | −0.982*** (−3.252) | −0.870*** (−3.374) | −0.862*** (−3.251) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family FEs | Yes | No | No | Yes | No | No |
| Fund family × Year FEs | No | Yes | No | No | Yes | No |
| Fund family × Year × Ind FEs | No | No | Yes | No | No | Yes |
| Observations | 169,533 | 169,487 | 160,860 | 169,533 | 169,487 | 160,860 |
| R-squared | 0.497 | 0.548 | 0.628 | 0.497 | 0.548 | 0.628 |

institutions have stronger incentives to internalize corporate governance externalities.¹⁶

We conduct various robustness checks of the voting behavior analysis and report the results in Table 3. First, we focus on a sample of closely contested proposals, defined as those that pass or fail by a small margin, i.e., within ± 5 percentage points around the threshold. Contested proposals are associated with more uncertainty about the vote outcome, suggesting that the monitoring role of cross-holders is particularly important in such proposals. This requirement reduces our sample size to 29,231 votes. Panel A of Table 3 shows that the coefficients on the cross-ownership measures continue to be positive and highly significant despite the reduction in sample size. For example, the coefficient on *HoldingPeers* ranges from 0.125 to 0.336, depending on the model specifications, which is similar to our baseline results in Table 2.

Second, we expand the sample of proposals to include contentious management-sponsored governance proposals.

We define contentious management-sponsored governance proposals as those that ISS recommends against (following Dimmock et al., 2018) because such proposals are likely associated with agency conflicts between managers and shareholders. We repeat our tests using the expanded sample. The results, reported in Panel B of Table 3, show that the coefficients on the cross-ownership measures continue to be significant and positive.

Third, we include different sets of fixed effects in our regression models and present the results in Panel C of Table 3. In particular, we include firm × fund-family fixed effects in addition to proposal fixed effects in Columns 1 and 4. To further control for the time-varying attitudes of a given fund family towards different types of shareholder-sponsored proposals, we control for fund-family × year × proposal-type fixed effects (in addition to proposal fixed effects) in Columns 2, 3, 5, and 6, where proposal types are as defined in the ISS Voting Analytics database (i.e., “ISSAgendaItemID”). Panel C of Table 3 shows that our results are robust to these changes in model specifications, which largely mitigates the concern for omitted variables at various levels.

Last, we repeat the baseline tests using cross-ownership measures based on alternative industry definitions, namely, three-digit SIC codes, four-digit SIC codes, and Fixed

¹⁶ We conduct an omitted variable bias test suggested by Oster (2018). The results, reported in Table IA-3 of the Internet Appendix, show that the identified set safely excludes zero under reasonable assumptions, suggesting that the likelihood that omitted variable bias drives our conclusions is low.

Table 3

Cross-ownership and voting behavior: Robustness checks.

This table reports robustness checks of the results on the relation between the tendency to vote against management and cross-ownership. The dependent variable is *VoteAgainstMgmt*, defined as the fraction of votes against management cast by the funds affiliated with the fund family. *HoldingPeers^{EW}* is the sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.1). *HoldingPeers^{VW}* is the market cap-weighted sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.2). *HoldingOwn* is the fund family's fractional ownership in the focal firm. Panel A restricts the sample of proposals to closely contested ones, i.e., those that pass or fail by a small margin, i.e., within ± 5 percentage points around the threshold. Panel B expands the sample to include contentious management-sponsored proposals. We define contentious management-sponsored proposals as those that ISS recommends against (following Dimmock et al., 2018). Panel C uses alternative model specifications with different sets of fixed effects. Panel D uses cross-ownership measures based on alternative industry definitions, including three-digit SIC codes, four-digit SIC codes, and the FIC-300 industries developed by Hoberg and Phillips (2010, 2016). The numbers in parentheses are *t*-statistics based on standard errors that are clustered at the fund-family level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

| Panel A: Contested proposals | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Dep. variable | VoteAgainstMgmt | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> | 0.148** (2.201) | 0.125* (1.776) | 0.326*** (3.010) | | | |
| <i>HoldingPeers^{VW}</i> | | | | 0.161** (2.009) | 0.129** (2.173) | 0.336** (2.494) |
| <i>HoldingOwn</i> | −1.176* (−1.854) | −1.149** (−2.325) | −1.420** (−2.400) | −1.158* (−1.830) | −1.162** (−2.349) | −1.385** (−2.306) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family FEs | Yes | No | No | Yes | No | No |
| Fund family × Year FEs | No | Yes | No | No | Yes | No |
| Fund family × Year × Ind FEs | No | No | Yes | No | No | Yes |
| Observations | 29,182 | 29,003 | 21,639 | 29,182 | 29,003 | 21,639 |
| R-squared | 0.470 | 0.567 | 0.708 | 0.470 | 0.567 | 0.708 |
| Panel B: Expanded sample that includes contentious management-sponsored proposals | | | | | | |
| Dep. variable | VoteAgainstMgmt | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> | 0.111*** (3.458) | 0.117*** (3.718) | 0.168*** (3.524) | | | |
| <i>HoldingPeers^{VW}</i> | | | | 0.106*** (3.732) | 0.120*** (4.488) | 0.169*** (3.850) |
| <i>HoldingOwn</i> | −1.670*** (−5.777) | −1.595*** (−6.714) | −1.667*** (−6.574) | −1.628*** (−5.589) | −1.564*** (−6.513) | −1.625*** (−6.319) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family FEs | Yes | No | No | Yes | No | No |
| Fund family × Year FEs | No | Yes | No | No | Yes | No |
| Fund family × Year × Ind FEs | No | No | Yes | No | No | Yes |
| Observations | 248,144 | 248,107 | 237,990 | 248,144 | 248,107 | 237,990 |
| R-squared | 0.455 | 0.506 | 0.584 | 0.455 | 0.506 | 0.584 |
| Panel C: Alternative model specifications | | | | | | |
| Dep. variable | VoteAgainstMgmt | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> | 0.133* (1.899) | 0.036** (2.287) | 0.034** (2.518) | | | |
| <i>HoldingPeers^{VW}</i> | | | | 0.148** (1.985) | 0.038** (2.297) | 0.058** (2.148) |
| <i>HoldingOwn</i> | −1.178* (−1.887) | −0.745*** (−3.248) | −0.813*** (−4.831) | −1.178* (−1.871) | −0.739*** (−3.234) | −0.813*** (−4.840) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm × Fund family FEs | Yes | No | Yes | Yes | No | Yes |
| Family × Year × Prop. Type FEs | No | Yes | Yes | No | Yes | Yes |
| Observations | 147,193 | 162,532 | 139,164 | 147,193 | 162,532 | 139,164 |
| R-squared | 0.632 | 0.769 | 0.842 | 0.632 | 0.769 | 0.842 |

(continued on next page)

Table 3 (continued)

| Panel D: Alternative industry definitions | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Dep. variable | VoteAgainstMgmt | | | | | |
| | SIC3 | | SIC4 | | FIC-300 | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| HoldingPeers ^{EW} | 0.334*** (3.061) | | 0.402*** (2.710) | | 0.337*** (3.061) | |
| HoldingPeers ^{VW} | | 0.371*** (3.343) | | 0.433*** (2.992) | | 0.386*** (3.694) |
| HoldingOwn | −0.886*** (−3.405) | −0.857*** (−3.287) | −1.001*** (−3.626) | −0.993*** (−3.528) | −0.766*** (−2.827) | −0.755*** (−2.766) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family × Year × Ind FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Observations | 133,528 | 133,528 | 111,769 | 111,769 | 125,129 | 125,129 |
| R-squared | 0.659 | 0.659 | 0.670 | 0.670 | 0.655 | 0.655 |

Industry Classification (FIC) 300 industries derived from 10-K texts by [Hoberg and Phillips \(2010, 2016\)](#).¹⁷ The results, reported in Panel D of Table 3, show that the governance effects of cross-holding institutions that we identify are robust to these alternative cross-ownership measures. The economic magnitudes are nontrivial as well. For example, Column 6 shows that a one-standard-deviation increase in the value-weighted cross-ownership measure using FIC-300 industries (about 0.052) is associated with an increase of 2.2 percentage points in the fraction of votes against the focal management by fund families.

To strengthen our interpretation that institutions internalize governance externalities that arise among peers, we conduct falsification tests by defining non-peers as firms that are not in the same industry as the focal firm. Specifically, for each industry in each year, we define an “unrelated” industry as the industry that is closest to the industry under consideration in terms of the number of firms. If there are multiple industries with the closest number of firms, we pick the industry with the closest average firm size (i.e., sales revenue). Non-peers are firms that are in the unrelated industry. Similar to *HoldingPeers*, we construct an equal-weighted and a value-weighted version of *HoldingNonPeers*. We use four alternative industry definitions, namely, two-digit SIC codes, three-digit SIC codes, four-digit SIC codes, and the FIC-300 industries. We repeat the baseline regressions in Table 2 by replacing *HoldingPeers* with *HoldingNonPeers*. The results, reported in Internet Appendix Table IA-1, show that the coefficient on *HoldingNonPeers* is insignificant and generally close to zero across all specifications. These findings lend further support to our argument that cross-ownership in peer firms influences voting decisions.

4.2. Cross-sectional tests

As discussed above, a cross-holding institution can benefit from monitoring a portfolio firm in two ways. The first is a direct gain from the improvement in the governance of the focal firm. The second is an indirect gain from the governance improvement at the peer firms in the institution's portfolio because of governance externalities, i.e., peer firms' tendency to follow the governance choices of the focal firm. Since the second benefit of monitoring depends on the extent of governance externalities, a cross-holding institution may have stronger monitoring incentives when governance externalities are more pronounced.

According to theoretical models such as [Acharya and Volpin \(2010\)](#) and [Dicks \(2012\)](#), corporate governance externalities could arise from firms competing for the same pool of managerial talents. Their models predict that the inefficiencies associated with governance externalities are stronger when the managerial labor market is more competitive in the sense that each individual manager possesses more and better outside options due to a higher demand for his or her talent. To better compete with peer firms in retaining and attracting talented managers, each firm in competitive managerial labor markets adopts poorer governance standards than what it would do in the absence of such competition. Since the indirect gain a cross-holding institution derives from monitoring a portfolio firm increases with the strength of governance externalities, which in this case is determined by the extent of labor market competition, we predict that the positive relation between cross-ownership and institutions' monitoring intensity should be more pronounced when the managers face more outside opportunities.

To examine this channel, we use two measures to capture managers' outside options in the labor market. The first is the industry homogeneity index developed by [Parrino \(1997\)](#), which is defined as the industry average of the partial correlation coefficients between a firm's stock returns and industry returns after controlling for market returns.¹⁸ This measure has also been used by

¹⁷ In untabulated analysis, we find that the results are robust to using Fama-French 48 industries and Text-based Network Industry Classification (TNIC) industries developed by [Hoberg and Phillips \(2010, 2016\)](#). Since TNIC industries are intransitive networks (i.e., the competitors of a firm do not necessarily compete against each other), using TNIC industries does not allow us to include fund-family × year × industry fixed effects in the regressions.

¹⁸ The industry homogeneity measure is calculated at the industry-quarter level: following [Kale et al. \(2009\)](#), we use a five-year rolling

Gillan et al. (2009) and Kale et al. (2009) as a proxy for managerial labor market competitiveness. An industry with a higher value of the homogeneity index is likely to have greater demand and thus enhanced competition for the same pool of managerial talents, because the managers' industry-specific skills and knowledge can be more easily transferable across firms in such an industry. The second measure is the natural logarithm of one plus the number of peer firms (again defined as those in the same industry and with similar size as the focal firm). When there are more peer firms that require similar managerial skills to those possessed by the focal firm's managers, the managers are likely to face a larger labor market and thus have access to more outside options (Taylor, 2013; Gao et al., 2015).

Panel A of Table 4 presents the results using the industry homogeneity index as a proxy for managers' outside opportunities. The specifications follow those in Table 2 except that we add interaction terms between the cross-ownership measures and the industry homogeneity index. Note that the industry homogeneity index itself is dropped from the models because it is fully absorbed by the proposal fixed effects which control for all time-varying firm and industry characteristics. We find that the coefficients of the interaction terms are positive and significant at the 1% level in all model specifications, which is consistent with our prediction that the effect of cross-ownership on the tendency to vote against management is more pronounced for firms whose managers face more outside options in the labor market. In Panel B of Table 4, we replace the industry homogeneity index with the log of one plus the number of peer firms. The results again suggest that the governance effect of cross-ownership increases with managers' outside opportunities.¹⁹

Overall, these results provide suggestive evidence that institutional cross-owners help internalize governance externalities arising from managerial labor market competition. It is worth pointing out that governance externalities may arise through other channels such as directors' reputational concerns (Levit and Malenko, 2016)²⁰ and product

market competition (e.g., Schmidt, 1997).²¹ We do not test these alternative channels because the theories do not provide unambiguous predictions in our empirical setting.

4.3. Identification using financial institution mergers

While the granular nature of our voting data enables us to include a large set of fixed effects to rule out alternative interpretations based on proposal- or firm-specific factors, time-varying characteristics of fund families, and time-invariant factors that are specific to institution-firm pairs, it remains possible that omitted variables, e.g., time-varying factors that are specific to pairs of institutions and firms, drive both cross-ownership and voting decisions. One possibility is that a fund family's decision to invest in a focal firm's peers is influenced by the focal firm's governance quality. That is, when the focal firm has worse governance than its peers, the fund family may shift its holdings more towards the peer firms and at the same time vote against management at the focal firm. This might explain the observed positive relation between holdings in peer firms and voting against focal firm management. To address such endogeneity concerns, we follow the recent literature (e.g., He and Huang, 2017) to use financial institution mergers as plausibly exogenous shocks to cross-ownership.

As argued by Huang (2016) and He and Huang (2017), financial institutions typically merge for reasons unrelated to the performance and characteristics of individual firms in their portfolios. Hence, these mergers are plausibly exogenous to the governance practices of individual firms in the merging institutions' portfolios and thus provide a nice quasi-experimental setting for analyzing the causal effect of cross-ownership on institutional monitoring. When two institutions merge, the portfolio of the target institution typically gets absorbed by the acquirer after the completion of the deal. Therefore, the acquirer institution is likely to experience an increase in the holdings of peer firms simply because the target institution holds these peer firms before the merger. We expect that a larger increase in cross-ownership induced by the merger leads to a higher likelihood that the acquirer institution votes against management after the merger than before the merger.

window prior to the quarter of a firm's shareholder meeting to estimate the partial correlation coefficients between this firm's stock returns and its industry returns over the same window. In order to obtain a meaningful estimate of the industry returns, we follow the literature to require an industry to have at least 35 firms in our estimation window. Please see Parrino (1997) for more details about the construction of the index.

¹⁹ Fig. IA-2 of the Internet Appendix plots the total marginal effect of *HoldingPeers* on *VoteAgainstMgmt* conditional on different levels of the industry homogeneity index and the number of peer firms.

²⁰ In the model of Levit and Malenko (2016), directors' reputational concerns (i.e., their desires to be invited to other boards) generate corporate governance spillovers across firms. Their model shows that there can be two types of governance equilibria depending on the aggregate quality of corporate governance. In the weak-governance equilibrium (i.e., when the aggregate quality of governance is low), the decision of whom to invite to serve on the board is controlled by managers, which may induce directors to pursue management-friendly policies in the hope of obtaining board seats at other companies. The opposite is true in the strong-governance equilibrium. Hence, their model indicates that if monitoring by institutional investors and that by the board are substitutes (complements), the monitoring incentive of cross-owners should be stronger (weaker) in the weak-governance equilibrium, and vice versa in the strong-governance equilibrium. Therefore, the sign of the effect of cross-ownership

on monitoring is indeterminate, depending on whether the strong-governance equilibrium or the weak-governance equilibrium prevails and whether shareholder monitoring and board monitoring are substitutes or complements.

²¹ Governance improvements at a focal firm may intensify product market competition and increase the incentives of managers at peer firms, which provides cross-owners an increased incentive to exert monitoring efforts at the focal firm. However, as Schmidt (1997) argues, an increase in product market competition can have both a positive effect (through increased liquidation probabilities) and a negative effect (through reduced profits and thus reduced rents for managers) on managerial incentives. Thus, whether increased product market competition induced by a focal firm's governance improvement leads to greater managerial effort at peer firms depends on whether the positive or the negative effects dominate. Our results are consistent with the net effect being generally positive. However, lacking a compelling theoretical rationale for how the effect should vary in the cross-section of firms, we do not test the cross-sectional implications of this channel.

Table 4

Cross-ownership and voting behavior: Cross-sectional tests.

This table reports OLS regression analysis of the effect of managerial labor market competition on the relation between the tendency to vote against management and cross-ownership. The dependent variable is *VoteAgainstMgmt*, defined as the fraction of votes against management cast by the funds affiliated with the fund family. *HoldingPeers^{EW}* is the sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.1). *HoldingPeers^{VW}* is the market cap-weighted sum of fractional ownership by the fund family in the peers of the focal firm as given in Eq. (A.2). *HoldingOwn* is the fund family's fractional ownership in the focal firm. We use two proxies for managerial labor market competition: *Homo* is the industry homogeneity index of Parrino (1997), and *LnNumPeers* is the natural logarithm of one plus the number of peer firms. The numbers in parentheses are *t*-statistics based on standard errors that are clustered at the fund-family level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

| Panel A: Industry homogeneity index as a proxy for managerial labor market competition | | | | | | |
|--|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Dep. variable | <i>VoteAgainstMgmt</i> | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> × <i>Homo</i> | 0.566*** (3.399) | 0.357*** (3.235) | 0.539*** (3.451) | | | |
| <i>HoldingPeers^{EW}</i> | −0.023 (−0.754) | 0.035 (1.353) | 0.048 (1.385) | | | |
| <i>HoldingPeers^{VW}</i> × <i>Homo</i> | | | | 0.544*** (3.044) | 0.401*** (4.140) | 0.540*** (3.215) |
| <i>HoldingPeers^{VW}</i> | | | | −0.006 (−0.234) | −0.002 (−0.096) | 0.060 (1.479) |
| <i>HoldingOwn</i> | −1.068*** (−3.406) | −0.870*** (−3.522) | −0.766*** (−2.607) | −1.035*** (−3.283) | −0.833*** (−3.374) | −0.732** (−2.468) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family FEs | Yes | No | No | Yes | No | No |
| Fund family × Year FEs | No | Yes | No | No | Yes | No |
| Fund family × Year × Ind FEs | No | No | Yes | No | No | Yes |
| Observations | 88,471 | 88,423 | 83,838 | 88,471 | 88,423 | 83,838 |
| R-squared | 0.487 | 0.542 | 0.638 | 0.487 | 0.542 | 0.638 |
| Panel B: Number of peers as a proxy for managerial labor market competition | | | | | | |
| Dep. variable | <i>VoteAgainstMgmt</i> | | | | | |
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers^{EW}</i> × <i>LnNumPeers</i> | 0.046** (2.504) | 0.039** (2.492) | 0.044** (2.493) | | | |
| <i>HoldingPeers^{EW}</i> | −0.022 (−0.532) | 0.004 (0.104) | 0.033 (0.641) | | | |
| <i>HoldingPeers^{VW}</i> × <i>LnNumPeers</i> | | | | 0.049** (2.503) | 0.046** (2.474) | 0.059** (2.505) |
| <i>HoldingPeers^{VW}</i> | | | | −0.020 (−0.487) | −0.005 (−0.109) | 0.012 (0.185) |
| <i>HoldingOwn</i> | −0.963*** (−3.219) | −0.875*** (−3.480) | −0.908*** (−3.460) | −0.943*** (−3.141) | −0.852*** (−3.361) | −0.881*** (−3.274) |
| Proposal FEs | Yes | Yes | Yes | Yes | Yes | Yes |
| Fund family FEs | Yes | No | No | Yes | No | No |
| Fund family × Year FEs | No | Yes | No | No | Yes | No |
| Fund family × Year × Ind FEs | No | No | Yes | No | No | Yes |
| Observations | 169,533 | 169,487 | 160,860 | 169,533 | 169,487 | 160,860 |
| R-squared | 0.497 | 0.548 | 0.628 | 0.497 | 0.548 | 0.628 |

We follow the procedure in He and Huang (2017) to construct our financial institution merger sample using the Mergers and Acquisitions database provided by Securities Data Corporation (SDC). We require that: (1) the merger is between two 13F institutions (or their parent firms) in the financial sector (with primary SIC codes in the 6000 to 6999 range) and announced during the period between 2004 and 2011; (2) the merger is completed within one year after the initial announcement; and (3) the target institution stops filing 13F forms within one year after the completion of the deal.

We perform a difference-in-differences (DiD) analysis of the effect of cross-ownership on the acquiring institution's tendency to vote against the management of its portfolio

firms.²² Specifically, we run the following DiD regression,

$$\begin{aligned}
 &VoteAgainstMgmt_{m,s,f,t} \\
 &= \alpha + \delta_s + \delta_m + \gamma_1 \times TargetHoldingPeers_{m,f} \times Post_{m,t} \\
 &\quad + \gamma_2 \times TargetHoldingPeers_{m,f} + \gamma_3 Post_{m,t} + \varepsilon, \quad (4)
 \end{aligned}$$

where $VoteAgainstMgmt_{m,s,f,t}$ is the fraction of votes against management cast by funds affiliated with the acquiring fund family of merger m on proposal s at

²² Since our institution merger setting is similar to that of brokerage mergers, we follow prior studies in that literature to use a DiD approach (e.g., Hong and Kacperczyk, 2010; Asker and Ljungqvist, 2010; Kelly and Ljungqvist, 2012). We obtain identical inferences when using an instrumental variable approach (see Table IA-6 of the Internet Appendix).

firm f 's annual shareholder meeting at time t ; δ_s is the proposal fixed effect; δ_m is the merger fixed effect; $TargetHoldingPeers_{m,f}$ is the holdings by the target fund family of merger m in the peers of firm f , as described in Eqs. (A.1) and (A.2), in the quarter immediately before the merger announcement date;²³ and $Post_{m,t}$ is an indicator variable that equals one if the meeting is in the one-year period after the effective date of merger m , and zero if it is in the one-year period before the announcement of the merger. Similar to our baseline OLS analysis, in some model specifications we control for $HoldingOwn$, the acquiring fund family's fractional ownership in the focal firm. We include proposal fixed effects and merger fixed effects in all of our specifications, and add fund family \times year fixed effects in some specifications. We cluster standard errors by merger to account for possible correlation in errors within a merger.

A higher value of $TargetHoldingPeers$ indicates a higher exposure to the treatment, because the focal firm is likely to experience a greater increase in cross-ownership by the acquiring institution around the merger event. It is important to note that we define the treatment variable based solely on target holdings prior to the announcement of the merger, as opposed to actual holdings of the acquirer after the completion of the merger, the latter of which likely reflect active portfolio decisions of the acquirer. Our treatment effect is captured by the estimated coefficient before the interaction term between $TargetHoldingPeers$ and $Post$. If cross-ownership induced by financial institution mergers increases the tendency to vote against management, we expect the coefficient, i.e., γ_1 , to be positive and significant.

Panel A of Table 5 reports the results. The estimated coefficient before $TargetHoldingPeers \times Post$ is significantly positive in all model specifications, suggesting that a greater increase in cross-ownership induced by the merger makes the acquiring institution more likely to vote against management. In terms of economic significance, the coefficient of 0.312 in Column 4 indicates that a one-standard-deviation increase in the target institution's holdings of peer firms before the merger (i.e., 0.043) leads to an increase of 1.35 percentage points ($=0.312 \times 0.043$) in the acquirer institution's tendency to vote against the focal firm's management after the merger than before the merger.²⁴

²³ $TargetHoldingPeers$ does not have a time subscript because it is based on the target fund family's pre-merger holdings, which are plausibly exogenous to the post-merger voting behavior of the acquirer fund family.

²⁴ We conduct two additional tests to strengthen the interpretation of our results. First, we check pre-trends using data before the mergers. We assume that the mergers occur 12 or 24 months prior to the actual merger dates and repeat our difference-in-differences tests. The results, reported in Table IA-4, show that the coefficient on $HoldingPeers \times Post$ is insignificant and small in magnitude across all specifications, suggesting that the parallel trends assumption is likely to hold in our setting. Second, as a placebo test, we examine whether non-merging institutions, i.e., institutions that are not involved in the mergers but vote on the same proposals as the acquirer institutions do, change their voting behavior around the mergers. The results, reported in Table IA-5, show that the coefficient on $HoldingPeers \times Post$ is insignificant and close to zero across all specifications, suggesting that the observed change in the voting behavior of acquiring fund families is not driven by common shocks that influence the voting behavior of mutual fund families in general.

The premise of our quasi-natural experiment is that firms whose peer firms are more heavily held by the target institution before the merger should receive more intense treatment (i.e., the acquirer institution should experience a larger increase in its holdings in these peers after the completion of the merger). To test this, we run the following DiD regression at the stock level,

$$\begin{aligned} &AcquirerHoldingPeers_{m,f,t} \\ &= \alpha + \varphi_1 \times TargetHoldingPeers_{m,f} \times Post_{m,t} \\ &\quad + \varphi_2 \times TargetHoldingPeers_{m,f} + \varphi_3 Post_{m,t} + \varepsilon, \end{aligned} \quad (5)$$

where $AcquirerHoldingPeers_{m,f,t}$ is the holdings by the acquirer fund family of merger m in the peers of firm f at time t (either the quarter immediately before the merger announcement date or the quarter immediately after the merger effective date); $TargetHoldingPeers_{m,f}$ is the holdings by the target fund family of merger m in the peers of firm f in the quarter immediately before the merger announcement date; and $Post_{m,t}$ is an indicator variable that equals one if the observation is in the quarter immediately after merger m 's effective date, and zero if it is in the quarter immediately before the merger announcement date. We again cluster standard errors by merger. If the merging fund families passively hold the peer stocks during the period from the quarter before merger announcement to the quarter following the merger completion, the coefficient on the interaction term, φ_1 , should be one.

Panel B of Table 5 reports the results. We use the same set of firms as in Panel A (i.e., we require the firm to have shareholder-sponsored governance proposals voted on by the acquirer fund family during the one-year period before or after the merger). As we can see, the estimated coefficients before $TargetHoldingPeers \times Post$ are positive and significant at the 1% or 5% level in all columns, suggesting that firms with higher $TargetHoldingPeers$ are indeed more intensely treated (i.e., experience a greater increase in cross-ownership by the acquiring fund family) due to the plausibly exogenous shock of financial institution mergers. The coefficient estimates of the interaction term suggest that a one-percentage-point increase in the cross-ownership by the target institution before the merger leads to an increase of 0.537 to 0.809 percentage points in the acquirer fund family's cross-ownership after the merger. This result suggests that a major fraction of the pre-merger cross-ownership by the target fund family is retained by the acquirer fund family post-merger, providing support for the premise of our identification strategy.

Overall, the results using the setting of financial institution mergers show that an increase in cross-ownership induced by financial institution mergers leads to a greater likelihood that the acquirer institution votes against management. Since cross-ownership changes due to institution mergers are plausibly exogenous to the voting behavior of the institutions and the governance practices of individual portfolio firms, this test allows us to get closer to a causal interpretation of the positive relation between cross-ownership and institutional monitoring. The findings suggest that our main results are unlikely to be driven by omitted time-varying characteristics of institution-firm

Table 5

Difference-in-differences estimation based on financial institution mergers.

This table reports difference-in-differences (DiD) analysis of the effect of institutional cross-ownership on the tendency to vote against management in the setting of financial institution mergers. For financial institution mergers that take place between 2004 and 2011, we examine the acquiring fund family's tendency to vote against management for its portfolio firms during the one-year period before the merger announcement date and the one-year period after the merger effective date. In Panel A, the dependent variable is *VoteAgainstMgmt*, defined as the fraction of votes against management cast by the funds affiliated with the acquiring fund family. *TargetHoldingPeers^{EW}* is the sum of fractional ownership by the target fund family in the peer firms of a focal firm in the quarter immediately before the merger announcement date. *TargetHoldingPeers^{VW}* is the market cap-weighted sum of fractional ownership by the target fund family in the peer firms of a focal firm in the quarter immediately before the merger announcement date. *Post* is a dummy variable to indicate the period after the merger effective date. *HoldingOwn* is the acquiring fund family's fractional ownership in the focal firm. In Panel B, the dependent variable is *AcquirerHoldingPeers^{EW}* (*AcquirerHoldingPeers^{VW}*), which is the sum of fractional ownership (the market cap-weighted sum of fractional ownership) by the acquiring fund family in the peer firms of a focal firm in the quarter immediately before the merger announcement date or the quarter immediately after the merger effective date. To be included in the sample, we require the firm to have shareholder-sponsored governance proposals voted on by the acquirer institution during the one-year period before or after the merger. The numbers in parentheses are *t*-statistics based on standard errors that are clustered at the merger level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

| Panel A: DiD results on voting | | | | |
|--|--|---------------------|--|---------------------|
| Dep. variable | <i>VoteAgainstMgmt</i> | | | |
| | (1) | (2) | (3) | (4) |
| <i>TargetHoldingPeers^{EW}</i> × <i>Post</i> | 0.554** (2.308) | 0.500** (2.326) | | |
| <i>TargetHoldingPeers^{EW}</i> | −0.116 (−1.299) | −0.128 (−1.372) | | |
| <i>TargetHoldingPeers^{VW}</i> × <i>Post</i> | | | 0.488*** (2.932) | 0.312*** (3.023) |
| <i>TargetHoldingPeers^{VW}</i> | | | −0.172 (−0.641) | 0.022 (0.879) |
| <i>Post</i> | 0.225** (2.382) | 0.024 (0.675) | 0.225** (2.380) | 0.026 (0.740) |
| <i>HoldingOwn</i> | −0.095 (−0.146) | −0.046 (−0.072) | −0.099 (−0.158) | −0.074 (−0.118) |
| Proposal FEs | Yes | Yes | Yes | Yes |
| Merger FEs | Yes | Yes | Yes | Yes |
| Fund-family × Year FEs | No | Yes | No | Yes |
| Observations | 4997 | 4995 | 4997 | 4995 |
| R-squared | 0.691 | 0.706 | 0.692 | 0.706 |
| Panel B: DiD results on cross-ownership | | | | |
| Dep. variable | <i>AcquirerHoldingPeers^{EW}</i> | | <i>AcquirerHoldingPeers^{VW}</i> | |
| | (1) | (2) | (3) | (4) |
| <i>TargetHoldingPeers^{EW}</i> × <i>Post</i> | 0.809** (2.339) | 0.639*** (3.563) | | |
| <i>TargetHoldingPeers^{EW}</i> | 0.466 (0.769) | | | |
| <i>TargetHoldingPeers^{VW}</i> × <i>Post</i> | | | 0.607*** (3.112) | 0.537*** (3.189) |
| <i>TargetHoldingPeers^{VW}</i> | | | −0.419 (−0.641) | |
| <i>Post</i> | −0.002 (−0.211) | −0.003 (−0.679) | −0.008 (−1.115) | −0.003 (−0.779) |
| Firm FEs | Yes | No | Yes | No |
| Merger FEs | Yes | No | Yes | No |
| Firm × Merger FEs | No | Yes | No | Yes |
| Observations | 2766 | 1290 | 2766 | 1290 |
| R-squared | 0.729 | 0.994 | 0.733 | 0.995 |

pairs that influence both cross-ownership and institutions' voting behavior.

5. Vote outcomes and stock return tests

5.1. Aggregate cross-ownership and vote outcomes

While our results so far suggest that cross-ownership increases the likelihood of voting against management at the institution (i.e., fund family) level, it remains an open

question whether cross-holding institutions have aggregate effects on actual vote outcomes, which might lead to changes in corporate governance policies. To examine the relation between vote outcomes and aggregate cross-ownership, we regress the outcome of a shareholder-sponsored governance proposal, i.e., whether management loses a vote, on our firm-level cross-ownership measures and control variables. Following previous literature (e.g., Dimmock et al., 2018), we control for various firm characteristics including firm size, operating performance, past

stock returns, Tobin's Q, leverage, capital expenditures, cash flows, institutional ownership, number of blockholders, Standard and Poor's (S&P) 500 membership, as well as managerial and board characteristics such as the age and tenure of the CEO, board size and independence, executive ownership, and an indicator for CEO-chairman duality. We also control for whether the recommendations of ISS and those of the management on the proposal are the same (*ISWithMgmt*). Further, we include different sets of fixed effects, including firm fixed effects, year fixed effects, industry fixed effects, and industry-year fixed effects. We cluster standard errors by firm in this analysis.

To show a robust relation between firm-level cross-ownership and vote outcome, we progressively saturate the specification with firm fixed effects and industry \times year fixed effects. The results, presented in Table 6, show that institutional cross-ownership positively predicts that management loses to shareholders in proxy votes on governance proposals. The economic magnitude is large as well. For example, Column 6, our most stringent model specification (with both firm and industry \times year fixed effects), shows that a one-standard-deviation increase in the value-weighted firm-level cross-ownership measure (i.e., 0.124) is associated with an increase of 12.8 percentage points ($=1.034 \times 0.124$) in the likelihood that management loses a vote, which is large considering that the unconditional probability of management losing a proxy vote has a mean of 27.3% and a standard deviation of 45.4%.

Consistent with prior studies (e.g., Bethel and Gillan, 2002; Malenko and Shen, 2016), management is less likely to lose a vote when management recommendations are aligned with ISS recommendations. For example, Column 6 shows that the likelihood of management losing a vote is 29.9 percentage points lower when ISS and management recommendations are the same than when they are different.

Overall, the above results provide suggestive evidence that the voting behavior we observe at the institution level has aggregate effects on vote outcomes, which in turn might lead to changes in corporate governance (Cufñat et al., 2012).

5.2. Stock returns around close-call votes

To strengthen the interpretation that corporate governance externalities are a mechanism for the above observed voting behavior by cross-holding institutional investors, we examine stock price reactions of peer firms when the focal firm is likely to experience plausibly exogenous changes in corporate governance. For identification, we use a regression discontinuity design built around close-call votes on shareholder-sponsored governance proposals. As Cufñat et al. (2012) point out, the result of a close-call vote around the majority threshold is akin to a random outcome, which enables us to identify corporate governance externalities through stock market reactions. We expect that, relative to the peers of a focal firm that experiences a narrowly failed shareholder proposal, the peers of a focal firm that experiences a narrowly passed shareholder proposal (which tends to lead to improved

corporate governance) should experience more positive announcement returns around the close-call vote event.

To test the effect of close votes on peer stock returns, we implement a nonparametric local linear estimation in the vicinity of the passing threshold using the optimal bandwidth suggested by Imbens and Kalyanaraman (2012) that minimizes the mean squared error in a sharp regression discontinuity setting.²⁵ In particular, we conduct nonparametric local linear regression analysis of cumulative abnormal stock returns of peer firms around close-call vote events at focal firms using a triangular kernel.²⁶ We focus on shareholder-sponsored governance proposals that pass or fail by a small margin (i.e., within ± 5 percentage points around the passing threshold). Since it may take some time for peer firms' stock prices to fully incorporate the information on shocks to the focal firm's governance, we consider a one-day event window (day 0, i.e., the day of the meeting) as well as a three-day window (day 0 to +2). We use both the capital asset pricing model (CAPM) and the Fama-French-Carhart four-factor model to calculate abnormal returns, and cluster standard errors by close-vote event.

The results, reported in Panel A of Table 7, show that peer firms' stock prices react positively to the passage of close-call votes on shareholder-sponsored governance proposals at focal firms. The economic magnitude is nontrivial. For example, the last two columns show that the peers of focal firms that narrowly pass a vote outperform those of focal firms that narrowly fail a vote by 1.1 to 1.5 percentage points over a three-day window. These results suggest that shocks to the governance practices of the focal firm can impose externalities on peer firms and that the market price rationally reflects such externalities.²⁷

If institutional cross-owners play an active role in internalizing governance externalities and the market recognizes such a role, an improvement in a focal firm's governance should be associated with large increases in the market value of the firm's peers when the peers and the focal firm share strong ownership ties through institutional cross-owners. In other words, the positive stock price reactions by peer firms to the passage of a shareholder-sponsored governance proposal at the focal firm should be particularly pronounced when the peers and the focal firm are highly interconnected through cross-holding institutions.

To test this conjecture, we measure the strength of ownership ties between two firms in a pair (consisting of

²⁵ Compared to the global polynomial method of regression discontinuity used in some previous literature, the local linear estimation model has better local fitness (Bakke and Whited, 2012), more attractive rate optimality, and superior bias properties (Fan and Gijbels, 1992; Hahn et al., 2001).

²⁶ Our results are robust to alternative kernels (such as a rectangular kernel) and alternative bandwidths (such as those between 50% and 150% of the optimal bandwidth).

²⁷ Consistent with the presence of governance externalities, we find that the correlation in the cumulative abnormal returns (CARs) between the focal firm and peer firms around close votes is positive and significant. For example, the correlation is 0.256 (0.351) and significant at the 1% level when using the one- (three-) day CAPM-adjusted returns. This result suggests that shocks to the governance structure of a focal firm are transmitted to peer firms.

Table 6

Aggregate cross-ownership at the firm level and vote outcomes.

This table reports regression analysis of the relation between the probability that management loses to shareholders in a proxy vote and aggregate cross-ownership at the firm level. The dependent variable is *MgmtLosesVote*, defined as a dummy variable that equals one if management loses a vote and zero otherwise. *HoldingPeers_Firm^{EW}* and *HoldingPeers_Firm^{VW}* are firm-level cross-ownership as given in Eq. (2). All other variables are defined in Table 1. The numbers in parentheses are *t*-statistics based on standard errors that are clustered by firm. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

| Dep. variable | <i>MgmtLosesVote</i> | | | | | |
|---------------------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| <i>HoldingPeers_Firm^{EW}</i> | 0.569*** (4.303) | 0.633*** (4.272) | 0.805*** (2.959) | | | |
| <i>HoldingPeers_Firm^{VW}</i> | | | | 0.670*** (4.665) | 0.735*** (4.539) | 1.034*** (3.428) |
| <i>ISSWithMgmt</i> | −0.328*** (−12.589) | −0.322*** (−11.361) | −0.299*** (−10.187) | −0.328*** (−12.611) | −0.323*** (−11.371) | −0.299*** (−10.204) |
| <i>LnAssets</i> | −0.045*** (−3.243) | −0.048*** (−3.219) | 0.063 (0.977) | −0.044*** (−3.189) | −0.047*** (−3.175) | 0.065 (1.019) |
| <i>InstOwn</i> | 0.246** (2.096) | 0.238* (1.871) | −0.027 (−0.123) | 0.246** (2.099) | 0.239* (1.872) | −0.030 (−0.139) |
| <i>LnNumBlocks</i> | 0.009 (0.349) | −0.014 (−0.451) | 0.033 (1.034) | 0.009 (0.317) | −0.015 (−0.485) | 0.031 (0.968) |
| <i>ROA</i> | −0.193 (−0.525) | −0.117 (−0.251) | 1.072** (2.259) | −0.191 (−0.523) | −0.115 (−0.249) | 1.095** (2.302) |
| <i>StockReturn</i> | −0.032 (−1.038) | −0.056 (−1.389) | −0.029 (−0.953) | −0.032 (−1.057) | −0.057 (−1.412) | −0.028 (−0.923) |
| <i>TobinQ</i> | −0.045** (−2.543) | −0.041* (−1.747) | −0.039 (−1.168) | −0.046*** (−2.603) | −0.041* (−1.782) | −0.039 (−1.165) |
| <i>Leverage</i> | −0.194* (−1.751) | −0.126 (−0.984) | −0.094 (−0.438) | −0.188* (−1.692) | −0.118 (−0.925) | −0.083 (−0.390) |
| <i>CapexAt</i> | 0.209 (0.532) | 0.193 (0.384) | −0.715 (−1.105) | 0.217 (0.554) | 0.195 (0.389) | −0.710 (−1.096) |
| <i>CashFlowAt</i> | 0.267 (1.029) | 0.024 (0.071) | 0.016 (0.055) | 0.271 (1.048) | 0.019 (0.057) | 0.023 (0.078) |
| <i>SP500</i> | −0.007 (−0.165) | 0.017 (0.340) | 0.013 (0.194) | −0.013 (−0.290) | 0.009 (0.182) | 0.013 (0.194) |
| <i>LnCEOAge</i> | −0.042 (−0.349) | −0.096 (−0.723) | 0.208 (0.867) | −0.040 (−0.329) | −0.096 (−0.726) | 0.191 (0.800) |
| <i>LnCEOTenure</i> | −0.019 (−1.215) | −0.013 (−0.696) | −0.016 (−0.655) | −0.020 (−1.223) | −0.013 (−0.710) | −0.016 (−0.632) |
| <i>PercentIndep</i> | 0.334*** (2.728) | 0.260* (1.908) | 0.351* (1.961) | 0.333*** (2.724) | 0.256* (1.883) | 0.361** (2.025) |
| <i>LnBoardSize</i> | 0.205** (2.470) | 0.131 (1.336) | 0.131 (1.053) | 0.207** (2.488) | 0.132 (1.349) | 0.142 (1.149) |
| <i>Top5ExecutiveOwn</i> | −0.356 (−1.121) | −0.535 (−1.393) | 0.205 (0.381) | −0.337 (−1.056) | −0.520 (−1.365) | 0.244 (0.441) |
| <i>Duality</i> | −0.048 (−1.590) | −0.062* (−1.872) | 0.006 (0.155) | −0.047 (−1.551) | −0.060* (−1.821) | 0.006 (0.167) |
| Firm FEs | No | No | Yes | No | No | Yes |
| Year FEs | Yes | No | No | Yes | No | No |
| Industry FEs | Yes | No | No | Yes | No | No |
| Industry × Year FEs | No | Yes | Yes | No | Yes | Yes |
| Observations | 2087 | 2009 | 1921 | 2087 | 2009 | 1921 |
| <i>R</i> -squared | 0.223 | 0.309 | 0.447 | 0.225 | 0.310 | 0.448 |

a focal firm and a peer firm) using the sum of the product of fractional ownership in the focal firm and that in the peer firm across institutions that hold shares in both the focal and peer firms. We partition the sample of peer firms into those with higher-than-median cross-ownership ties with the focal firms and those with lower-than-median ties, and run separate nonparametric local linear regressions on the two subsamples. Panel B of Table 7 shows that the positive stock price reactions by peer firms to the passage of a shareholder-sponsored governance proposal at the focal firm are particularly pronounced when the focal and peer firms share higher-than-median ownership ties through cross-holding institutions. For

example, the last two columns show that the outperformance of the peers of focal firms that narrowly pass a vote over those of focal firms that narrowly fail a vote is 1.7 percentage points over a three-day window when ownership ties between the focal and peer firms are higher than the median. In contrast, this estimate is only 0.3 percentage points and statistically insignificant when ownership ties are lower than the median. Since it is not feasible to test the statistical difference in the coefficients across nonparametric regressions (e.g., Hansen, 2015; Malenko and Shen, 2016), we caution that we cannot rule out the possibility that these two coefficients are equal statistically. Nevertheless, these results provide suggestive evidence that the

Table 7

Stock returns around close-call votes.

This table reports nonparametric local linear regression analysis of cumulative abnormal stock returns of peer firms around close-call vote events at focal firms, using a triangular kernel with optimal bandwidth (following [Imbens and Kalyanaraman, 2012](#)). We restrict the sample of votes to those that pass or fail by a small margin (within ± 5 percentage points around the threshold). The dependent variable is the cumulative abnormal returns of peer firms either on day 0, which is the day of the close vote, or over a three-day window around the close-vote event (i.e., day 0 to +2). We use the CAPM and the Fama-French-Carhart four-factor model to calculate abnormal returns. Panel A conducts the test using the full sample of peer firms, and Panel B partitions peer firms into a high and low subsample based on the median value of *CrossOwn*, defined as the sum of the product of fractional ownership in the focal firm and that in the peer firm across institutions that hold shares in both the focal and peer firms. *Pass* is an indicator that equals one if a shareholder-sponsored governance proposal narrowly passes at the focal firm and zero if it narrowly fails. The numbers in parentheses are Z-statistics based on standard errors that are clustered at the firm level. ***, **, and * represent significance at the 1%, 5%, and 10% levels, respectively.

| Panel A: Full sample | | | | | | | | |
|--|---------------------|--------------------|--------------------|------------------|-------------------|------------------|--------------------|------------------|
| Dep. variable | CAPM 1-day | | FFC4 1-day | | CAPM 3-days | | FFC4 3-days | |
| | (1) | | (2) | | (3) | | (4) | |
| <i>Pass</i> | 0.008** (2.069) | | 0.005* (1.717) | | 0.015* (1.729) | | 0.011** (1.979) | |
| Observations | 7307 | | 7307 | | 7307 | | 7307 | |
| Panel B: Subsamples by cross-ownership | | | | | | | | |
| Dep. variable | CAPM 1-day | | FFC4 1-day | | CAPM 3-days | | FFC4 3-days | |
| <i>CrossOwn</i> | High | Low | High | Low | High | Low | High | Low |
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| <i>Pass</i> | 0.010*** (2.714) | −0.001 (−0.218) | 0.009** (2.333) | 0.001 (0.301) | 0.018* (1.717) | 0.006 (0.944) | 0.017** (2.528) | 0.003 (0.379) |
| Observations | 3673 | 3634 | 3673 | 3634 | 3673 | 3634 | 3673 | 3634 |

market perceives institutional cross-ownership as a channel through which one firm's governance structure affects that of its peers. They also indicate that institutional cross-owners might be able to benefit from the governance improvement at focal firms through an increase in peer firms' stock prices.²⁸

6. Conclusion

In this paper, we examine the role of institutional cross-owners in alleviating the inefficiency associated with corporate governance externalities. Exploiting the variation in cross-ownership across institutions within a proposal as well as the variation in cross-ownership across firms within a given institution's portfolio, we show that an institution's holdings in peer firms are positively associated with the likelihood that the institution votes against management on shareholder-sponsored governance proposals. We also find evidence suggesting that this correlation is stronger for firms whose managers are likely to have more outside job opportunities, which is consistent with managerial labor market competition being a possible driver of governance externalities. Exploiting financial institution mergers that generate plausibly exogenous shocks

to cross-ownership, we find that the relation between cross-ownership and institutions' tendency to vote against management is likely causal.

We further show that high aggregate cross-ownership positively predicts management losing a vote. Consistent with the premise that shocks to the governance practices of a focal firm can impose externalities on its peers, we find that peer firms' stock prices react positively to the passage of close-call votes on shareholder-sponsored governance proposals at focal firms. More important, the positive stock price reaction is particularly pronounced when the focal and peer firms share strong ownership ties through cross-holding institutions, suggesting that the market correctly anticipates the role of cross-owners in internalizing governance externalities.

Overall, our evidence highlights the importance of a market-based mechanism, i.e., institutional cross-ownership, in reducing the inefficiency induced by governance externalities, which are hard to observe and quantify in the first place. Our study also has important policy implications. Given that institutional cross-owners are uniquely positioned to collect and produce information about firms and incentivized to internalize governance externalities, cross-ownership, as a market-based solution, can play an important role in addressing governance externalities.

Appendix. A simple framework for the cross-ownership measures

We use a simple conceptual framework to develop our main measures for cross-ownership. The key objective is to capture an institution's monitoring gains arising from

²⁸ While the results here suggest that corporate governance externalities are a plausible mechanism through which cross-ownership affects institutions' voting decisions, they do not rule out the possibility that, because of economies of scale in monitoring, the unit cost of monitoring decreases with the holdings in peer firms, thereby leading to greater monitoring efforts. Nevertheless, it is useful to note that since our baseline results continue to hold when we include fund-family \times year \times industry fixed effects in the regressions, economies of scale in monitoring at the industry level do not seem to explain our findings.

governance externalities, which increase its incentive to monitor. Suppose an institution holds shares in firm f (a focal firm) and P peers of the firm, indexed by 1, 2, ..., and P . Denote the fractional ownership of fund family i in firm f at time t as $\alpha_{i,f,t}$ and that in the peers as $\alpha_{i,1,t}$, $\alpha_{i,2,t}$, ..., and $\alpha_{i,P,t}$, respectively. Suppose a monitoring action taken by institution i at firm f increases the value of firm f by Δ_f , and because of governance externalities, increases the value of peer firms by Δ_1 , Δ_2 , ..., and Δ_P , respectively. Thus, the benefit earned by the institution from monitoring firm f comprises two components. The first is the gain from its holdings in firm f , i.e., $\alpha_{i,f,t} \Delta_f$. The second is the gain from its cross-holdings, i.e., $\sum_{p=1}^P \alpha_{i,p,t} \Delta_p$, which is the focus of our paper.

We make two alternative simplifying assumptions about the impact of the monitoring action at firm f on the value of its peer firms. First, we assume that the dollar value of the impact is the same across peer firms, i.e., $\Delta_1 = \Delta_2 = \dots = \Delta_P = c$.²⁹ This assumption enables us to rewrite the expected dollar gain on the peer holdings as $c \sum_{p=1}^P \alpha_{i,p,t}$. Thus, other things equal, the expected benefit from the monitoring action at the focal firm increases in the sum of the institution's fractional ownership in the peer firms. This leads to an equal-weighted measure of cross-ownership by fund family i in the peers of firm f at time t ,

$$\text{HoldingPeers}_{i,f,t}^{\text{EW}} = \sum_{p=1}^P \alpha_{i,p,t}. \quad (\text{A.1})$$

Second, we assume that the dollar value of the impact as a fraction of the market capitalization is the same across peer firms, i.e., $\frac{\Delta_1}{M_1} = \frac{\Delta_2}{M_2} = \dots = \frac{\Delta_P}{M_P} = c$, where M_p is the market cap of peer firm p at time t . In other words, the percentage returns due to governance externalities are the same across peer firms. This assumption enables us to rewrite the expected dollar gain on peer holdings as $c \sum_{p=1}^P \alpha_{i,p,t} M_p = c \bar{M} \sum_{p=1}^P \alpha_{i,p,t} \frac{M_p}{\bar{M}}$, where $\bar{M} = \frac{\sum_{p=1}^P M_p}{P}$. Thus, other things equal, the expected benefit from an institution's monitoring action at the focal firm increases in the weighted sum of its fractional ownership in peer firms, weighting by the latter's market cap. This leads to our second cross-ownership measure, the value-weighted sum of holdings by fund family i in the peers of firm f at time t ,

$$\text{HoldingPeers}_{i,f,t}^{\text{VW}} = \sum_{p=1}^P \alpha_{i,p,t} \frac{M_p}{\bar{M}}. \quad (\text{A.2})$$

²⁹ We assume that the gains induced by governance externalities are homogeneous across peers in terms of dollar amounts or percentage returns, because there is no clear theoretical rationale for how such gains would vary across peers. In the case of pay benchmarking, the dollar gains, in the form of reduced pay for executives, are likely to be the same across peer firms. In the case of governance provisions, the percentage returns are likely to be similar across peers. For example, a focal firm declassifying its board may prompt its peers to do the same, which may have similar impacts on the peer firms in terms of stock returns regardless of firm size if the peer firms are otherwise identical. While these assumptions are admittedly simplistic, they provide a useful starting point for us to capture the benefits and incentives associated with cross-ownership.

References

- Acharya, V., Gabarro, M., Volpin, P.F., 2016. *Competition for Managers and Corporate Governance*. New York University, University of Mannheim, and City University of London Unpublished working paper.
- Acharya, V., Volpin, P.F., 2010. Corporate governance externalities. *Rev. Financ. Stud.* 14, 1–33.
- Albuquerque, R.A., Marques, L.B., Ferreira, M.A., Matos, P.P., 2019. International corporate governance spillovers: evidence from cross-border mergers and acquisitions. *Rev. Financ. Stud.* 32, 738–770.
- Anton, M., Ederer, F., Gine, M., Schmalz, M., 2016. *Common Ownership, Competition, and Top Management Incentives*. University of Navarra, Yale University, and University of Michigan Unpublished working paper.
- Appel, I., Gormley, T.A., Keim, D.B., 2016. Passive investors, not passive owners. *J. Financ. Econ.* 121, 111–141.
- Appel, I., Gormley, T.A., Keim, D.B., 2018. Standing on the shoulders of giants: the effect of passive investors on activism. *Rev. Financ. Stud.* forthcoming.
- Ashraf, R., Jayaraman, N., Ryan, H.E., 2012. Do pension-related business ties influence mutual fund proxy voting? Evidence from shareholder proposals on executive compensation. *J. Financ. Quant. Anal.* 47, 567–588.
- Asker, J., Ljungqvist, A., 2010. Competition and the structure of vertical relationships in capital markets. *J. Polit. Econ.* 118, 599–647.
- Azar, J., Schmalz, M.C., Tecu, I., 2018. Anti-competitive effects of common ownership. *J. Financ.* 73, 1513–1565.
- Back, K., Collin-Dufresne, P., Fos, V., Li, T., Ljungqvist, A., 2018. Activism, strategic trading, and liquidity. *Econometrica* 86, 1431–1463.
- Bakke, T., Whited, T., 2012. Threshold events and identification: a study of cash shortfalls. *J. Financ.* 67, 1083–1111.
- Bereskin, F., Cicero, D., 2013. CEO compensation contagion: evidence from an exogenous shock. *J. Financ. Econ.* 107, 477–493.
- Bethel, J.E., Gillan, S.L., 2002. The impact of the institutional and regulatory environment on shareholder voting. *Financ. Manag.* 31, 29–54.
- Bizjak, J.M., Lemmon, M.L., Naveen, L., 2008. Does the use of peer groups contribute to higher pay and less efficient compensation? *J. Financ. Econ.* 90, 152–168.
- Bizjak, J.M., Lemmon, M.L., Nguyen, T., 2011. Are all CEOs above average? An empirical analysis of compensation peer groups and pay design. *J. Financ. Econ.* 100, 538–555.
- Bushee, B., Jung, M., Miller, G., 2017. Do investors benefit from selective access to management? *J. Financ. Rep.* 2, 31–61.
- Butler, A., Gurun, U., 2012. Educational networks, mutual fund voting patterns, and CEO compensation. *Rev. Financ. Stud.* 25, 2533–2562.
- Chen, X., Harford, J., Li, K., 2007. Monitoring: which institutions matter? *J. Financ. Econ.* 86, 279–305.
- Cremers, M., Grinstein, Y., 2014. Does the market for CEO talent explain controversial CEO pay practices? *Rev. Financ.* 18, 921–960.
- Cuñat, V., Gine, M., Guadalupe, M., 2012. The vote is cast: the effect of corporate governance on shareholder value. *J. Financ.* 67, 1943–1977.
- Cvijanović, D., Dasgupta, A., Zachariadis, K., 2016. Ties that bind: how business connections affect mutual fund activism. *J. Financ.* 71, 2933–2966.
- Davis, G.F., Kim, E.H., 2007. Business ties and proxy voting by mutual funds. *J. Financ. Econ.* 85, 552–570.
- Dicks, D.L., 2012. Executive compensation and the role for corporate governance regulation. *Rev. Financ. Stud.* 25, 1971–2004.
- Dimmock, S., Gerken, W., Ivković, Z., Weisbenner, S., 2018. Capital gains lock-in and governance choices. *J. Financ. Econ.* 127, 113–135.
- Edmans, A., Levit, D., Reilly, D., 2018. Governance under common ownership. *Rev. Financ. Stud.* forthcoming.
- Fan, J., Gijbels, I., 1992. Variable bandwidth and local linear regression smoothers. *Ann. Stat.* 20, 2008–2036.
- Faulkender, M., Yang, J., 2010. Inside the black box: the role and composition of compensation peer groups. *J. Financ. Econ.* 96, 257–270.
- Financial Times, 2014. Passive investment, active ownership. April 6.
- Foroughi, P., Marcus, A.J., Nguyen, V.Q., Tehranian, H., 2016. Peer Effects in Corporate Governance Practices: Evidence from Universal Demand Laws. Boston College Unpublished working paper.
- Gabaix, X., Landier, A., 2008. Why has CEO pay increased so much? *Q. J. Econ.* 121, 49–100.
- Gao, H., Luo, J., Tang, T., 2015. Effects of managerial labor market on executive compensation: evidence from job-hopping. *J. Account. Econ.* 59, 203–220.
- Gillan, S.L., Hartzell, J., Parrino, R., 2009. Explicit vs. implicit contracts: evidence from CEO employment agreements. *J. Financ.* 64, 1629–1655.

- Gillan, S.L., Starks, L.T., 2000. Corporate governance proposals and shareholder activism: the role of institutional investors. *J. Financ. Econ.* 57, 275–305.
- Gillan, S.L., Starks, L.T., 2003. Corporate governance, corporate ownership, and the role of institutional investors: a global perspective. *J. Appl. Financ.* 13, 4–22.
- Hahn, J., Todd, P., Van der Klaauw, W., 2001. Identification and estimation of treatment effects with a regression-discontinuity design. *Econometrica* 69, 201–209.
- Hansen, B., 2015. Punishment and deterrence: evidence from drunk driving. *Am. Econ. Rev.* 105, 1581–1617.
- Hansen, R.G., Lott Jr., J.R., 1996. Externalities and corporate objectives in a world with diversified shareholder/consumers. *J. Financ. Quant. Anal.* 31, 43–68.
- Harford, J., Jenter, D., Li, K., 2011. Institutional cross-holdings and their effect on acquisition decisions. *J. Financ. Econ.* 99, 27–39.
- He, J., Huang, J., 2017. Product market competition in a world of cross-ownership: evidence from institutional blockholdings. *Rev. Financ. Stud.* 30, 2674–2718.
- Hoberg, G., Phillips, G., 2010. Product market synergies and competition in mergers and acquisitions: a text-based analysis. *Rev. Financ. Stud.* 23, 3773–3811.
- Hoberg, G., Phillips, G., 2016. Text-based network industries and endogenous product differentiation. *J. Polit. Econ.* 124, 1423–1465.
- Hong, H., Kacperczyk, M., 2010. Competition and bias. *Q. J. Econ.* 125, 1683–1725.
- Huang, J., 2016. Shareholder coordination, corporate governance, and firm value. University of Illinois Unpublished working paper.
- Iliev, P., Lowry, M., 2015. Are mutual funds active voters? *Rev. Financ. Stud.* 28, 446–485.
- Imbens, G., Kalyanaraman, K., 2012. Optimal bandwidth choice for the regression discontinuity estimator. *Rev. Econ. Stud.* 79, 933–959.
- John, K., Kadyrzhanova, D., 2008. Peer effects in corporate governance. New York University and Georgia State University Unpublished working paper.
- Kale, J.R., Reis, E., Venkateswaran, A., 2009. Rank-order tournaments and incentive alignment: the effect on firm performance. *J. Financ.* 64, 1479–1512.
- Kang, J., Luo, J., Na, H.S., 2018. Are institutional investors with multiple blockholdings effective monitors? *J. Financ. Econ.* 128, 576–602.
- Kelly, B., Ljungqvist, A., 2012. Testing asymmetric-information asset pricing models. *Rev. Financ. Stud.* 25, 1366–1413.
- Keswani, A., Stolin, D., Tran, A.L., 2017. Frenemies: how do financial firms vote on their own kind. *Manag. Sci.* 63, 631–654.
- Kwon, H.J., 2016. Executive Compensation Under Common Ownership. University of Chicago Unpublished working paper.
- Levit, D., Malenko, N., 2016. The labor market for directors and externalities in corporate governance. *J. Financ.* 71, 775–808.
- Malenko, N., Shen, Y., 2016. The role of proxy advisory firms: evidence from a regression-discontinuity design. *Rev. Financ. Stud.* 29, 3394–3427.
- Matvos, G., Ostrovsky, M., 2008. Cross-ownership, returns, and voting in mergers. *J. Financ. Econ.* 89, 391–403.
- Matvos, G., Ostrovsky, M., 2010. Heterogeneity and peer effects in mutual fund proxy voting. *J. Financ. Econ.* 98, 90–112.
- McCahery, J.A., Sautner, Z., Starks, L.T., 2016. Behind the scenes: the corporate governance preferences of institutional investors. *J. Financ.* 71, 2905–2932.
- Morgan, A., Poulsen, A., 2001. Linking pay to performance—compensation proposals in the S&P 500. *J. Financ. Econ.* 62, 489–523.
- Morgan, A., Poulsen, A., Wolf, J., Yang, T., 2011. Mutual funds as monitors: evidence from mutual fund voting. *J. Corp. Financ.* 17, 914–928.
- New York Times, 2016. A monopoly Donald Trump can pop. Eric Posner, Fiona S. Morton, and Glen Weyl, December 7.
- Oster, E., 2018. Unobservable selection and coefficient stability: theory and validation. *J. Bus. Econ. Stat.* Forthcoming.
- Parrino, R., 1997. CEO turnover and outside succession: a cross-sectional analysis. *J. Financ. Econ.* 46, 165–197.
- Schmidt, K.M., 1997. Managerial incentives and product market competition. *Rev. Econ. Stud.* 64, 191–213.
- Schwartz-Ziv, M., Wermers, R., 2017. Do institutional investors monitor their large vs. small investments differently. Evidence from the Say-On-Pay Vote. Michigan State University and University of Maryland Unpublished working paper.
- Taylor, L., 2013. CEO wage dynamics: estimates from a learning model. *J. Financ. Econ.* 108, 79–98.
- Wall Street Journal, 1993. Teachers' pension plan to give firms tough exams. Leslie Scism, October 6.
- Wooldridge, J.M., 2010. *Econometric Analysis of Cross Section and Panel Data*. MIT Press, Cambridge, MA.