Institutional Cross-Ownership and Corporate Financing of Investment Opportunities*

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Abstract

When institutional blockholders cross-own multiple firms within the same industry, they are expected to have more private information about each individual firm, which, in turn, can improve monitoring and coordination. We document that cross-ownership facilitates external financing of investment opportunities, consistent with expectations of better post-financing outcomes with the presence of institutional blockholders. We show further that the effect of cross-ownership is stronger for firms that have poorer quality public disclosure, indicating that private information of institutional blockholders could mitigate difficulties in monitoring opaque firms. Our paper sheds light on how the nature of a firm's existing owners can affect its ability to raise capital.

JEL classification: G10, G23, G32.
Keywords: Cross-ownership; Investment opportunity; Corporate financing.

1. Introduction

Public firms are becoming increasingly interconnected through institutional investors' stock ownership. One reason for this is the large and growing number of individual investors who invest their excess cash and retirement savings through financial institutions (Matvos and Ostrovsky, 2008; Harford, Jenter, and Li, 2011; He and Huang, 2017; He, Huang, and Zhao, 2017). Similar to He and Huang (2017), we refer to a firm with institutional cross-ownership as one whose institutional blockholders that also have significant stakes in other firms within the same industry. For the firm, this cross-ownership presents interesting and important dynamics for the firm because it now has an investor with the incentive to maximize their welfare through their joint ownership of the different firms within the same industry. From an information perspective, this investor also has access to private information about the firm's peers in addition to that about the firm, thus making her a relatively more informed investor.[1] The existing literature on institutional cross-ownership has examined how such cross-ownership influences firms' operating activities such as product market coordination, corporate governance, and corporate acquisitions (e.g., Hansen and Lott, 1996; Matvos and Ostrovksy, 2008; He and Huang, 2017; He, Huang, and Zhao, 2017; Azar, Schmalz, and Tecu, 2018; Kang, Luo, and Na, 2018). In this paper, we examine how the presence of investors with cross-ownership affects the ability of the firm to raise capital to finance investment opportunities.

Investment opportunities are vitally important to firms as opportunities to generate shareholder value (Jensen, 1986; Stulz, 1990). After an investment opportunity arises, a firm

[1] Kacperczyk, Sialm, and Zheng (2005) find that mutual fund managers who concentrate their holdings in industries perform better, consistent with them having informational advantages.

goes through a typical business cycle: financing the opportunity, making investments with that financing, and finally engaging in operations to produce and sell the resultant product (Smith and Ross, 1992; Gaver and Gaver, 1993; Gul, 1999; Ho, Lam, and Sami, 2004; Bolton, Chen, and Wang, 2011). Not surprisingly, investors care about adverse selection and post-financing issues concerns such as agency problems, information asymmetry among investors, and product market competition. Existing theories and empirical evidence provide contrasting predictions about how institutional cross-ownership can affect corporate financing in face of investment opportunities.

On the one hand, some findings in the existing literature suggest that capital providers can benefit from the presence of institutional investors with cross-ownership, which, in turn, should facilitate financing of investment opportunities. In particular, there is evidence that these institutional investors can use their private information advantage from multiple shareholdings to generate positive post-financing effects. First, adverse selection and post-financing agency problems are important concerns when a firm tries to obtain financing (Myers and Majluf, 1984; Fama and French, 2002; Frank and Goyal, 2003; Chang, Dasgupta, and Hilary, 2006, 2009). There is evidence in the prior literature that institutional cross-ownership is associated with better shareholder monitoring, which could mitigate these concerns . Kang, Luo, and Na (2018) show that firms with institutional cross-ownership have better governance outcomes such as higher forced CEO turnover-performance sensitivity, consistent with the enhanced shareholder monitoring arising from informational advantages and governance experience obtained from multiple blockholdings.[2] He, Huang, and Zhao

[2] The literature about auditors and board of directors documents that industry expertise improves firm monitoring (e.g., Gul, Fung, and Jaggi, 2009; Wang, Xie, and Zhu, 2015).

(2017) find that cross-ownership of same-industry firms is associated with better monitoring in that institutional cross-owners are more likely to vote against management on shareholder-sponsored governance proposals. Consistent with financial reporting monitoring, He, Li, and Yeung (2018) find that cross-blockholders' industry-wide information advantage discourages earnings management, resulting in negative accruals that increase the association between accruals and cash flows.

Second, institutional investors with cross-ownership can use their private information about different firms to engage in product market coordination among the firms. He and Huang (2017) provide evidence that institutional cross-ownership facilitates product market coordination. Specifically, they find that cross-held firms have higher market share growth than non-cross-held firms. They also find that these firms benefit from explicit forms of product market collaboration such as within-industry joint ventures and they also experience greater innovation productivity and operating profitability. Azar, Schmalz, and Tecu (2018) find that cross-ownership is associated with reduced product market competition in the U.S. airline industry. From the perspective its capital providers, greater product market coordination can reduce financial risk.

On the other hand, the presence of institutional cross-owners can make investors more concerned about losses from adverse trades and self-dealing, thus hindering financing of investment opportunities. First, potential capital providers might be concerned that institutional cross-owners use their information advantage to engage in trades that are adverse to the other shareholders. For example, cross-owners could sell (buy) shares upon knowledge of news good (bad) for the firm using information gleaned from another firms, and their

cross-ownership increases the likelihood that they privately obtain such information from time to time (Foster, 1981; Holden and Subrahmanyam, 1992; Hou, 2007). Concerns about the potential for adverse trades by existing cross-owners can be likened to concerns that investors have about insider trading when providing the firm with capital (Bhattacharya and Daouk, 2002). Consistent with informed investors trading in the equity market based on information spillovers, Bushman, Smith, and Wittenberg-Moerman (2010) provide evidence that institutional lenders exploit confidential syndicate information by using this information to trade in the equity markets.

Furthermore, institutional cross-owners might induce firms to engage in self-dealing that expropriates the wealth of other capital providers (La Porta et al., 2000; Djankov et al., 2008).[3] An institutional investor with cross-ownership has the incentive to trade-off the interest of one firm against another cross-held firm to maximize the benefits of jointly owning multiple firms. Self-dealing can take many different forms such as inter-corporate loans and transfer pricing. Matvos and Ostrovksy (2008) show that when a mutual fund owns both the acquirer and target in an merger setting, it will vote for a merger that is bad for acquirer because the gains from owning the target compensate for the losses from owning the acquirer.

Ultimately, it is an empirical question whether institutional cross-ownership facilitates or hinders corporate financing of investment opportunities. Improved monitoring of agency problems and better product market coordination predict a positive association between

[3] While the literature on self-dealing typically portrays the process as involving a controlling party (a manager and/or controlling shareholders), control is not a necessary condition. As long as a party has enough influence to direct corporate wealth to themselves at the expense of the other shareholders, it is irrelevant whether that party is a manager, controlling shareholder, or an influential shareholder (e.g., institutional blockholder).

institutional cross-ownership and corporate financing, whereas concerns about losses from adverse trades and self-dealing predict a negative association.

Using a large sample of U.S. firms during the 1981-2016 period, we find that firms with institutional cross-ownership are able to obtain more external financing in face of investment opportunities, consistent with investors expecting better post-financing outcomes with the presence of institutional blockholders. The effect of institutional cross-ownership is not only statistically, but also economically, significant. When there are investment opportunities, firms with cross-ownership are able to obtain more than double the external financing compared to those without it. Our findings are robust to alternative institutional cross-ownership measures, industry classifications, samples, and regression specifications.

To identify the causal effect of institutional cross-ownership on financing, we follow He and Huang (2017) and rely on the quasi-experimental setting of financial institution mergers. A firm and one of its same-industry peers might separately be block-held by the two merging institutions, so there is no cross-ownership before the merger. However, after it, both firms are block-held by the merged institution, resulting in cross-ownership. Since financial institutions usually merge for reasons unrelated to their stock holdings, such mergers provide a setting in which changes in institutional cross-ownership are exogenous to the operations of the cross-held firms. We perform a difference-in-differences analysis around financial institution mergers and find that those that lead to cross-ownership results in the cross-held firms being able to obtain more financing for their investment opportunities.

Earlier, we discussed two possible reasons for the positive effect that institutional cross-ownership has on the financing of investment opportunities: i) improved monitoring of

agency problems and ii) better product market coordination. We explore these explanations further by examining how the relation between cross-ownership and the financing of investment opportunities varies cross-sectionally with conditions under which these two roles are likely to be more important.

Prior literature has highlighted the fact that when offering financing, capital providers are concerned about agency problems. Prior literature has also emphasized the importance of good public disclosure allowing stakeholders to monitor the firm and reduce agency problems (Bushman and Smith, 2001). Consistent with private-information-based monitoring being a substitute for public-information-based-monitoring, we find that institutional cross-ownership has a stronger effect on the financing of investment opportunities when the firm has a lack of financial statement comparability and transparency. These findings suggest that capital providers value institutional cross-owners' monitoring role for such firms as cross-owners' presence sends a signal that current and future agency problems are likely to be kept in check.

Next, to the extent that product market coordination mitigates the potential difficulties (e.g., competing products and price competition) that competition creates, we expect cross-ownership to have a stronger positive effect on the financing of investment opportunities when a firm is expected to face more competition in its product market. We proxy for product market competition using the industry-level Herfindahl-Hirschman index and price-cost margin. Using these two proxies, we do not find that competition results in a stronger (or weaker) effect on the financing of investment opportunities.

We then conduct a more in-depth analyses of cross-ownership institutional investors by focusing on variations in their investment horizons. Prior literature have documented that

dedicated institutional investors, which have low portfolio turnover and high stockholding concentration, more likely to engage in monitoring activities than other types of institutional investors (e.g., Bushee, 1998, 2001). Integrating the techniques use to classify institutional investors in this literature with that in the cross-ownership literature, we find the effect of institutional cross-ownership on corporate financing of investment opportunities is stronger if the cross-owners are dedicated institutional investors. This result provides further support that private-information-based monitoring is one possible channel explaining the positive effect of cross-ownership on the financing of investment opportunities.

Finally, we explore whether firms with institutional cross-ownership use the increased financing to fund more investment projects. As noted earlier, the typical business cycle involves making investments with the financing obtained to leverage on investment opportunities. Consistent with the expectation that firms with more financing engage in more investment, we find that in face of investment opportunities, firms with institutional cross-ownership make more capital, as well as research and development (R&D), investments. We also find that institutional cross-ownership eases firm financial constraints by reducing the sensitivity of investments to operating cash flow.

Our paper contributes to the literature in two ways. First, we extend the literature that examines how additional corporate financing is affected by considerations of presence, incentives, and possible actions by the nature of existing capital providers, all of which could affect the assessment of the risks and returns of providing the financing. For example, the literature on initial public offerings (IPOs) has examined how lockups that restrict share sales by existing shareholders affect the attention of new investors, IPO pricing, stock returns when

the lockup expires, and disclosure strategies (e.g., Field and Hanka, 2001; Bradley et al., 2001; Aggarwal, Krigman, and Womack, 2002; Ertimur, Sletten, and Sunder, 2014). Prior studies have also examined how managerial equity ownership affects financing activities (e.g., Stulz, 1988; Datta, Iskandar-Datta, and Raman, 2005). Giannetti et al. (2011) find that firms that obtain more credit from suppliers are also more likely to obtain more bank lending, especially less informed bank lending, consistent with the presence of trade creditors providing a useful signal to other lenders.[4] Consistent with agency problems in family firms, Chen, Dasgupta, and Yu (2014) find that greater scope for expropriation in family firms limits external financing that is more sensitive to information asymmetry. Our paper contrasts and complements the above literature by investigating how cross-ownership of same-industry firms by institutional investors can facilitate a firm's financing of investment opportunities. An interesting insight from our paper is that more private information held by an investor can help a firm attract financing if the private information is expected to enhance the welfare of other investors.[5]

Second, we extend the nascent literature on cross-ownership of same-industry firms by institutional investors (He and Huang, 2017; He, Huang, and Zhao, 2017). Unlike existing papers that examine the operational aspects of institutional cross-ownership, we focus on the financing aspect. Specifically, we extend prior research by examining whether the existing shareholders' cross-ownership profile matters to new capital providers. A key implication

[4] Their argument relies on Petersen and Rajan's (1997) observation that trade creditors have superior private information and monitoring due to advantages like being able to observe customer orders and make site visits.

[5] This insight contrasts with the existing literature on information asymmetry among investors, which typically considers the interaction between these investors to be a zero-sum game in that more informed investors benefit at the expense of the less informed.

from our study is that the institutional cross-ownership of same-industry firms not only benefits the firm in terms of its current product markets, it enables the firm to obtain the necessary financing to take advantage of investment opportunities. Consistent with the existing literature that has documented the benefits of cross-ownership in terms of monitoring of agency problems, we find evidence that suggests that capital providers take these benefits into account when providing capital. Overall, institutional cross-ownership appears to be beneficial to a firm at various stages in its business cycle after an investment opportunity arises. It suggests that the trend towards greater institutional cross-ownership might be good for shareholders' welfare.

Section 2 describes our sample and variables. The empirical analyses examining the relation between institutional ownership and the corporate financing of investment opportunities are presented in Section 3. Section 4 provides further cross-sectional tests of this relation. Section 5 discusses results of supplementary analyses. Finally, Section 6 concludes.

2. Sample and Variables

2.1. Sample

We obtain data used to compute institutional cross-ownership from Thomson Financial's CDA Spectrum database, which collects and reports quarterly institutional ownership information from form 13F. Financial statement information is obtained from Compustat and stock return information from the Center for Research in Security Prices (CRSP). To be included in our sample, a firm-year must have positive values for sales and total assets and non-missing industry classification information (four-digit SIC codes) and

belong to an industry with at least two firms. We also exclude firms in the financial (SIC 6000-6999) and utility (SIC 4900-4999) industries because these are regulated industries and have distinct external financing and investment opportunities. To mitigate the effect of outliers, we winsorize all the variables (except dummy variables) at both the upper and lower one percentiles. Since the institutional ownership data starts from 1980, we restrict our sample period to 1981-2016. Our final sample consists of 125,017 firm-year observations for 14,803 unique firms listed in the U.S.

2.2. Variable Construction

2.2.1. Cross-Ownership Variables

To construct our cross-ownership variables, we follow He and Huang (2017) and calculate for each firm the proportion of shares held by each institutional investor in each quarter using the Thomson Financial 13F database. We define an institutional investor as the blockholder of a firm if it holds a proportion of shares that exceeds 5% of shares outstanding. Cross-ownership is defined as the case when an institutional investor is the blockholder of more than one firm in the same four-digit SIC industry at a given point in time.

Our main independent variable is the cross-ownership dummy (*DCROSS*), which is a dummy variable equal to one if the firm is cross-owned by at least one institutional blockholder in any of the four quarters in a fiscal year, zero otherwise. In robustness checks, we also use four alternative cross-ownership variables. The number of cross-owned firms (*NUMCON*) is the number of same-industry peers that share any common institutional blockholder with the firm in the quarter. The number of institutions with cross-ownership (*NUMCROSS*) is the number of unique institutional blockholders that cross-own a firm in the

quarter. The average number of all cross-owned firms (*AVGNUM*) is the average number of same-industry peers block-held by all the cross-ownership institutional investors in the quarter. The percentage of cross-ownership (*CROSSOWN*) is the sum of all the cross-ownership institutional blockholders' average percentage holdings in the quarter. For the four alternative measures, we average across the four quarters in a given fiscal year to obtain annual measures. We use the natural logarithm of one plus *NUMCON*, *NUMCROSS*, and *AVGNUM* in the analysis to correct for the skewness in these variables.

2.2.2. Financing and Growth Opportunity Variables

We calculate the corporate financing variables following prior literature (Lemmon and Roberts, 2010; Shroff, 2017). Total financing (*FINANCING*) is the sum of net equity issues and net debt issues, divided by total assets at the beginning of the year. Net equity issues are calculated as the sale of common and preferred stock minus the purchase of common and preferred stock.[6] Net debt issues are calculated as long-term debt issues minus long-term debt reduction plus the change in current debt.

Following prior studies (e.g., Jung, Kim, and Stulz, 1996; Martin, 1996), we adopt sales growth and Tobin's Q as the measure of firm investment opportunities. Sales growth is the annual growth rate of the firm's sales revenue. Higher sales growth indicates that the firm is in the expansion stage and thus has more investment opportunities. Following prior studies (e.g., Collins and Kothari, 1989; Lewellen, Loderer, and Martin, 1987; Graham and Rogers, 2002), we calculate Tobin's Q as the ratio of the market value of equity over the book value of equity. A higher Tobin's Q indicates a greater valuation of the firm's growth potential and

[6] Our results (untabulated) hold when we include only firm-initiated equity issuance calculated following McKeon (2015).

thus more investment opportunities. Since investment opportunities exhibit large variations among industries, we use industry-adjusted sales growth (*SALEGR*) and Tobin's Q (*TOBINQ*) in the analysis, defined as sales growth and Tobin's Q minus the average value of the respective variable among the firm's two-digit SIC industry. Nevertheless, our results hold if we use the raw value of sales growth and Tobin's Q.

2.2.3. Control Variables

Following prior literature (e.g., Lemmon and Roberts, 2010; Hadlock and Pierce, 2010; Badertscher et al., 2013; Kausar et al., 2016), we include a number of firm characteristics as control variables in the regression. Cash holdings (*CASH*) are cash and short-term investments divided by total assets. Firm size (*SIZE*) is the natural logarithm of total assets. Leverage (*LEV*) is total debt divided by total assets. Return on assets (*ROA*) is income before extraordinary items divided by total assets. Tangibility (*PPE*) is total property, plant, and equipment divided by total assets. Cash flow from operations (*CFO*) is operating cash flow divided by total assets. Dividend payment (*DIV*) is a dummy variable equal to one if the firm has positive dividend payments, zero otherwise. Altman's *Z*-score (*ALTMAN*) is the financial distress measure constructed following Altman (1968). The Herfindahl-Hirschman index (*HHI*) is the sum of the squared market shares of all firms in the firm's four-digit SIC industry in Compustat, where market share is the ratio of the firm's sales over total industry sales.

We follow He and Huang (2017) and also include a number of control variables related to ownership by institutional investors. Block-ownership (*BLOCKOWN*) is the average percentage of shares held by institutional blockholders across the four quarters in a fiscal year.

Institutional ownership (*INSTOWN*) is the average percentage of shares held by all the institutional investors across the four quarters in a fiscal year. The block-ownership dummy (*DBLOCK*) is a dummy variable equal to one if the firm has at least one institutional blockholder in any of the four quarters of a fiscal year, zero otherwise.

2.3. Summary Statistics

Table 1 presents the summary statistics of the variables. The table shows that on average, firms obtain total new financing that is 10.1% of beginning-of-year total assets. The mean value of the cross-ownership dummy is 0.314, suggesting that 31.4% of the sample firm are cross-owned by at least one institutional blockholder. Further, the mean value of industry-adjusted sales growth is 0.008 and the mean value of industry-adjusted Tobin's Q is 0.05. The summary statistics of the control variables are also largely consistent with prior literature (e.g., Lemmon and Roberts, 2010; He and Huang, 2017).

[Insert Table 1 here]

Table 2 reports the correlation matrix of the variables in the analysis. The upper right of the table reports the Pearson correlation matrix, while the lower left reports the Spearman correlation matrix. The Pearson and Spearman correlations indicate that total financing is positively correlated with industry-adjusted sales growth and Tobin's Q, consistent with the expectation that firms with more investment opportunities engage in more external financing.

[Insert Table 2 here]

Last, we conduct a multi-collinearity test and the results (untabulated) show that the highest variance inflation factor (VIF) among the independent variables is 2.12, below the threshold of 5 (O'Brien, 2007), which suggests that there is no multi-collinearity problem in

our tests.

3. Relation between Institutional Cross-Ownership and the Corporate Financing of Investment Opportunities

3.1. Baseline Analysis

In this section, we conduct our baseline analysis on the effect of institutional cross-ownership on the corporate financing of investment opportunities. The regression design is as follows.

$$FINANCING_{i,t} = \alpha + \beta_1 DCROSS_{i,t-1} \times SALEGR_{i,t-1} + \beta_2 DCROSS_{i,t-1} + \beta_3 SALEGR_{i,t-1} + \beta_4 CASH_{i,t-1} + \beta_5 SIZE_{i,t-1} + \beta_6 LEV_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 PPE_{i,t-1} + \beta_9 CFO_{i,t-1} + \beta_{10} DIV_{i,t-1} + \beta_{11} ALTMAN_{i,t-1} + \beta_{12} HHI_{i,t-1} + IND + YR + \varepsilon_{i,t} \quad (1)$$

$$FINANCING_{i,t} = \alpha + \beta_1 DCROSS_{i,t-1} \times TOBINQ_{i,t-1} + \beta_2 DCROSS_{i,t-1} + \beta_3 TOBINQ_{i,t-1} + \beta_4 CASH_{i,t-1} + \beta_5 SIZE_{i,t-1} + \beta_6 LEV_{i,t-1} + \beta_7 ROA_{i,t-1} + \beta_8 PPE_{i,t-1} + \beta_9 CFO_{i,t-1} + \beta_{10} DIV_{i,t-1} + \beta_{11} ALTMAN_{i,t-1} + \beta_{12} HHI_{i,t-1} + IND + YR + \varepsilon_{i,t} \quad (2)$$

where *i* denotes the firm, *t* denotes the year, *IND* is industry fixed effects based on the two-digit SIC code, *YR* is year fixed effects, and ε is the error term. The regression is performed using ordinary least squares (OLS). The *t*-statistics are computed using standard errors clustered at both the firm and year levels. The dependent variable is total financing (*FINANCING*) and the independent variable of interest is the interaction term between institutional cross-ownership and investment opportunities (i.e., *DCROSS*×*SALEGR* and *DCROSS*×*TOBINQ*), which captures the financing of investment opportunities in the presence of institutional cross-ownership.

[Insert Table 3 here]

The baseline regression results are presented in Table 3. In Column (1), we use industry-adjusted sales growth as the measure of investment opportunities. The results show that the coefficient of *DCROSS*×*SALEGR* is positive and statistically significant (*t*-statistics 2.4), suggesting that institutional cross-ownership facilitates more financing for firms when they have good investment opportunities. Further, the coefficient of *SALEGR* is also positive and statistically significant (*t*-statistics 3.51), suggesting that high growth firms in general are able to obtain more financing.

In terms of economic significance, the magnitude of the coefficients show that a one-standard-deviation increase in industry-adjusted sales growth (0.577) is associated with an increase in total financing of $0.019 \times 0.577 = 0.011$ when there is no institutional cross-ownership. When there is institutional cross-ownership, there is a further increase in financing of $0.026 \times 0.577 = 0.015$, suggesting that financing of investment opportunity more than doubles on the presence of institutional cross-ownership. Therefore, the effect of institutional cross-ownership on the financing of investment opportunities is not only statistically, but also economically, significant.

The results with industry-adjusted Tobin's Q as the measure of investment opportunities are presented in Column (2) and are similar to those in Column (1). The coefficient of *DCROSS*×*TOBINQ* is positive and statistically significant (*t*-statistics 6.07), suggesting that institutional cross-ownership increases financing when Tobin's Q is high. In particular, when there is no institutional ownership, a one-standard-deviation increase in Tobin's Q (4.212) is associated with an increase in total financing of $0.006 \times 4.212 = 0.025$. On the presence of

institutional cross-ownership, there is a further increase in total financing of 0.007×4.212=0.029. The results further confirm our findings in terms of economic significance.

With respect to control variables, Table 3 shows that total financing is positively and significantly related to tangibility, dividend dummy, and the Altman's Z-score, while negatively and significantly related to cash holdings, firm size, leverage, return on assets, and operating cash flow. The results are largely consistent with prior literature (e.g., Lemmon and Roberts, 2010).

Overall, the findings in the baseline regression suggest that firms with institutional cross-ownership are able to obtain more external financing when they have investment opportunities, consistent with institutional cross-ownership leading to an expectation of improved operations and enhanced monitoring, which benefits future capital providers and makes them more willing to provide finance for firm investments.

3.2. Robustness Checks

We perform a number of robustness checks to confirm the validity of our findings in the baseline regression analysis. First, we examine whether our findings hold for alternative measures of institutional cross-ownership as described in Section 2.2.1 (i.e., the number of cross-owned firms, the number of institutions with cross-ownership, the average number of all cross-owned firms, and the percentage of cross-ownership). Further, in the main analysis, we define the cross-ownership dummy based on the four-digit SIC industry classification. As a robustness check, we define the variable based on the 10K text-based fixed industry classification (FIC 500) developed by Hoberg and Phillips (2010, 2016) and the Fama-French

48 industry classification, respectively.[7] The results are presented in Panel A of Table 4 and show that the coefficients of the interaction terms between these measures and the two investment opportunity measures are all positive and statistically significant, suggesting that our findings hold for alternative institutional cross-ownership measures.

Second, we examine whether our findings hold for alternative industry classification in calculating industry-adjusted sales growth and Tobin's Q. In the main analysis, we adjust the two growth opportunity measures based on two-digit SIC industry. In this section, we just the sales growth and Tobin's Q using FIC 500 and Fama-French 48 industry classifications, respectively. The results are reported in Panel B of Table 4. For both alternative industry classifications, the coefficients of the interaction terms between institutional cross-ownership and the two investment opportunity measures are positive and statistically significant, suggesting that our findings hold for alternative industry classifications in adjusting sales growth and Tobin's Q.

Third, we examine whether our results hold in alternative samples and report the results in Panel C of Table 4. First, we restrict our sample to manufacturing industries (SIC codes 2000-3999), as these industries are capital intensive and should have greater demand for external financing for investment opportunities. Second, we use a refined industry classification by removing industries for which the fourth digit of their SIC codes is 0 or 9. Clarke (1989) and Kahle and Walking (1996) state that these SIC codes may not define economic markets accurately. Third, we only include firm-years with non-zero block-ownership (i.e., having at least one institutional investor that holds more than 5% of the

[7] The sample size of the FIC 500 test is significantly reduced (55,880 observations), due to availability of the FIC 500 industry classification data.

firm's shares). Last, we require industry-years to have at least 20 observations. The results show that the coefficient on the interaction term between the cross-ownership dummy and investment opportunities is positive and statistically significant in almost all the samples, suggesting the robustness of our findings to alternative samples.

Last, we investigate the robustness of our results to alternative model specifications and report the results in Panel D of Table 4. In the first test, we replace industry fixed effects with firm fixed effects. The purpose of this test is to mitigate the omitted variable concerns by further controlling for time-invariant firm characteristics. We continue to find that cross-ownership increases the financing of investment opportunities. In the second test, we use the decile ranking of all the variables in the regression to make sure that our findings are not driven by skewness in some of the variables. The results show that the coefficient on the interaction term between the cross-ownership dummy and investment opportunities is positive and statistically significant in all the specifications, suggesting that our findings are robust to alternative model specifications.

3.3. Endogeneity

There are concerns that our results may be driven by endogeneity problems. It is likely that firm financing, investment opportunities, and institutional cross-ownership are all correlated with variables omitted from the regression. Even if we control for a bunch of variables and various fixed effects, we still could not completely rule out this possibility. It is also likely that firms with greater investment opportunities and easier financing are more attractive to institutional investors, which results in more cross-ownership. In this section, we follow He and Huang (2017) and address the potential omitted variable and reverse causality

problems using a quasi-natural experiment of financial institution mergers that cause exogenous changes in institutional cross-ownership.

Financial institution mergers are common in the U.S. and usually occur for reasons unrelated to the institutions' stock holdings. For example, many of the mergers between financial institutions are due to consolidation in the financial sector in response to deregulations such as the Gramm-Leach-Bliley Act of 1999, which allowed the consolidation of commercial banks, investment banks, securities companies, and insurance companies. He and Huang (2017) note that over 60% of the financial institution mergers in their sample are due to banking sector consolidation. Jayaraman, Khorana, and Nelling (2002) also mention that mergers between asset management firms are largely motivated by business strategy considerations such as economies of scale in fund operations and the expansion of financial product offerings.

Due to liquidity and transaction cost concerns, after two financial institutions merge, the acquiring institution usually holds the portfolios of the target institution for an extended period of time, especially for blockholdings. (e.g., Holthausen, Leftwich, and Mayers, 1987; Keim and Madhavan, 1996). Therefore, before the merger, a firm and one of its same-industry peers might be block-held by the two merging institutions separately so there is no cross-ownership. But after the merger, both firms are block-held by the merged institution, which results in cross-ownership. Since the mergers are exogenous to the cross-held firms, financial institution mergers provide a setting in which changes in institutional cross-ownership are exogenous to firm financing decisions and investment opportunities.

We use 12 financial institution merger events identified by He and Huang (2017). The authors use the SDC Mergers and Acquisitions database and search mergers between two 13F institutions (or their parent firms) in the financial sector (SIC codes 6000-6999) between 1983 and 2011. They further require the merger to have been completed within one year after the initial announcement and the target institution to have stopped filing 13F forms within one year after the completion of the deal.

We conduct a difference-in-difference (*DiD*) test around financial institution mergers. We define the treatment firms as firms that were block-held by one of the merging institutions during the quarter immediately before the merger announcement date and the other merging institution did not block-hold the firm but block-held at least one of its same industry peers during the same pre-merger quarter. The idea is that the treatment firms should not have been cross-held by the merging institutions before the merger and are likely to be cross-held by the merged institution after it. We define the control firms as firms that were block-held by the same merging institution that block-holds the treatment firms during the quarter immediately before the merger announcement date while the other merging institution block-held none of the firm's same-industry peers during the same pre-merger quarter. The reason for selecting the control firms from the same merging institution is to control for the merging institution's managerial skills and investment styles that might be related to firm characteristics such as financing and investment opportunities. We create two dummy variables. The treatment dummy (*TREAT*) is a dummy variable equal to one for the treatment firms and zero for the control firms. The post-merger dummy (*POST*) is a dummy variable equal to one for the three years after the merger and zero for the three years before it. We include the interaction terms

between the two dummies and the measures of growth opportunities in the regression specification in Equations (1) and (2).

The DiD results are presented in Table 5. The sample of the test is much smaller (2,832 observations) as compared to the main analysis. In Columns (1) and (2) in which firm-merger fixed effects (i.e., fixed effects for each firm involved in each merger event) are included, the coefficients of *POST*×*TREAT*×*SALEGR* and *POST*×*TREAT*×*TOBINQ* are both positive and statistically significant (*t*-statistics 1.92 and 1.8, respectively). The results suggest that after financial institution mergers (i.e., an exogenous increase in institutional cross-ownership), the treatment firms are able to obtain more financing for their investment opportunities than are the control firms. In Columns (3) and (4), we replace firm-merge fixed effects with the respective firm and merge fixed effects. The results show that the coefficient of *POST*×*TREAT*×*SALEGR* is insignificant, but the coefficient of *POST*×*TREAT*×*TOBINQ* is positive and highly significant (*t*-statistics 2.77).

Overall, with the above research design based on exogenous changes in institutional cross-ownership, we continue to find that cross-ownership facilitates the financing of investment opportunities, thus providing a nice robustness check to our earlier main results. Perhaps more importantly, the results allow us to draw a stronger inference that the positive relation between cross-ownership and the financing of investment opportunities are less likely to be driven by omitted correlated variable biases and that the causality goes from cross-ownership to financing.

4. Cross-Sectional Tests

In the baseline analysis, we find that firms with institutional cross-ownership obtain

more financing when they have good investment opportunities. We propose that institutional cross-ownership enhances shareholder monitoring, which mitigates agency conflicts between managers and capital providers and that institutional cross-ownership improves product market coordination among competitors, which reduces the downside risk of capital providers and that. In this section, we conduct cross-sectional tests to differentiate the channels through which institutional cross-ownership enhances firm financing of investment opportunities.

4.1. The Role of Monitoring by Institutional Cross-owners

External capital providers usually do not have access to firms' inside information and thus mainly rely on public information from firm disclosures in monitoring managers. Prior studies have examined the role of the quality of public information in the monitoring of firms. As a result, the quality of firm financial reporting plays an important role in shareholder monitoring. For example, Biddle, Hilary, and Verdi (2009) document evidence that one mechanism linking reporting quality and investment efficiency is the reduction of frictions such as moral hazard and adverse selection that hamper efficient investment. We expect the effect of institutional cross-ownership to be stronger when the financial reporting environment is poorer. We employ two measures of the quality of the financial reporting environment, financial statement comparability and opacity.

Financial statement comparability (*ACCTCOMP*) is estimated following De Franco, Kothari, and Verdi (2011), which measures the comparability of the firm's financial statements with those of its peers.[8] Briefly, the measure relies on the basic notion that accounting's key objective is to represent the economics of a firm. How a firm's accounting

[8] We obtain data on financial statement comparability from Rodrigo Verdi's website http://mitmgmtfaculty.mit.edu/rverdi/.

systems map economic events onto financial statements is first determined by running time-series regressions of the firm's previous quarters of earnings (a proxy for financial statements) and stock returns (a proxy for economic events). The relation between various firms' mapping functions is then determined via pairwise correlations and firm-to-firm comparability scores are then generated. *ACCTCOMP* is then determined as the average of the firm's four highest comparability scores during the year. Hence, higher values of *ACCTCOMP* indicate a better financial reporting environment.[9] Using this measure, De Franco et al. (2011) find that greater financial statement comparability facilitates the analysts' earnings forecasts. They conclude that comparability increases the overall quantity and quality of information available to analysts about the firm because it lowers the cost of acquiring information.

Following Hutton, Marcus, and Tehranian (2009), financial statement opacity (*OPAQUE*) is measured as the prior three years' moving sum of the absolute value of discretionary accruals. Similar to Hutton et al. (2009), we calculate discretionary accruals using the regression residuals from the modified Jones (1991) accruals model of Dechow, Sloan, and Sweeney (1995). Specifically, we run the following regression for each industry-year:[10]

$$\frac{TA_{i,t}}{AT_{i,t-1}} = \beta_1 \frac{1}{AT_{i,t-1}} + \beta_2 \frac{\Delta Sales_{i,t}}{AT_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{AT_{i,t-1}} + \varepsilon_{i,t}, \quad (3)$$

[9] We refer interested readers to De Franco, Kothari, and Verdi (2011) for the details underlying the construction of this measure.

[10] Industry is defined based on the two-digit SIC industry classification. We require a minimum of 8 observations within each industry-year to run the regression.

where *i* denotes the firm, *t* denotes the year, and ε is the error term. *TA* is the total accruals of the firm, calculated as income before extraordinary items minus cash flow from operating activities adjusted for extraordinary items and discontinued operations. *AT* is the firm's book assets. *ΔSales* is the change in sales. *PPE* denotes gross property, plant, and equipment. The above model attempts to capture the extent to which reported accruals deviate from the expected levels of accruals based on the firm's normal business conditions. As higher absolute values of accruals represent larger deviations from normal/expected levels, higher values of *OPAQUE* indicate a worse financial reporting environment. Using this measure, Hutton et al. (2009) find that more opacity is associated with a higher likelihood of future stock price crashes, consistent with firms using discretionary accruals to initially hide bad news.

We partition our sample into two subsamples by financial statement comparability and opacity, respectively. We then perform the regressions in Equations (1) and (2) for these subsamples. The regression results are presented in Table 6. Panel A shows that the coefficients of *DCROSS*×*SALEGR* and *DCROSS*×*TOBINQ* are both positive and statistically significant for the subsample with low financial statement comparability, while they are insignificant for the subsample with high financial statement comparability. The difference between the coefficients is statistically significant for *DCROSS*×*TOBINQ* (*p*-value 0.011), suggesting that the effect of institutional cross-ownership on corporate financing for investment opportunities is stronger when the firm has lower financial statement comparability.

The results for financial statement opacity in Panel B are similar. The coefficients of

DCROSS×*SALEGR* and *DCROSS*×*TOBINQ* are larger for the subsample of firms with high financial statement opacity and the differences are statistically significant (*p*-value 0.014 and 0.061, respectively). The results show that the effect of institutional cross-ownership on corporate financing for investment opportunities is stronger for firms with higher financial statement opacity. Overall, the findings are consistent with the argument that better private monitoring by institutional cross-owners is more important when a more opaque public environment makes it typically more difficult for external monitoring based on publicly available information (Biddle, Hilary, and Verdi, 2009). In other words, the presence of relatively more informed institutional cross-owners enhances shareholder monitoring, which, in turn, reduces concerns about agency problems in financing.

4.2. The Role of Product Market Coordination by Institutional Cross-owners

To analyze the channel of product market coordination, we examine whether the effect of institutional cross-ownership on the financing of investment opportunities varies among firms with different levels of product market competition. Since product market coordination is more important for firms in highly competitive industries, we expect there to be a stronger effect of cross-ownership for these firms.

We use two measures of product market competition. Our first is the Herfindahl-Hirschman index (*HHI*), calculated as the sum of the squared market shares of all firms in the firm's four-digit SIC industry.[11] A higher value of *HHI* indicate a higher level of market concentration and hence lower product market competition within the industry (Gaspar and Massa, 2006; Hou and Robinson, 2006). Our second measure is the price-cost

[11] The results (untabulated) are qualitatively similar when we use the Hoberg-Phillips industry concentration measures based on Text-based Network Industry Classifications (TNIC).

margin (*PCM*), which is the ratio of aggregate sales over aggregate operating costs of the firm's four-digit SIC industry. Prior studies (e.g., Aghion et al., 2005; Gaspar and Massa, 2006; Peress, 2010) suggest that high *PCM* (i.e., greater industry profitability) indicates greater market power and hence lower product market competition. Using both measures, Gaspar and Massa (2006) show that firms in low competition industries have lower idiosyncratic volatility in stock returns. The authors argue that market power works as a hedging instrument that smoothes out idiosyncratic fluctuations. Market power also lowers information uncertainty for investors and hence return volatility.

Again, we partition our sample into two subsamples by these two measures, respectively, and perform the regressions in Equations (1) and (2) for these subsamples. The regression results are presented in Table 7. Panel A shows that the coefficients of *DCROSS*×*SALEGR* and *DCROSS*×*TOBINQ* are both larger for the subsample of firms with a low Herfindahl-Hirschman index (i.e., high product market competition). Nevertheless, the differences between the coefficients are statistically insignificant (*p*-value 0.405 and 0.108, respectively), suggesting that the effect of institutional cross-ownership on the financing of investment opportunities is indifferent between firms with high and low product market competition. The results of the subsamples partitioned by the price-cost ratio in Panel B are similar, which further confirms our findings. Overall, the results of the cross-sectional tests are inconsistent with the argument that institutional cross-ownership improves product market coordination among competitors, which reduces capital providers' downside risk.

5. Supplementary Analyses

5.1. Cross-Ownership by Different Types of Institutional Investors

In the main analysis, we treat all the institutional investors as a homogenous group in defining cross-ownership. Bushee (1998, 2001) classifies institutional investors into three types based on their past investment behavior. Dedicated institutional investors are characterized as having low portfolio turnover and high stockholding concentration, consistent with a "relationship investing" role. Transient institutional investors have high portfolio turnover and highly diversified portfolio holdings. These investors are more interested in short-term trading profits than long-term holding gains. Quasi-index institutional investors have low portfolio turnover and highly diversified portfolios, consistent with a passive, buy-and-hold strategy of investing. Since dedicated institutional investors have larger shareholdings and are long-term committed, we expect them to be involved more in monitoring activities. As a result, the effect of cross-ownership on corporate financing of investment opportunities should be stronger if the cross-owners are dedicated institutional investors.

We define dedicated cross-ownership dummy (*DCROSS_DED*) as a dummy variable equal to one if the firm is cross-owned by at least one dedicated institutional blockholder in any of the four quarters in a fiscal year, zero otherwise. Transient cross-ownership dummy (*DCROSS_TRA*) and quasi-index cross-ownership dummy (*DCROSS_QIX*) are defined in a similar way. Then, we perform the regressions in Equations (1) and (2) with these three dummy variables included. The regression results are presented in Table 8. Columns (1)-(3) and (5)-(7) include the three variables separately and Columns (4) and (8) include these variables into the same regression. All columns offer similar findings. In particular, Column (4) shows that the coefficients of *DCROSS_DED*×*SALEGR*, *DCROSS_TRA*×*SALEGR*, and

DCROSS_QIX×*SALEGR* are all positive and statistically significant. Nevertheless, the coefficient of *DCROSS_DED*×*SALEGR* is larger than that of the other two and the differences are statistically significant (*p*-value 0.018 and 0.001, respectively), suggesting a stronger effect of dedicated institutional cross-ownership. The results in Column (8) are similar.

Overall, the findings are consistent with our expectation that the effect of institutional cross-ownership on corporate financing of investment opportunities is stronger when the cross-owners are dedicated institutional investors. This is likely due to the greater involvement of these investors in monitoring activities.

5.2. Institutional Cross-Ownership and Corporate Investments

Our findings show that institutional cross-ownership increases corporate financing when the firm has more investment opportunities. In this section, we further explore whether these firms use the increased financing to fund more investment projects. We focus on three types of investments: capital investments, R&D investments, and acquisitions. We define capital expenditure (*CAPX*) as capital expenses divided by total assets at the beginning of the year, R&D expenditure (*RND*) as R&D expenses divided by total assets at the beginning of the year, and acquisition expenditure (*ACQ*) as acquisition expenses divided by total assets at the beginning of the year. In addition, we examine aggregate firm net investments (*NET_INV*), which is defined as the sum of the capital, R&D, and acquisition expenditures minus the sales of property, plant, and equipment, divided by total assets at the beginning of the year.

We replace total financing with capital expenditure, R&D expenditure, acquisition expenditure, and net investments in the regression specifications in Equations (1) and (2).

Columns (1)-(8) of Table 9 presents the results. Columns (1) and (2) show that the coefficients of *DCROSS*×*SALEGR* and *DCROSS*×*TOBINQ* are both positive and statistically significant (*t*-statistics 3.88 and 5.47, respectively) when capital expenditure is the dependent variable. The finding suggests that cross-held firms increase their investments in capital assets when there are more growth opportunities. The results for R&D expenditure are presented in Columns (3) and (4) and show that cross-held firms also increase their investments in R&D projects when they have more growth potential. Columns (5) and (6) show that the coefficient of *DCROSS*×*SALEGR* is insignificant and the coefficient of *DCROSS*×*TOBINQ* is statistically significant (*t*-statistics 4.54) in the regressions in which acquisition expenditure is the dependent variable. Last, Columns (7) and (8) show that the coefficients of *DCROSS*×*SALEGR* and *DCROSS*×*TOBINQ* are both positive and statistically significant (*t*-statistics 3.82 and 8.73, respectively), indicating that institutional cross-ownership increases the net investments of firms with more growth opportunities.

Further, we investigate whether institutional cross-ownership affects the sensitivity of firm investments to operating cash flow, because prior studies (e.g., Fazzari, Hubbard, and Petersen, 1988; Hovakimian, 2009) argue that higher investment-cash flow sensitivity indicates a greater cost of external financing and hence higher financial constraint. We follow Biddle and Hilary (2006) and Hovakimian and Hovakimian (2009) and measure investment-cash flow sensitivity (*CFSI*) as the difference between the cash-flow-weighted time-series average investment of a firm and its unweighted arithmetic time-series average investment.

We replace total financing with investment-cash flow sensitivity in the regression

specifications in Equations (1) and (2). The results are presented in Columns (9)-(10) of Table 8, which show that the coefficients of *DCROSS*×*SALEGR* and *DCROSS*×*TOBINQ* are negative and statistically significant in both columns (*t*-statistics -2.07 and -3.33, respectively) in which investment-cash flow sensitivity is the dependent variable. The results suggest that institutional cross-ownership also reduces the cost of external financing and hence financial constraint for growth firms.

Overall, the findings are consistent with our argument that institutional cross-ownership increases external financing when firm investment opportunities are high. Increased financing makes firms better able to fund their capital and R&D investments, which eases firms' financial constraints by reducing their reliance on operating cash flow.

6. Conclusion

When firms access the capital markets to finance investment opportunities, existing institutional investors' cross-ownership of peer firms presents interesting challenges to capital providers that have to consider what how these investors have and will affect important concerns in financing such as those that related to information asymmetry and moral hazard. An important characteristic of these institutional investors with cross-ownership is that they are likely to be relatively more informed. On the one hand, the private information that these institutional investors possess could enhance shareholder monitoring, which, in turn, reduce adverse selection and agency problems. This information can also be used to facilitating product market coordination, which, in turn, is expected to reduce the downside risk of providing capital. On the one hand, there is a risk that these institutional investors could engage in share trading or self-dealing that are adverse to the welfare of other investors.

Given the increasing trend of firms with institutional cross-ownership and the importance of financing investment opportunities in a firm's business cycle, we examine the relation between these two constructs. The tension underlying the relation ultimately makes this relation ultimately an empirical question.

Using a large sample of U.S. firms during the 1981-2016 period, we find robust evidence that firms with institutional cross-ownership are able to obtain more financing in face of investment opportunities. This result is robust to the use of an identification test in which financial institution mergers are used as an exogenous shock to institutional cross-ownership. Further, we find that the effect of institutional cross-ownership on corporate financing is stronger when a lack of peer comparability and transparency in financial reporting make the use of public information to monitoring the firm more difficult. The finding suggests that when providing additional capital to fund a firm's investment opportunities, capital providers take into account the role of institutional cross-owners in using their private information to monitor opaque firms. In other words, they appear to consider the presence of these potentially more informed investors as a boon to their welfare. Finally, we document that the effect of institutional investors with cross-ownership on corporate financing of investment opportunities is stronger when these investors are dedicated ones. This result further supports the private-information-based monitoring channel because prior literature has shown that dedicated investors pay more attention to monitoring. Consistent with cross-ownership facilitating the financing of investment opportunities, we also find that firms with institutional cross-ownership make more capital and R&D investments when they have investment opportunities.

Our paper extends the literature that examines how corporate financing is affected by considerations of the presence, incentives, and possible actions of existing capital providers, all of which could affect the assessment of the risks and returns to providing financing. Our paper contrasts and complements this set of literature by investigating how institutional investors' cross-ownership of same-industry firms can facilitate a firm's financing of investment opportunities. Our paper also extends the nascent literature on the cross-ownership of same-industry firms by institutional investors. Consistent with the existing literature that has documented the benefits of cross-ownership in terms of the monitoring of agency problems, we find evidence that suggests that capital providers take these benefits into account when providing financing. The findings help deepen our understanding of the role of cross-ownership and should be of interest to academic researchers, investors, and regulators.

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APPENDIX: VARIABLE DEFINITIONS

Variables		Variable Definitions
Financing Variables		
FINANCING	=	External financing, measured as the sum of net debt issues and net equity issues, divided by beginning-of-year total assets. Net debt issues are calculated as long-term debt issues minus long-term debt reduction plus the change in current debt. Net equity issues are calculated as the sale of common and preferred stock minus purchase of common and preferred stock. Source: Compustat.
Cross-Ownership Variables		
DCROSS	=	Cross-ownership dummy, measured as a dummy variable equal to one if the firm is cross-owned by at least one institutional blockholder in any of the four quarters in a fiscal year and zero otherwise. Source: Thomson Financial 13F.
NUMCON	=	Number of cross-owned firms, measured as the natural logarithm of one plus the average number of same-industry peers that share any common institutional blockholder with the firm across the four quarters in a fiscal year. Source: Thomson Financial 13F.
NUMCROSS	=	Number of institutions with cross-ownership, measured as the natural logarithm of one plus the average number of unique institutional investors that cross-own a firm across the four quarters in a fiscal year. Source: Thomson Financial 13F.
AVGNUM	=	Average number of all cross-owned firms, measured as the natural logarithm of one plus the average number of same-industry peers block-held by all the cross-ownership institutional investors across the four quarters in a fiscal year. Source: Thomson Financial 13F.
CROSSOWN	=	Percentage of cross-ownership, measured as the average percentage holdings by all the cross-ownership institutional investors across the four quarters in a fiscal year. Source: Thomson Financial 13F.
DCROSS_DED	=	Dedicated cross-ownership dummy, measured as a dummy variable equal to one if the firm is cross-owned by at least one dedicated institutional blockholder in any of the four quarters in a fiscal year and zero otherwise. Source: Thomson Financial 13F.
DCROSS_TRA	=	Transient cross-ownership dummy, measured as a dummy variable equal to one if the firm is cross-owned by at least one transient institutional blockholder in any of the four quarters in a fiscal year and zero otherwise. Source: Thomson Financial 13F.
DCROSS_QIX	=	Quasi-index cross-ownership dummy, measured as a dummy variable equal to one if the firm is cross-owned by at least one quasi-index institutional blockholder in any of the four quarters in a fiscal year and zero otherwise. Source: Thomson Financial 13F.
Investment Opportunity Variables		
SALEGR	=	Industry-adjusted sales growth, measured as the annual growth rate in sales over the preceding year adjusted by two-digit SIC industry mean. Source: Compustat.
TOBINQ	=	Industry-adjusted Tobin's Q, measured as market value of equity divided by the book value of equity over the preceding year adjusted by two-digit SIC industry mean. Source: Compustat.
Control Variables		
CASH	=	Cash holdings, measured as cash and short-term investments divided by total assets. Source: Compustat.
SIZE	=	Firm size, measured as the natural logarithm of total assets. Source: Compustat.
LEV	=	Leverage, measured as total debt divided by total assets. Source: Compustat.
ROA	=	Return on assets, measured as income before extraordinary items divided by total assets. Source: Compustat.
PPE	=	Tangibility, measured as property, plant and equipment divided by total

		assets. Source: Compustat.
CFO	=	Cash flow from operations, measured as operating cash flow divided by total assets. Source: Compustat.
DIV	=	Dividend dummy, measured as a dummy variable equal to one if the firm pays a dividend and zero otherwise. Source: Compustat.
ALTMAN	=	Altman's Z-score, measured following Altman (1968) as (3.3*operating income after depreciation+ 0.999*sales+1.4* retained earnings+1.2*working capital)/total assets+ (0.6*common shares outstanding*share price)/total liabilities. Source: Compustat.
HHI	=	Herfindahl–Hirschman Index, measured as the sum of squared market shares of all firms in the firm's four-digit SIC industry in Compustat. Source: Compustat.
Other Variables		
PCM	=	Price-cost margin, measured as aggregate sales divided by aggregate operating costs of the firm's four-digit SIC industry, where operating costs include the cost of goods sold; selling, general, and administrative expenses; depreciation; depletion; and amortization. Source: Compustat.
ACCTCOMP	=	Financial statement comparability, measured following De Franco, Kothari, and Verdi (2011) as the comparability of the firm's financial statement with those of its industry peers. Source: http:// mitmgmtfaculty.mit.edu/rverdi/.
OPAQUE	=	Financial statement opacity, measured as the prior three years' moving sum of the absolute value of discretionary accruals, calculated following Hutton, Marcus, and Tehranian (2009). Source: Compustat.
CAPX	=	Capital expenditure, measured as capital expenses divided by beginning-of-year total assets. Source: Compustat.
RND	=	R&D expenditure, measured as R&D expenses divided by beginning-of-year total assets. Source: Compustat.
ACQ	=	Acquisition expenditure, measured as acquisition expenses divided by beginning-of-year total assets. Source: Compustat.
NET_INV	=	Net investments, measured as the sum of capital, R&D, and acquisition expenditures minus sales of property, plant, and equipment, and then divided by beginning-of-year total assets. Source: Compustat.
CFSI	=	Investment-cash flow sensitivity, measured following Biddle and Hilary (2006) and Hovakimian and Hovakimian (2009) as the difference between the cash-flow-weighted time-series average investments of a firm and its unweighted arithmetic time-series average investments. Source: Compustat.

TABLE 1. Summary Statistics

	Mean	S.D.	10%	25%	Median	75%	90%
FINANCING	0.101	0.307	-0.059	-0.013	0.010	0.086	0.310
DCROSS	0.314	0.464	0.000	0.000	0.000	1.000	1.000
SALEGR	0.008	0.577	-0.396	-0.222	-0.078	0.069	0.350
TOBINQ	0.050	4.212	-2.385	-1.483	-0.593	0.603	2.987
CASH	0.210	0.288	0.010	0.030	0.099	0.274	0.547
SIZE	5.181	2.256	2.314	3.531	5.046	6.720	8.251
LEV	0.227	0.214	0.000	0.037	0.192	0.349	0.509
ROA	-0.025	0.250	-0.253	-0.041	0.036	0.087	0.147
PPE	0.333	0.284	0.050	0.114	0.252	0.472	0.745
CFO	0.049	0.212	-0.154	0.003	0.083	0.154	0.232
DIV	0.347	0.476	0.000	0.000	0.000	1.000	1.000
ALTMAN	4.200	6.867	0.116	1.684	3.154	5.258	9.378
HHI	0.257	0.184	0.076	0.126	0.204	0.332	0.519
Obs.				125,017			

This table reports the summary statistics of the variables in the analysis. Variable definitions are available in the appendix.

TABLE 2. Correlation Matrix

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
(1)FINANCING		-0.051***	0.146***	0.143***	0.166***	-0.225***	0.006**	-0.404***	-0.021***	-0.386***	-0.149***	-0.021***	-0.048***
(2)DCROSS	0.003		-0.021***	0.012***	0.088***	0.249***	-0.094***	0.097***	-0.065***	0.100***	-0.017***	0.078***	-0.139***
(3)SALEGR	0.105***	0.034***		0.120***	0.210***	-0.069***	-0.014***	-0.105***	0.104***	-0.125***	-0.105***	0.101***	-0.015***
(4)TOBINQ	0.166***	0.037***	0.244***		0.148***	-0.015***	-0.074***	-0.033***	-0.003	-0.031***	-0.015***	0.249***	-0.015***
(5)CASH	0.122***	0.094***	0.105***	0.135***		-0.160***	-0.324***	-0.228***	-0.234***	-0.219***	-0.217***	0.365***	-0.092***
(6)SIZE	-0.101***	0.271***	0.035***	0.085***	-0.147***		0.123***	0.319***	0.190***	0.338***	0.437***	-0.020***	-0.068***
(7)LEV	-0.127***	-0.102***	-0.023***	-0.054***	-0.515***	0.192***		-0.137***	0.260***	-0.084***	-0.010***	-0.423***	-0.001
(8)ROA	-0.041***	0.083***	0.222***	0.216***	0.049***	0.261***	-0.164***		0.121***	0.784***	0.269***	0.280***	0.052***
(9)PPE	-0.022***	-0.081***	0.094***	0.059***	-0.325***	0.223***	0.333***	0.150***		0.213***	0.156***	-0.083***	-0.123***
(10)CFO	-0.104***	0.091***	0.107***	0.168***	-0.005***	0.309***	-0.065***	0.666***	0.285***		0.277***	0.185***	0.011***
(11)DIV	-0.106***	-0.017***	-0.047***	0.068***	-0.188***	0.429***	0.054***	0.324***	0.225***	0.318***		0.023***	0.062***
(12)ALTMAN	0.074***	0.109***	0.170***	0.282***	0.331***	-0.030***	-0.574***	0.538***	-0.117***	0.327***	0.130***		0.004
(13)HHI	-0.079***	-0.141***	0.020***	-0.033***	-0.113***	-0.071***	0.028***	0.056***	-0.097***	-0.016***	0.086***	0.049***	

This table reports the Pearson (upper right) and Spearman (lower left) correlation matrix of the variables in the analysis. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 3. Institutional Cross-Ownership and Corporate Financing of Investment Opportunities

VARIABLE	*FINANCING*	*FINANCING*
	(1)	(2)
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.026***	
	(3.51)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.007***
		(6.07)
$DCROSS_{i,t-1}$	0.001	-0.001
	(0.52)	(-0.03)
$SALEGR_{i,t-1}$	0.019***	
	(6.24)	
$TOBINQ_{i,t-1}$		0.006***
		(10.79)
$CASH_{i,t-1}$	-0.127***	-0.119***
	(-15.68)	(-14.88)
$SIZE_{i,t-1}$	-0.113***	-0.109***
	(-40.10)	(-39.01)
$LEV_{i,t-1}$	-0.134***	-0.143***
	(-11.83)	(-12.43)
$ROA_{i,t-1}$	-0.134***	-0.126***
	(-11.27)	(-10.76)
$PPE_{i,t-1}$	0.118***	0.129***
	(13.49)	(14.94)
$CFO_{i,t-1}$	-0.086***	-0.093***
	(-7.37)	(-8.02)
$DIV_{i,t-1}$	0.041***	0.039***
	(12.95)	(12.32)
$ALTMAN_{i,t-1}$	0.004***	0.003***
	(10.29)	(7.39)
$HHI_{i,t-1}$	-0.018	-0.014
	(-1.64)	(-1.21)
Obs.	125,017	125,017
Adj. R^2 (%)	34.2	34.7

This table reports the regression results of the relation between institutional cross-ownership and the corporate financing of investment opportunities. The regressions are performed using OLS, with the *t*-statistics (in parentheses) corrected for error heteroskedasticity and within-firm error clustering. The intercept, year fixed effects, firm fixed effects are included in all the regressions but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 4. Robustness Checks

Panel A. Alternative Cross-Ownership Measures

VARIABLE	*FINANCING*	*FINANCING*
	(1)	(2)
(1) Number of cross-owned firms (Obs. 125,017)		
$NUMCON_{i,t-1} \times SALEGR_{i,t-1}$	0.009***	
	(2.81)	
$NUMCON_{i,t-1} \times TOBINQ_{i,t-1}$		0.002***
		(5.05)
$NUMCON_{i,t-1}$	0.001	-0.001
	(0.53)	(-0.54)
$SALEGR_{i,t-1}$	0.020***	
	(6.54)	
$TOBINQ_{i,t-1}$		0.006***
		(11.25)
(2) Number of institutions with cross-ownership (Obs. 125,017)		
$NUMCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.025***	
	(2.85)	
$NUMCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.007***
		(5.67)
$NUMCROSS_{i,t-1}$	-0.001	-0.002
	(-0.10)	(-0.66)
$SALEGR_{i,t-1}$	0.019***	
	(6.45)	
$TOBINQ_{i,t-1}$		0.006***
		(10.97)
(3) Average number of all the cross-owned firms (Obs. 125,017)		
$AVGNUM_{i,t-1} \times SALEGR_{i,t-1}$	0.008***	
	(2.73)	
$AVGNUM_{i,t-1} \times TOBINQ_{i,t-1}$		0.003***
		(6.32)
$AVGNUM_{i,t-1}$	0.001	-0.001
	(0.72)	(-0.28)
$SALEGR_{i,t-1}$	0.019***	
	(6.46)	
$TOBINQ_{i,t-1}$		0.005***
		(10.78)
(4) Percentage of cross-ownership (Obs. 125,017)		
$CROSSOWN_{i,t-1} \times SALEGR_{i,t-1}$	0.163***	
	(2.72)	
$CROSSOWN_{i,t-1} \times TOBINQ_{i,t-1}$		0.039***
		(4.50)
$CROSSOWN_{i,t-1}$	-0.020	-0.029
	(-1.05)	(-1.57)
$SALEGR_{i,t-1}$	0.020***	
	(6.56)	
$TOBINQ_{i,t-1}$		0.006***
		(11.41)
(5) Define *DCROSS* using FIC 500 industry classification (Obs. 59,751)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.016*	
	(1.78)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.003***
		(2.70)
$DCROSS_{i,t-1}$	0.001	-0.001
	(0.14)	(-0.34)
$SALEGR_{i,t-1}$	0.012**	
	(2.55)	
$TOBINQ_{i,t-1}$		0.004***
		(6.17)

(6) Define *DCROSS* using Fama-French 48 industry classification (Obs. 126,095)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.022***	
	(3.22)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.006***
		(5.76)
$DCROSS_{i,t-1}$	-0.005*	-0.006**
	(-1.76)	(-2.15)
$SALEGR_{i,t-1}$	0.019***	
	(5.94)	
$TOBINQ_{i,t-1}$		0.005***
		(9.94)
Panel B. Alternative Growth Opportunity Measures		
VARIABLE	*FINANCING*	*FINANCING*
	(1)	(2)
(1) FIC 500 industry classification (Obs. 59,751)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.021**	
	(2.31)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.002*
		(1.73)
$DCROSS_{i,t-1}$	0.004	0.003
	(1.33)	(0.99)
$SALEGR_{i,t-1}$	0.010**	
	(2.09)	
$TOBINQ_{i,t-1}$		0.005***
		(6.12)
(2) Fama-French 48 industry classification (Obs. 126,568)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.029***	
	(3.84)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.008***
		(6.40)
$DCROSS_{i,t-1}$	0.001	-0.001
	(0.51)	(-0.15)
$SALEGR_{i,t-1}$	0.019***	
	(6.34)	
$TOBINQ_{i,t-1}$		0.005***
		(10.80)
Panel C. Alternative Samples		
VARIABLE	*FINANCING*	*FINANCING*
	(1)	(2)
(1) Manufacturing industries only (Obs. 65,878)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.022**	
	(1.99)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.009***
		(5.05)
$DCROSS_{i,t-1}$	0.001	0.001
	(0.20)	(0.14)
$SALEGR_{i,t-1}$	0.027***	
	(5.68)	
$TOBINQ_{i,t-1}$		0.007***
		(9.80)
(2) Refined definition of industries (Obs. 123,529)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.026***	
	(3.42)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.007***
		(6.04)
$DCROSS_{i,t-1}$	0.001	-0.001
	(0.51)	(-0.03)
$SALEGR_{i,t-1}$	0.019***	
	(6.24)	

$TOBINQ_{i,t-1}$		0.00548***
		(10.78)
(3) Block-held firm-years only (Obs. 62,998)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.006	
	(0.59)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.008***
		(5.50)
$DCROSS_{i,t-1}$	-0.014***	-0.014***
	(-5.03)	(-4.98)
$SALEGR_{i,t-1}$	0.020***	
	(3.22)	
$TOBINQ_{i,t-1}$		0.004***
		(4.72)
(4) Four digit SIC Industry-years with more than 20 observations only (Obs. 59,561)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.026***	
	(2.65)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.009***
		(5.47)
$DCROSS_{i,t-1}$	-0.002	-0.005
	(-0.49)	(-1.08)
$SALEGR_{i,t-1}$	0.016***	
	(3.96)	
$TOBINQ_{i,t-1}$		0.006***
		(7.76)

Panel D. Alternative Specifications

VARIABLE	*FINANCING*	*FINANCING*
	(1)	(2)
(1) With firm and year fixed effects (Obs. 125,017)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.060***	
	(7.84)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.011***
		(11.49)
$DCROSS_{i,t-1}$	0.005**	0.002
	(2.40)	(1.27)
$SALEGR_{i,t-1}$	0.036***	
	(12.39)	
$TOBINQ_{i,t-1}$		0.007***
		(14.85)
(2) Decile ranking of all variables (Obs. 125,017)		
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	-0.001	
	(-0.10)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.023***
		(3.13)
$DCROSS_{i,t-1}$	0.001	-0.011**
	(0.10)	(-2.36)
$SALEGR_{i,t-1}$	0.034***	
	(8.80)	
$TOBINQ_{i,t-1}$		0.108***
		(21.39)

This table reports the results of robustness checks. The regressions are performed using OLS, with the *t*-statistics (in parentheses) corrected for error heteroskedasticity and within-firm error clustering. The intercept, year fixed effects, firm fixed effects, and control variables are included but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 5. Quasi-natural Experiment of Institution Mergers

VARIABLE	*FINANCING*	*FINANCING*	*FINANCING*	*FINANCING*
	(1)	(2)	(3)	(4)
$POST \times TREAT \times SALEGR_{i,t-1}$	0.015*		-0.006	
	(1.92)		(-0.72)	
$POST \times TREAT \times TOBINQ_{i,t-1}$		0.003*		0.003**
		(1.80)		(2.77)
$POST \times SALEGR_{i,t-1}$	-0.064***		-0.047***	
	(-9.55)		(-4.66)	
$TREAT \times SALEGR_{i,t-1}$	-0.011		-0.001	
	(-0.97)		(-0.01)	
$POST \times TOBINQ_{i,t-1}$		-0.005***		-0.005***
		(-4.11)		(-4.71)
$TREAT \times TOBINQ_{i,t-1}$		-0.002		-0.002
		(-0.74)		(-1.00)
$POST \times TREAT$	0.049***	0.047***	0.042***	0.040***
	(4.24)	(6.16)	(4.60)	(5.69)
$POST$	0.020**	0.024***	0.019***	0.022***
	(3.68)	(7.02)	(5.03)	(7.54)
$TREAT$	-0.025***	-0.024***	-0.019***	-0.018**
	(-4.29)	(-4.45)	(-3.29)	(-3.07)
$SALEGR_{i,t-1}$	0.008		0.004	
	(0.93)		(0.68)	
$TOBINQ_{i,t-1}$		0.002		0.002
		(1.28)		(1.48)
$CASH_{i,t-1}$	0.037	0.062***	0.024*	0.039*
	(1.39)	(3.47)	(2.04)	(2.02)
$SIZE_{i,t-1}$	-0.129***	-0.134***	-0.128***	-0.131***
	(-10.82)	(-15.53)	(-13.29)	(-16.08)
$LEV_{i,t-1}$	-0.287***	-0.282***	-0.271***	-0.267***
	(-9.44)	(-15.93)	(-12.83)	(-16.45)
$ROA_{i,t-1}$	0.019	0.010	0.011	0.006
	(0.48)	(0.27)	(0.35)	(0.20)
$PPE_{i,t-1}$	0.154***	0.160***	0.142***	0.145***
	(6.82)	(10.35)	(6.68)	(8.26)
$CFO_{i,t-1}$	-0.112**	-0.143***	-0.107***	-0.127***
	(-2.82)	(-6.51)	(-5.12)	(-6.64)
$DIV_{i,t-1}$	0.033**	0.035**	0.031**	0.034**
	(2.23)	(2.96)	(2.62)	(3.12)
$ALTMAN_{i,t-1}$	0.001	0.001	0.001	0.001
	(0.61)	(0.72)	(1.44)	(1.45)
$HHI_{i,t-1}$	-0.052**	-0.046***	-0.054***	-0.051***
	(-3.07)	(-3.18)	(-3.99)	(-3.67)
Firm FE	No	No	Yes	Yes
Merge FE	No	No	Yes	Yes
Firm-merge FE	Yes	Yes	No	No
Obs.	2,832	2,832	2,832	2,832
Adj. R^2 (%)	32.0	35.7	34.3	33.9

This table reports the results of the difference-in-differences (DiD) test around financial institution mergers. We place a firm in the treatment group if it is block-held by one of the merging institutions during the quarter immediately before the merger announcement date and at least one of its same-industry peers are block-held by the other party of the merger during the same pre-merger quarter. We place a firm in the control group if it is block-held by the same institution (that holds the treatment) and none of its same-industry peers are block-held by the other party of the merger during the same pre-merger quarter. *TREAT* is a dummy variable equal to one if the firm is in the treatment group, zero if the firm is in the control group. *POST* is a dummy variable equal to one for the post-merger period, zero for the pre-merger period. The regressions are performed using OLS, with the *t*-statistics (in parentheses) computed using standard errors clustered at the institution merger level. The intercept is included but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 6. The Role of Monitoring by Institutional Cross-owners

Panel A: Partition by Financial Statement Comparability

	FINANCING			
VARIABLE	Low	High	Low	High
	(1)	(2)	(3)	(4)
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.029**	-0.005		
	(1.97)	(-0.38)		
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$			0.012***	0.001
			(4.55)	(0.62)
$DCROSS_{i,t-1}$	-0.010	-0.005*	-0.010*	-0.005
	(-1.59)	(-1.68)	(-1.68)	(-1.55)
$SALEGR_{i,t-1}$	0.011*	0.008		
	(1.68)	(0.94)		
$TOBINQ_{i,t-1}$			0.006***	0.004***
			(5.93)	(4.59)
Controls and fixed effects included				
Obs.	28,443	28,354	28,443	28,354
Adj. R^2 (%)	34.9	17.9	35.7	18.1
Difference test	1.49		6.52**	
	(*p*=0.222)		(*p*=0.011)	

Panel B: Partition by Financial Statement Opacity

	FINANCING			
VARIABLE	Low	High	Low	High
	(1)	(2)	(3)	(4)
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	-0.014	0.043***		
	(-1.35)	(3.86)		
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$			0.004***	0.011***
			(3.16)	(5.48)
$DCROSS_{i,t-1}$	0.001	0.006	0.001	0.005
	(0.13)	(1.25)	(0.51)	(1.00)
$SALEGR_{i,t-1}$	0.023***	0.019***		
	(4.29)	(4.83)		
$TOBINQ_{i,t-1}$			0.004***	0.006***
			(5.76)	(8.24)
Controls and fixed effects included				
Obs.	61,522	61,521	61,522	61,521
Adj. R^2 (%)	27.6	35.1	27.8	35.6
Difference test	6.00**		3.52*	
	(*p*=0.014)		(*p*=0.061)	

This table reports the regression results for the subsamples by firm reporting quality. The regressions are performed using OLS, with the *t*-statistics (in parentheses) corrected for error heteroskedasticity and within-firm error clustering. The intercept, year fixed effects, firm fixed effects, and control variables are included but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 7. The Role of Product Market Coordination by Institutional Cross-owners

Panel A: Partition by Herfindahl-Hirschman Index

	FINANCING			
VARIABLE	Low	High	Low	High
	(1)	(2)	(3)	(4)
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.031***	0.014		
	(3.18)	(1.13)		
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$			0.009***	0.004**
			(5.46)	(2.52)
$DCROSS_{i,t-1}$	0.002	0.004	0.001	0.004
	(0.44)	(1.37)	(0.02)	(1.14)
$SALEGR_{i,t-1}$	0.013***	0.023***		
	(3.15)	(4.84)		
$TOBINQ_{i,t-1}$			0.005***	0.006***
			(6.20)	(8.59)
Controls and fixed effects included				
Obs.	62,480	62,537	62,480	62,537
Adj. R^2 (%)	35.4	34.0	35.9	34.4
Difference test	0.69		2.57	
	(p= 0.405)		(p= 0.108)	

Panel B: Partition by Price-Cost Margin

	FINANCING			
VARIABLE	Low	High	Low	High
	(1)	(2)	(3)	(4)
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.021**	0.029***		
	(2.05)	(2.62)		
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$			0.005***	0.008***
			(2.93)	(4.80)
$DCROSS_{i,t-1}$	0.002	0.003	0.002	0.001
	(0.58)	(0.88)	(0.54)	(0.06)
$SALEGR_{i,t-1}$	0.020***	0.019***		
	(4.47)	(4.33)		
$TOBINQ_{i,t-1}$			0.006***	0.005***
			(8.39)	(6.82)
Controls and fixed effects included				
Obs.	62,511	62,506	62,511	62,506
Adj. R^2 (%)	31.7	37.1	32.2	37.4
Difference test	0.12		0.74	
	(p=0.725)		(p=0.389)	

This table reports the regression results for the subsamples by measures of product market competition. The regressions are performed using OLS, with the *t*-statistics (in parentheses) corrected for error heteroskedasticity and within-firm error clustering. The intercept, year fixed effects, firm fixed effects, and control variables are included but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 8. Cross-Ownership by Difference Types of Institutional Investors and Corporate Financing of Investment Opportunities

VARIABLE	*FINANCING*							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) DCROSS_DED$_{i,t-1}$ ×SALEGR$_{i,t-1}$	0.174***			0.186***				
	(3.80)			(4.06)				
(2) DCROSS_TRA$_{i,t-1}$ ×SALEGR$_{i,t-1}$		0.069***		0.074***				
		(4.58)		(4.86)				
(3) DCROSS_QIX$_{i,t-1}$ ×SALEGR$_{i,t-1}$			0.021*	0.026**				
			(1.84)	(2.22)				
(4) DCROSS_DED$_{i,t-1}$ ×TOBINQ$_{i,t-1}$					0.027***			0.034***
					(4.21)			(5.20)
(5) DCROSS_TRA$_{i,t-1}$ ×TOBINQ$_{i,t-1}$						0.016***		0.019***
						(6.32)		(7.35)
(6) DCROSS_QIX$_{i,t-1}$ ×TOBINQ$_{i,t-1}$							0.009***	0.011***
							(5.32)	(6.43)
DCROSS_DED$_{i,t-1}$	0.014**			0.014**	0.012**			0.015**
	(2.25)			(2.23)	(2.12)			(2.57)
DCROSS_TRA$_{i,t-1}$		-0.011***		-0.008**		-0.009**		-0.005
		(-3.31)		(-2.29)		(-2.53)		(-1.30)
DCROSS_QIX$_{i,t-1}$			0.010***	0.007**			0.009***	0.007**
			(3.80)	(2.43)			(3.75)	(2.55)
SALEGR$_{i,t-1}$	0.021***	0.021***	0.021***	0.019***				
	(7.46)	(7.18)	(7.27)	(6.53)				
TOBINQ$_{i,t-1}$					0.006***	0.006***	0.006***	0.006***
					(13.68)	(13.29)	(12.77)	(11.65)
Controls and fixed effects included								
Obs.	125,017	125,017	125,017	125,017	125,017	125,017	125,017	125,017
Adj. R^2 (%)	34.2	34.2	34.2	34.3	34.6	34.6	34.6	34.7
Difference test								
(1)=(2)				5.57**				
				(*p*=0.018)				
(1)=(3)				11.77***				
				(*p*=0.001)				

(2)=(3)	7.29*** (*p*=0.007)		
(4)=(5)			5.23** (*p*=0.022)
(4)=(6)			12.56*** (*p*=0.000)
(5)=(6)			8.10** (*p*=0.004)

This table reports the regression results of the relation between cross-ownership by different types of institutional investors and corporate financing of investment opportunities. The regressions are performed using OLS, with the *t*-statistics (in parentheses) corrected for error heteroskedasticity and within-firm error clustering. The intercept, year fixed effects, and firm fixed effects are included but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.

TABLE 9. Institutional Cross-Ownership and Corporate Investments

VARIABLE	*CAPX* (1)	*CAPX* (2)	*RND* (3)	*RND* (4)	*ACQ* (5)	*ACQ* (6)	*NET_INV* (7)	*NET_INV* (8)	*CFSI* (9)	*CFSI* (10)
$DCROSS_{i,t-1} \times SALEGR_{i,t-1}$	0.007***		0.006***		-0.001		0.015***		-0.008**	
	(3.88)		(3.84)		(-0.54)		(3.82)		(-2.07)	
$DCROSS_{i,t-1} \times TOBINQ_{i,t-1}$		0.001***		0.002***		0.001***		0.005***		-0.002***
		(5.47)		(7.26)		(4.54)		(8.73)		(-3.33)
$DCROSS_{i,t-1}$	0.002***	0.002***	0.001	0.001	0.001	0.001	0.004***	0.003**	-0.002	-0.002
	(3.24)	(2.83)	(1.17)	(0.80)	(0.44)	(0.62)	(2.58)	(2.25)	(-1.03)	(-0.92)
$SALEGR_{i,t-1}$	0.002***		0.001		0.001		0.004***		0.003**	
	(3.33)		(1.20)		(0.39)		(2.86)		(2.08)	
$TOBINQ_{i,t-1}$		0.001***		0.001***		0.001		0.002***		-0.001
		(9.05)		(7.36)		(1.64)		(7.89)		(-0.88)
$CASH_{i,t-1}$	0.008***	0.009***	-0.022***	-0.022***	0.030***	0.030***	0.017***	0.018***	-0.025***	-0.024***
	(5.50)	(6.24)	(-11.79)	(-11.63)	(15.32)	(15.40)	(4.06)	(4.59)	(-5.32)	(-5.13)
$SIZE_{i,t-1}$	-0.019***	-0.018***	-0.019***	-0.018***	-0.010***	-0.010***	-0.056***	-0.055***	-0.025***	-0.025***
	(-30.50)	(-29.69)	(-23.48)	(-22.91)	(-14.69)	(-14.43)	(-37.12)	(-36.22)	(-13.42)	(-13.58)
$LEV_{i,t-1}$	-0.039***	-0.040***	-0.014***	-0.016***	-0.038***	-0.039***	-0.105***	-0.109***	0.013**	0.015**
	(-16.29)	(-16.68)	(-5.28)	(-5.90)	(-13.33)	(-13.67)	(-17.69)	(-18.21)	(1.99)	(2.21)
$ROA_{i,t-1}$	0.016***	0.017***	-0.029***	-0.028***	0.025***	0.025***	0.013**	0.015***	-0.026***	-0.025***
	(7.94)	(8.53)	(-10.00)	(-9.88)	(11.18)	(11.14)	(2.36)	(2.78)	(-4.02)	(-4.00)
$PPE_{i,t-1}$	0.080***	0.081***	0.010***	0.010***	0.001	0.001	0.088***	0.090***	-0.090***	-0.088***
	(27.33)	(28.00)	(6.11)	(6.34)	(0.26)	(0.14)	(16.44)	(16.92)	(-15.90)	(-15.82)
$CFO_{i,t-1}$	0.023***	0.022***	-0.024***	-0.025***	0.010***	0.009***	0.005	0.002	-0.014**	-0.014**
	(10.24)	(9.78)	(-8.76)	(-9.16)	(4.05)	(3.80)	(0.93)	(0.41)	(-2.07)	(-2.06)
$DIV_{i,t-1}$	0.003***	0.003***	0.004***	0.004***	0.006***	0.006***	0.016***	0.015***	0.001	0.001
	(3.41)	(3.10)	(6.50)	(6.08)	(4.97)	(4.86)	(8.03)	(7.62)	(0.35)	(0.40)
$ALTMAN_{i,t-1}$	0.001***	0.001***	0.001***	0.001*	-0.001	-0.001	0.001***	0.001***	-0.001	-0.001
	(13.56)	(11.26)	(3.65)	(1.69)	(-0.18)	(-1.23)	(6.87)	(4.31)	(-0.69)	(-0.12)
$HHI_{i,t-1}$	0.001	0.002	-0.001	-0.001	-0.005	-0.004	-0.005	-0.003	0.024**	0.024**
	(0.42)	(0.66)	(-0.26)	(-0.05)	(-1.36)	(-1.28)	(-0.82)	(-0.53)	(2.55)	(2.52)
Obs.	126,611	126,611	126,611	126,611	126,611	126,611	126,611	126,611	127,809	127,809
Adj. R^2 (%)	51.1	51.2	80.6	80.8	12.0	12.0	0.40.0	40.3	76.1	76.2

This table reports the regression results of the relation between institutional cross-ownership and corporate investments. The regressions are performed using OLS, with the *t*-statistics (in parentheses) corrected for error heteroskedasticity and within-firm error clustering. The intercept, year fixed effects, and firm fixed effects are included but not reported. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels, respectively. Variable definitions are available in the appendix.