# Facilitating Takeovers and Takeover Premia: The Case of Coordinated Monitoring

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**Abstract**

This paper shows that coordinated monitoring by institutional investors affect how firms behave in the M&A market. We employ spatial dimension of geographic links between major investors as a proxy for interaction and information exchange which determines the effectiveness of investor monitoring over firm management. Using US data over 25 years, we show that M&A activity is significantly more intense and that gains for acquiring shareholders are significantly higher, when institutions coordinate better their monitoring efforts. We also find that this effect is particularly prominent for firms with bad corporate governance and those whose information environment is more opaque. Our results are robust to an array of controls, various econometric specifications, and alternative measurements of the main variables.

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## 1. Introduction

Growing theoretical research supports the idea that corporate policies are influenced by a group of large institutional investors coordinating their monitoring strategies[1]. The basic argument goes back to at least Shleifer and Vishny (1986) who predict that if a single large investor does not have sufficiently high incentives to perform monitoring, he will team up with other large investors and act as a group to exercise influence over firm's strategic decisions. Noe (2002) points out that this monitoring technology can be applied to multiple target firms at the same time, and Bennedsen and Wolfenson (2000) argue that groups of investors in a monitoring cohort may change dynamically depending on the allocation of power between them. More recently, Edmans (2014) shows that multiple large investors exert governance through different forms of actions meant to improve firm value. While most of the theory does not offer a precise prediction regarding the manner in which large investors intervene in corporate affairs, empirical literature provides some useful guidance in this regard, by showing that institutional investors use private channels and intervene in managerial decisions quietly without disclosing this information to other market participants (McCahery, Sautner, and Starks, 2016). Most importantly, however, private negotiations between institutional investors and firm management prove to be an extremely effective device that features high odds of a successful outcome (Carleton, Nelson, and Weisbach, 1998).

In this paper, we apply the above insights to the context of mergers and acquisitions (M&A). In particular, we examine whether M&A outcomes are significantly influenced by monitoring strategies performed simultaneously by a group of major institutional investors, an activity to which we will refer throughout the paper as "coordinated monitoring". Because CEO

[1] A comprehensive review of the theoretical and empirical literature on large investors is given in Edmans and Holderness (2017)

and other board members often lack relevant M&A experience (Bao and Edmans, 2011; Field and Mkrtchyan, 2017), it is institutional investors that may use their skills and expertise to influence firms' acquisition process and outcome. For example, Barclay and Holderness (1991) find that skills and incentives of large investors, and not just ownership concentration, affect corporate policies. Arguments suggesting that large investors may actively shape corporate strategic decisions is particularly relevant given the fact that firms often tend to engage in value destroying M&A (Loughran and Vijh, 1997; Moeller, Schlingemann and Stulz, 2005). Whereas prior research finds some relation between institutional shareholdings and M&A (Chen, Harfrod, and Li, 2007; Cronqvist and Fahlenbrach, 2009), our paper highlights an alternative channel by which group of large institutional investors influence M&A activity, above and beyond the apparent influence of concentrated ownership. As predicted by the theories outlined above, this channel suggests that large investors interact with one another to coordinate their monitoring activities with the objective of influencing firms' decisions.

We attempt to capture this effect by using the measure of geographic distance between major investors. An extensive academic literature shows that geographic proximity fosters interaction, sharing of information, and ideas. For example, Hong, Kubik, and Stein (2005) argue that professional investors exchange information with one another, through face-to-face communication during formal and informal meetings. Their analysis indicates that this communication is more effective if geographic distance between investors is narrowed and that investors make similar investment decisions when they are located in the vicinity of one another. Similarly, Coval and Moskowitz (1999, 2001) show that institutional investors obtain access to special information attainable to them through geographic proximity. Building on this literature, we construct measures of coordinated monitoring by major institutional investors using

geographic distances between their headquarters. We posit that coordinated monitoring will be more effective, if investors are located close by, as geographic proximity entails greater social interaction and improves information flow. We then use these measures to predict whether firms are more or less likely to engage in M&A activity, and whether the quality of the M&A deals differs depending on how well multiple investors coordinate their monitoring efforts.

We find strong evidence that coordinated monitoring affects M&A outcomes. For a sample of US public firms over the period 1990 to 2014, we find that the firm's acquisitiveness – measured by the likelihood of undertaking an acquisition, number of acquisitions per firm, and aggregate deal vale –increases significantly with geographic proximity between major investors. This effect remains substantial after controlling for other measures of institutional presence including institutional ownership, number of blockholders, and blockholder ownership, and after adding all standard controls. When we put these results in the economic context, we find that a one standard deviation increase in physical proximity among investors corresponds to 5% increase in the annual probability of undertaking an acquisition and 30% increase in the annual aggregate deal value (both relative to the mean), which suggests a sizable impact of coordinated monitoring on the intensity of M&A. The computed marginal effect is similar to the one found in Jenter and Lewellen (2015) for a different predictor variable but also in the M&A context. In the second part of our analysis, we explore the cross-sectional variation in cumulative abnormal return (CAR) to acquiring firms around the M&A announcements. We find that acquirer CARs vary with physical distance between major investors and are significantly higher when investors are headquartered geographically closer to one another. This variation implies that if coordinated monitoring is more effective, acquirers generate better M&A that provide more value to their shareholders. The economic implication of this result is that an increase in the degree of investor

proximity by one standard deviation, improves abnormal returns to acquirers around M&A announcements by 0.6% in absolute terms and roughly 55% in comparison to the mean (1.09%). Further, when we partition the sample according to the target type, we find that coordinated monitoring is particularly relevant in explaining CARs when the target is publicly traded. More specifically, shareholders of the acquiring firms earn economically significant 70 basis points more, if the proximity between major investors increases by one standard deviation. In absolute values, this corresponds to a nearly three-fold increase in the CAR relative to its mean value. This finding highlights for the first time the role of geographic proximity between investors and their joint monitoring efforts in determining the returns to acquiring firms in M&A beyond the effect of concentrated ownership. Overall, the results outlined above support the view that coordinated monitoring is valuable for acquirers.

We complete the analysis by investigating how acquirer CARs vary with the quality of corporate governance using E-index (Bebchuk, Cohen, and Ferrell, 2009; Gompers, Ishii, and Metrick, 2003) and information asymmetry within the firm (Duchin, Matsusaka, and Ozbas, 2010). The intuition behind this approach is that firms with poor corporate governance or serious information problems limit the monitoring effectiveness of the board of directors which may have an adverse effect on the profitability gains from making acquisitions. It is precisely in these firms that we expect the coordinated monitoring by major investors to play an active role in counterbalancing the effect of the reduced monitoring by the board. It has long been argued that the size of the external investment is positively related to the intensity of monitoring, which in turn reduces managerial discretion and thus the likelihood of making bad acquisitions (Barclay and Holderness, 1989; Edmans and Holderness, 2017). Because the largest institutional investors, as a group, typically hold a controlling stake in firms in which they invest, they have

powerful economic incentives to monitor managerial activities. In line with this view, we find that if firms' corporate governance is weak and coordinated monitoring by institutions is stronger, then acquirer CARs are significantly higher. We find similar result when we repeat the test for the subsample of firms for which information environment is more opaque and therefore the cost of acquiring information about the firm by non-executives is higher. Here again, coordinated monitoring is positively and significantly related to acquirer CARs.

We next conduct a series of robustness checks to gauge the sensitivity of the results to different model specifications and estimation procedures. An important concern is that our regressions may omit a variable which is highly correlated with our measures of M&A intensity and M&A quality and therefore our main results may be largely a statistical artifact due to this correlation. We attempt to control for this potential bias in several ways and show that our results are robust to adding of an array of control variables including: (1) hedge fund activism, (2) balance of power among institutional investors, (3) institutional investor portfolio turnover, (4) concentration of firms in physical space, (5) county, state, and metropolitan statistical area (MSA) fixed effects, (6) identity of the top three institutional investors, (7) fraction of local targets, (8) geographic distance between the acquirer and the target, and (9) cross-ownership between acquirer and target institutional investors in the target firm. A failure to include these factors may result in biased estimates and can lead us to incorrect conclusions about acquisition consequences of coordinated monitoring. To further test the robustness of our findings, we examine the sensitivity of our results to the choice of the definition of coordinated monitoring and construct an alternative measure. This measure differs from our baseline measure along two important aspects. First, it weighs each individual distance between a pair of investors by the fraction of total funds these investors invest in a given firm. Second, it weighs the same pairs of

distances by the fraction of equity these investors own in a firm. Both weightings can account for the strength of economic incentives to monitor the management. We show that our results are robust to this alternative measure (see Appendix B for details). Furthermore, our conclusions are not altered when we estimate the coefficients using a variety of alternative econometric models including zero-inflated Poisson regression and zero-inflated negative binomial regression.

Our work contributes mainly to three literatures in corporate finance. First, we add to the growing literature on the role of institutional investors in monitoring M&A process. Chen, Harford and Li (2007) show that concentration of ownership by certain types of institutions is an important determinant of the post-M&A performance, whereas Cronqvist and Fahlenbrach (2009) show that blockholders invested in firms with higher capital expenditures, enhance M&A activity. In a more recent paper, Fich, Harford, and Tran (2015) find that concentration of institutional ownership in the target firm affects the probability of completing an acquisition and the size of the premium paid to the target shareholders. In the international context, Ferreira, Massa, and Matos (2009) document that foreign institutional ownership increases the probability of completing a cross-border M&A deal. Our paper complements these findings by highlighting a specific channel – beyond the concentration of ownership effect outlined above – through which institutional investors influence M&A intensity and M&A quality. This channel is operable when the largest institutional investors are more geographically proximate, team up and act as a group to affect M&A activity. We show that when this happens, firms make significantly more acquisitions which are significantly more profitable for acquiring shareholders. Perhaps the closest to our article is a study by Huang (2016). There are, however, important conceptual and methodological differences. For example, his main explanatory variable is based on geographic clustering defined as the ownership concentration by all institutional investors in an immediate

geographic neighborhood. In contrast, our main proxy for coordinated monitoring is the physical distance between the largest institutional investors who are the top three shareholders in the firm. Not surprisingly, our results are mostly different from his.

Our paper also contributes to the understanding of the role of blockholders and blockholder interventions in firm decision making. Influential theoretical work (Shleifer and Vishny, 1986; Burkart, Gromb, and Panunzi, 1997; Bennedsen and Wolfenson, 2000; Noe, 2002; Edmans and Manso, 2010; Edmans, 2014) posit that multiple blockholders can cooperate through repeated interactions with the aim to influence firms' strategies in the process, which we refer to as coordinated monitoring. Despite the theoretical appeal, there is limited empirical tests of these theories. The most formidable obstacle is the difficulty of finding a good proxy for institutional investor interactions that could be converted into the quantitative variable. This is why our paper also builds on work exploring the interplay between geographic proximity and communication. This strand of research shows that geographic proximity promotes interaction and thus information transmission (Coval and Moskovitz, 1999, 2001; Feng and Seashoes, 2004; Loughran and Schulz, 2005; Hong, Kubik, and Stein, 2005; Baik, Kang, and Kim, 2010). We therefore construct a proxy for coordinated monitoring by considering physical distance between largest institutional investors. We show that this proxy has a strong effect on M&A outcomes. Hence, our paper's findings also extend the literature on the role of geographic proximity on corporate decision-making, including firm dividend policy (John, Knyazeva, and Knyazeva, 2011) and corporate governance (Chhaochharia, Kumar, and Niessen-Ruenzi, 2012; Knyazeva, Knyazeva, and Masulis, 2013).

The remainder of the paper is organized as follows. Section 2 describes the sample selection criteria and the data sources. Our empirical methodology and the results are provided in

Section 3. In Section 4 we examine the robustness of our results and extensions of the analysis. Section 5 reviews our arguments and concludes the paper.

## 2. Data, sample, and variables

### *2.1. Sample construction and data sources*

Our sample covers the 25-year period from 1990 to 2014. We start constructing the sample by obtaining headquarters locations and financial accounting information for all US firms from the annual Center for Research in Security Prices (CRSP) – Compustat Merged database. We exclude financial firms (SIC codes 6000-6999), utilities (SIC codes 4900-4999), firms with incomplete data coverage, and those with the book value of total assets of less than $10 million. We next merge these data with Thomson Reuters Institutional (13f) Holdings to retrieve information on the percentage of shares held by each institutional investor. We are able to identify three largest investors, all investors that hold at least a block, and the size of the total institutional ownership. We then match the identity of the top three investors with data on geographic location of their headquarters using zone improvement plan (ZIP) codes collected from Lipper Marketplace, Compact Disclosure, and the official websites of money managers. We supplement these data with the data on institutional location graciously provided to us by Alok Kumar and used in Chhaochharia et al. (2012). Next, from the Securities Data Corporation (SDC) database we retrieve information on mergers and acquisitions (M&A). From this database, we exclude buybacks, recapitalizations and exchange offers, and impose that the M&A deal value must be at least 1% of the market value of the acquirer's equity. We then follow standard practice and eliminate all observations which do not satisfy the following criteria: (1) the acquirer holds less than 50% stake in the target before the deal announcement; (2) the acquirer seeks in the deal at least 50% stake; (3) the deal value is equal to at least $1million; (4) a

target is a US firm. From SDC we also extract headquarters' ZIP codes for both acquirers and targets. Finally, we link the resulting dataset to CRSP Daily Stock File, Institutional Brokers' Estimate System (IBES), and Institutional Shareholder Services (ISS) from which we obtain data on stock market, analyst coverage, and corporate governance, respectively. The final sample includes 41,148 firm-year observations. The exact number of observations used in our regressions varies due to missing observations for the right-hand side variables and depending on the model specification.

In our later analyses, we obtain additional data from several other sources. The data on hedge fund activism come from Alon Brav and covers the period 1994 through 2011. The same dataset is used in Brav, Jiang, and Hyunseob (2013), and Brav, Jiang, and Hyunseob (2015). Investor classification data based on Bushee (2001) and Bushee and Noe (2000) come from Brian Bushee's website. Data on the delineation of the metropolitan statistical areas (MSA) come from United States Census Bureau and has been enumerated by the 2010 United States Census. Counties and states are identified using Federal Information Processing Standards (FIPS).

[Please insert Table 1 about here]

*2.2. Descriptive statistics*

Before turning to the main analysis, we report in Table 1 the summary statistics of our data. To reduce the impact of outliers, we winsorize all continuous variables at the 1% level in each tail. Panel A reveals that the average distance between the three major institutional investors is 1,075 miles. This compares with the average distance between the firm and the three major institutional investors of 1,132 miles. In a somewhat different context, similar average values are reported by Bernstein, Giroud, and Townsend (2016) and Chhaochharia et al. (2012). We also find that, on average, 16 percent of all target firms in our sample can be considered local

with the headquarters located within 60-mile radius of the acquirer. The last row of Panel A shows that approximately 6 out of 10 firms are located in the MSA, a fraction similar to that documented in John, Knyazeva, and Knyazeva (2011). Panel B of Table 1 summarizes institutional investor characteristics. The typical sample firm has about two blockholders who own in aggregate roughly 16% of firm's common equity, whereas institutional investors taken together hold approximately a 50% stake. This last figure is comparable to that in Li and Srinivasan (2011) and Bodnaruk, Massa, and Simonov (2013). Further, the three largest institutional investors, based on which we construct our main explanatory variable, hold together a 18.5% stake (untabulated). Fraction of institutional ownership in the acquirer exceeds the fraction of institutional investment in the M&A target (i.e., cross-holding) by a factor of three at the median. The M&A characteristics of our sample presented in Panels C-E are consistent with those in previous studies (e.g., Bouwman, Fuller, and Nain, 2009; Cai and Sevilir, 2012; Ishii and Xuan, 2014). About 20% of firms in our sample make at least one acquisition. The acquirer cumulative abnormal return (CAR) measured over the five days centered on the M&A announcement is around 1%. Nearly one in four M&A deals is entirely paid for in cash. The average deal value is about 30% of the equity market capitalization of the acquirer. In the vast majority of cases, the acquirer buys a private firm or a subsidiary of the public or private firm and the target management attitude towards the bid is friendly. Panel F reports firm characteristics. These statistics suggest that our sample is similar to those used in prior work (e.g., Fu, Lin, and Officer 2013; Custodio and Metzger, 2014). The typical firm has been publicly traded for 18 years, has a market value of $2.6 billion, book leverage of 0.2, and invests in fixed assets at a rate of 6% per year. The average annual stock market return is 18% and daily volatility 3%. The last panel in Table 1 focuses on variables used in the additional analyses. We

observe that the activist hedge fund intervention is a relatively rare event in our sample. We also find the average investment horizon of the three major institutional investors is 18%, meaning that in aggregate 36% of their equity portfolio is turned over in a year. Using the classification of Bushee (2001), we observe that 9 out of 10 investors among the top 3 can be considered to have a long-term orientation.

### *2.3. Variables*

#### *2.3.1. Main variables*

The dependent variables we adopt are designed to capture the intensity of M&A activity and the quality of the M&A decisions, respectively. We use three alternative measures of M&A intensity: incidence of M&A (*M&A_Incidence*) which is a dummy equal to one if the firm undertakes an acquisition, and zero otherwise; total value of acquisitions as a proportion of firm's equity market capitalization (*Aggregate_M&A_Deal_Value*); and the number of M&A per acquirer (*Number_of_M&A*). The quality of M&A is measured as a five-day cumulative abnormal return centered around the reported M&A announcement date. The return in estimated with a market-adjusted-return model relative to a CRSP value-weighted stock market index.

Our primary explanatory variable is the geographic distance between the three major institutional investors (*Investor_Distance*) measured as the simple average of pairwise distances between their respective headquarters. The geographic location of the headquarters is at the ZIP code level and the algorithm for calculating the distance between a pair of ZIP codes is provided in Coval and Moskowitz (1999). We consider three largest institutional investors, as in aggregate they accumulate sufficient critical mass of firm's equity to exercise influence over firm decisions (in our sample this equity share amounts to 18.5% on average). Equally importantly, monitoring by multiple large investors in a group allows for more effective coordination of the monitoring

efforts, if number of participants in a group is small in size. These arguments support the notion that our variable can be used as a good proxy for the effectiveness of the coordinated monitoring. We obtain similar results, if we use the alternative proxy and construct *Investor_Distance* by weighting geographic distance between investors, where the weights correspond to the fraction of investor's portfolio represented by the shares of a given firm as well as the fraction of institutional equity holdings in the same firm (see details in Appendix).

We construct a variety of institutional ownership variables. Guided by recent theoretical work (e.g., Edmans, 2014; Edmans and Manso, 2011; Noe, 2002) we measure the number of blockholders *(#_Blockholders*) and the total blockholder ownership (*Blockholder_Ownership*), as large investors affect the strength of monitoring and monitoring policy. We also compute total institutional ownership (*Institutional_Owenrship*) which has been shown to be an important determinant of corporate activities (e.g., Gillan and Starks, 2000; Aggarval, Erel, Ferreira, and Matos, 2011; Fitch, Harford, and Tran, 2015).

We also employ a number of geography-based measures. The distance between the major institutional investors and the firm (*Firm_Distance*) proxies for the access to firm-level information. The distance between the acquirer and the target (*Distance_Acquirer_to_Target*) and the incidence of local M&A transactions (*Local_Target*) capture potential information-based and operational synergies arising from geographic proximity in the M&A process (Uysal, Kedia, and Panchapagesan 2008, John, Knyazeva, and Knyazeva, 2015). The size of the local market for corporate control are measured by two alternative variables: the concentration of firms in physical space around the acquirer (*Firm_Concentration*) and the distance from the acquirer to the large statistical metropolitan area (John, Knyazeva, and Knyazeva, 2011).

*2.3.2. Control variables*

Our analysis includes a broad range of control variables, such as firm and deal characteristics as well as other control variables commonly used in corporate finance research. Deal characteristics include relative size of the deal (*Relative_Deal_Value*) mode of payment (*100%_Cash_Deal*), industry relatedness of the acquisition (*Diversifying*), deal attitude (*Hostile*), and target type (*Private_Target*). Observable firm characteristics include firm size (*Firm_Size*), market-to-book ratio (*Market_to_Book*), cash holdings (*Cash_Holdings*), leverage (*Leverage*), capital expenditures (*Capex*), return on assets (*ROA*), annual stock market return (*Stock_Return*), stock return volatility (*Volatility*), information on credit rating (*Credit_Rating*), and the age of the firm (*Firm_Age*). In a robustness test reported later we also control for activist intervention in the firm (*Hedge_Fund_Activism*), which is a dummy variable that takes the value one if the firm is the target of the activist hedge fund, and zero otherwise; variation in the equity ownership of the three major institutional investors (*Variation_in_Ownership*); institutional investor portfolio turnover (*Investment_Horizon*); and proportion of long-term investors among the largest investors in the firm (*Committed_Investors*).

## 3. Research design and main results

In the subsections below we present our empirical methodology and the results of our tests examining how M&A intensity and M&A quality vary with the effectiveness of coordinated monitoring.

### *3.1. Effect of coordinated monitoring on M&A intensity*

We measure the effect of coordinated monitoring on the intensity of M&A activity through our coefficient of interest $\beta$ in the following regression:

$$M\&A\ Intensity\ Variables_{i,t} = \alpha + \beta Investor\_Distance_{i,t-1} + \gamma Firm\_Distance_{i,t-1} + \delta Investor\ Ownership\ Variables_{i,t-1} + \sum \theta\ Controls_{i,t-1} + \varphi_j + \omega_t + \varepsilon_{i,t}, \quad (1)$$

where the subscripts *i*, *j*, and *t* denote firm, industry, and year, respectively; *M&A Intensity Variables* sequentially relies on three proxies: 1) dummy variable that takes the value of one if the firm undertakes and acquisition, and zero otherwise; 2) sum of M&A deal values scaled by the market capitalization of acquirer's equity, and; 3) number of M&A transactions. These variables capture different aspects of the firm's participation in the M&A market, namely, presence, volume, and the frequency of acquisitions. *Firm_Distance* is the geographic distance between the location of the major institutional investors and firm's headquarters, and *Investor Ownership Variables* include measures of total institutional ownership of firm's equity, equity ownership by institutional blockholders, and the number of blockholders. *Controls* are based on variables suggested in the previous literature and account for firm size, investment opportunities, cash holdings, leverage, capital expenditures, profitability, stock market performance, stock return volatility, credit rating, and firm's age; vector $\varphi$ includes industry fixed-effects to control for industry-level time-invariant unobservable factors; vector $\omega$ includes year fixed-effects to control for time-varying unobserved firm characteristics. In all regressions we use robust standard errors clustered at the firm level. Detailed variable definitions and data sources appear in Appendix A.

[Please insert Table 2 about here]

Columns 1 through 4 of Table 2 show the estimates obtained from a probit regression described by Eq. (1), where the dependent variable is a binary variable that takes the value of one if the firm makes an acquisition, and zero otherwise. We find that the coefficient on *Investor_Distance* is consistently negative and statistically significant at the 1% level across all specifications. Our finding shows that the reduction in distance between major institutional investors is associated, on average, with the higher likelihood of pursuing an acquisition. The

evidence is consistent with the interpretation that effectiveness of coordinated monitoring rises with proximity between coordinating investors and has a significant impact on acquisitiveness of firms. This further confirms our argument that major monitoring institutions may engage in acquisition programs by providing strategic guidance. The effect is also economically large. In the most comprehensive specification shown in Column 4, a one standard deviation increase in the geographic proximity is associated with 5% increase in the annual probability of making an acquisition, relative to the mean. The magnitude of the effect is similar to the one reported in, for example, Jenter and Lewellen (2015) in the context of M&A and managerial preferences. Regarding the other institutional investor variables (e.g., *Institutional_Ownership*), it appears that firms with more concentrated ownership by institutions are more likely to engage in acquisitions. This result seems to reinforce our overall evidence that institutional investors get involved in M&A decisions. It is therefore important to highlight that coordinated monitoring effect persists after controlling for standard measures of institutional oversight that have been shown in other contexts to affect M&A.

We further investigate the role of coordinated monitoring in M&A by regressing the aggregate value of M&A deals scaled by the market capitalization of acquirer's equity against the explanatory variables used in the previous regressions and given by Eq. (1). We estimate the model in Eq. (1) by Tobit, left-censored at 0. The results presented in Table 2, Columns 5 through 8, strengthen the conclusion that coordinated monitoring strategies by institutions affect M&A decisions. In each specification, *Investor_Distance* has significant explanatory power at the 1% level implying that when major institutional investors are geographically proximate, firms tend to spend more on M&A. Again, as shown above, this relation operates independently from the institutional ownership effect which is positive and also highly statistically significant.

In the last set of tests, we re-run our empirical specification in Eq. (1) with the number of M&A deals as our last proxy for the intensity of M&A activity and estimate the regression coefficients using the negative binomial model. The estimates reported in Columns 9-12 of Table 2 are consistent with our previous evidence. Controlling for the same factors as before, we find that firms make a larger number of acquisitions if the major institutional investors coordinate better their monitoring efforts. This effect remains highly statistically significant across all specifications.

In regressions reported in the Internet Appendix, we repeat our analysis using more elaborate proxy for coordinated monitoring that accounts for the proportion of funds the institutional investor allocates to a given stock as well as fraction of stock ownership held by the institution. The results of these regressions are qualitatively and quantitatively similar to our baseline results reported in Table 2.

In summary our results consistently appear to demonstrate that geographic proximity improves the effectiveness of coordinated monitoring which has a positive impact on firms' M&A investments.

### *3.2. Omitted variable bias and additional analyses*

In this subsection, we report the results of several additional regressions that attempt to control for possible omitted variable bias. As can be seen in Panel A of Table 3, we consider five additional variables which we introduce to our base case model. In Panel B, we consider different fixed effects that capture various geographic characteristics of our sample firms.

[Please insert Table 3 about here]

#### *3.2.1. Hedge fund activism*

A growing strand of literature documents that hedge fund activism influences corporate policy and control. For example, Klein and Zur (2009) show that activist hedge funds are often concerned with the M&A activity of their targets. To rule out the concern that our findings could be influenced by hedge fund activism and its effect on M&A, we estimate the sensitivity of our results to the inclusion of the variable that represents hedge fund's intervention in the firm. For this purpose, we construct a dummy *Hedge_Fund_Activism* equal to one if the company becomes the target of activist hedge fund, and zero otherwise. If hedge fund activism drives our results, we expect a weaker relation between coordinated monitoring and M&A or even the disappearance of this effect. Our sample of activist events comes from Brav, Jiang and Hyunseob (2013) and covers the period 1994 through 2011. We replicate our regression analysis using *Hedge_Fund_Activism* in our most saturated specification. As reported in Panel A Table 3, the estimates of the regression coefficients are very similar to the main results of the paper (Table 2). Thus, the inclusion of the activism dummy does not affect the interpretation of our main results.

*3.2.2. Balance of power among institutional investors*

Another concern is that our results are driven by the relative power of the major institutional investors and therefore may be interpreted as an artifact of a dominant position of the largest institution in a firm's investor base versus other large investors, rather than the outcome of their coordinated decision-making process. We attempt to control for this possibility by constructing the variable that captures a dispersion of institutional ownership defined as the standard deviation of the equity-holdings owned by the three largest institutional investors, and adding this variable (*Variation_in_Ownership*) as a control in our regressions. We then re-estimate the baseline specification described in Eq (1). Panel A of Table 3 shows that the results remain qualitatively the same when *Variation_in_Ownership* is included in the model.

Moreover, the estimated coefficient is negative and highly statistically significant implying that if major investors are more equal in size their effect on M&A is more pronounced. This result further strengthens our conclusion that coordinated monitoring works better among large investors of similar size and that the observed effect it is not due to the dominant position of a single large institutional investor.

*3.2.3. Investment horizon*

One might be also concerned that the trading horizon of the institutional investor may affect our results. Arguably, investors with a long-term commitment monitor more intensively and have better information about the firm and its mangers. On the other hand, investors with short-term orientation buy and sell more frequently and rely more on short-run gains from opportunistic trading. The literature has shown that these two distinct types of investors may influence corporate decision-making in different ways (Gaspar, Massa, and Matos, 2005; Chan, Harford, and Li, 2007). If this is actually the case, we might observe investors' trading behavior having some impact on the degree of managerial acquisitiveness and thus firms' M&A intensity. To alleviate concerns about this issue, we replicate our analysis using two alternative measures of investment horizon. The first measure is based on Gaspar, Massa, and Matos (2005) and is similar to other approaches used before in Carhart (1997), and Barber and Odean (2000). This measure uses information on the rotation of all the stocks in each investor's portfolio and aggregates this information over the period of four reporting quarters, which mitigates the impact of a single quarter of data in the calculations. By construction, the measure is not computed in the quarter the investor or company enters the Thomson Reuters database for the first time or when there is a break in the sequence of reporting quarters. To take account of investor trading horizon in our specification, we follow the approach proposed in Gaspar et al. (2005) and

construct the variable *Investment_Horizon* which takes the value from the continuous range between 0 and 2, where 2 represents complete liquidation of the equity position. We then take the average of *Investment_Horizon* for the top 3 equityholders of the firm.

Our second measure is based on the investor classification used in Bushee (2001) and Bushee and Noe (2000) which divides the universe of institutional investors into "dedicated", "quasi-indexer", and "transient". According to this classification, transient investors have high portfolio turnover and focus on short-term trading profits. "Dedicated" investors and "quasi-indexers", on the other hand, are characterized by their interest in the long-term appreciation of shareholder wealth. Similar to the approach in Cella, Ellul, and Giannetti (2013), we construct a dummy variable *Committed_Investor*, setting it equal to one if majority of the largest three institutional investors in the preceding year are either "dedicated" or "quasi-indexers", and zero otherwise. We then re-run our main regressions using these two additional control variables and confirm that our principal results are generally unaffected (Tables 3A-4A).

*3.2.4. Concentration of local firms*

Almazan, De Motta, Titman, and Uysal (2010) show that firms' geographic locations vis-a-vis nearby firms affect their investment and financial decisions, including acquisition activity. More specifically, higher concentration of local firms increases the supply of potential targets and therefore creates good acquisition opportunities for acquiring firms. In order to address the possibility that the local acquisition opportunities are driving our results, we replicate our analysis by including in the regression the measure of firm concentration (*Firm_Concentration*) which we define as the proportion of firms headquartered within the 60 mile radius of the potential acquirer. Our results are robust to the inclusion of this control. As reported in Table 3, the point estimates of our main variables are essentially unaffected.

*3.2.5. Preferences of the investor groups*

In the subsequent robustness check, we attempt to control for the identity of the major institutional investors who may stay invested either in several companies at the same time or in a single company over several years and therefore may form a group or a coalition. A group of investors may be bound by the same policy choices and therefore may have similar attitudes toward corporate investments and growth. For example, acquisition-inclined group of investors may follow similar approach toward different companies in which they stay invested and maintain increased willingness to engage in M&A. We want to control for this attribute and rule out the possibility that our results are simply due to the propensity of certain institutional investors to make many acquisitions. To this end, we code as a "group" a triple of top 3 institutional investors by equity ownership, if it appears in our sample at least twice. We treat size rank of the investor on the dimension of equity ownership within the top 3 as irrelevant. According to this assignment procedure there are between 2,024 and 8,317 distinct groups (depending on the model specification) which are represented in our regressions as fixed effects. The remaining observations are classified as a single group. We recognize that coding each unique triple of investors (even if it appears in the sample only once) would probably offer a cleaner test, however, with 25,927 unique triples in our sample the probit model does not converge. Our results are robust to this alternative specification. The coefficients on *Investor_Distance* remain negative and highly statistically significant (see Panel B of Table 3) suggesting that our result is not due to the specific agenda of standing investor groups.

*3.2.6. Location by county, MSA, and state*

There is substantial variation in economic activity across states and metropolitan areas in the US, as well as across counties within the same state. For example, Dougal, Parsons, and

Titman (2015) show that local agglomeration economies are a significant determinant of firm investment and growth. Consequently, the number of public and private firms may vary greatly from one area to another, affecting a pool of potential bidders and targets and therefore the number of M&A transactions. Furthermore, it should be easier for potential acquirers to obtain information on firms when the relative density of firms in physical space is greater, because as the number of firms headquartered in a given area increases, the average distance between investors and these firm grows smaller. Because of these two effects, larger number of potential buyers and sellers in the M&A market, and improved flow of information about firms, our results may be driven by geographic variation in various economic factors rather than geographic proximity between major investors. To rule out this possibility, we re-estimate our core set of tests adding county, state and metropolitan statistical area (MSA) fixed effects. To classify geographic locations we use Federal Information Processing Standards (FIPS) which uniquely identifies counties and states, and Office of Management and Budget (OMB)'s definition of metropolitan statistical area. We use the information on MSA in two ways. First, similarly to Loughran and Schultz (2005) and John, Knyazeva and Knyazeva (2011) we calculate the distance between firm's headquarters and ten largest metropolitan statistical areas as enumerated by the 2010 United States Census. We then classify a firm as located within the metropolitan area, if its main office is 100 miles or less from the most proximate MSA. Second, using the information from to the same Census, we consider all MSA of at least half a million inhabitants, and classify the firm as metropolitan, if its headquarters lies within the limits of the closest MSA. Tables 6A-9A present robustness results from the four sets of regressions with fixed effects for each state, county, and MSA as defined above. As can be seen, our results are essentially unchanged in these alternative specifications.

*3.3. Coordinated monitoring and wealth effects of M&A activity*

To gauge the effect of coordinated monitoring on value created by M&A, we follow previous literature and regress abnormal stock return to acquirer surrounding the acquisition announcement on the main variables of interest and a range of controls. The cross-sectional equation we estimate is of the form:

$$CAR_{i,t} = \alpha + \beta Investor\_Distance_{i,t-1} + \gamma Firm\_Distance_{i,t-1} +$$
$$\delta Investor\ Ownership\ Variables_{i,t-1} + \sum \theta\ Controls_{i,t-1} + \varphi_j + \omega_t + \varepsilon_{i,t}, \quad (2)$$

where the subscripts *i*, *j*, and *t* denote firm, industry, and year, respectively. $CAR_{it}$ is the cumulative market-adjusted return computed relative to the CRSP value-weighted index over the five days centered around the acquisition announcement[2]. Distance and institutional ownership variables are the same as those used in the previous steps of our study. The set of control variables for the acquiring firms includes: *Firm Size*, firm *Market-to-Book* ratio, financial *Leverage*, return on assets (*ROA*), *Stock Return*, and stock return *Volatility*, and the firm's *Credit Rating*. Further, we add such controllers as a dummy variable for hostile deals (*Hostile*), a dummy variable for deals that were financed solely by cash (*100% Cash Deal*), a dummy for acquisitions when an acquirer and a target firm are from different industry sectors (*Diversifying*), and a dummy identifying whether the target firm is a private company (*Private Target*). We provide detail definitions of each of the controls in Appendix A.

We investigate the effect on investor proximity on the quality of acquisitions of publicly listed targets as well as all targets. We first conduct the analysis using the sample of deals in which

[2] Alternatively, to define abnormal returns we use market model parameters estimated from -240 to -41 days before the first acquisition announcement based on CRSP value-weighted index. The two sets of results are essentially the same.

the target was a publicly traded company. Given their importance and visibility, these are the acquisitions where institutional investors are more likely to intervene, and where they can facilitate the deal the most. The results of this analysis are reported in Panel A of Table 4.

[Please insert Table 4 about here]

As in Table 2, we report results for four different model specifications. As in the previous table, the coefficients of the distance measures are multiplied by 10,000. The coefficients of the key proximity variables are negative and significant at 1% and at 5% level for the proximity measures constructed for three largest institutional investors, respectively. Looking at model 2, a 1,000-mile increase in the distance between top 3 investors corresponds to a decrease of 0.92% in abnormal returns. A one-standard deviation change in the distance between the top 3 investors generates a change of about 0.59% in the acquiring abnormal returns. Similar economic magnitudes for the effect of distance on CARs could be obtained from the other models.

These results indicate that M&A deals undertaken by acquirers with geographically closer to each other largest institutional investors create higher value for the acquiring companies than deals announced by firms whose main institutional investors are geographically dispersed. Further, the coefficients for the investor distance to the firm are also negative and significant across all models, even if only at the 10% level. This means that investor proximity to the investee firm has a significant impact on acquirer cumulative abnormal return following the deal announcement. More specifically, the closer the main institutional investors are located to the investee firm the, the higher abnormal return is accumulated following acquisition announcement. None of the coefficients for institutional ownership is statistically significant.

Next, we repeat the analysis represented by equation (3) for the entire universe of acquisitions carried out by our sample firms. Panel B of Table 4 documents the results of this analysis. The

coefficients of our proximity measure calculated for the three largest institutional investors are statistically significant while at lower significance level than the corresponding coefficients for the sample of publicly traded target firms. The economic magnitude of the effect is smaller as well. In model 2, a 1,000-mile (one-standard deviation) increase in distance decreases abnormal returns of only 0.24% (0.15%). Thus, the results reported in Table 4 show that geographic proximity between the main institutional investors of the acquiring firms plays a considerably more important role when the target firm is publicly traded than when the target is a private or a subsidiary company. Further, the distance to the firm variable loses its statistical significance as well, indicating that in our sample we do not observe a significant effect of investors' distance to acquirer on abnormal returns. In contrast, blockholder variables turn to be negative and significant, meaning that the number and the ownership stake of these institutional investors have a value-destroying effect on the acquisition announcement returns of the acquirer.

Overall, investor proximity affects positively M&A quality and the effect is stronger in acquisitions of listed targets, where institutional investors are expected to be more interested, either for the size of the deal or for its visibility. These results are consistent with the view that the activism of the coalitions of institutional investors plays a positive role in the acquisition policy of the acquiring firm.

*3.3.1. Additional controls*

Similarly to the analysis for the acquisition activity, we present a battery of tests to address additional issues that could affect our results. We analyze the robustness of our results to the inclusion of five variables that could affect the findings shown in Table 4. We control for five variables: 1) a dummy to capture if the target is a local firm; 2) the distance between the acquirer and the target; 3) the concentration of local firms; 4) overlap in the investor base between acquirer

and the target firm; 5) the distance to the nearest metropolitan statistical area. We find that the negative coefficients of our main variables are still statistically significant in the regressions on the sample of public targets. Concerning the sample of all targets, we observe that the inclusion of these additional geographically based variables makes the investors' distance variables statistically significant, especially the one among the top 3 investors.

[Please insert Table 5 about here]

### *3.4. Effect of coordinated monitoring on firms with poor corporate governance and severe information asymmetries*

In this subsection we perform a split sample analysis based on the quality of corporate governance and the cost of acquiring information about the firm, respectively. We then test empirically whether coordinated monitoring effect persists across all subsamples.

#### *3.4.1. Information cost*

We further investigate whether the effect of geographic proximity between the main institutional shareholders varies with the level of information costs the acquiring company. If information about the company is easy to obtain, the importance of proximity among institutional investors should decrease because there is less need for them to build coalition to be informed. For this purpose, we use the *Information Cost Index* of Duchin, Matsusaka, and Ozbas (2010) as a proxy for the costs of information about acquiring firm. This index is created on the basis of three financial-analyst related variables that measures an outsider's cost of becoming informed: the number of analysts that issued forecasts about the firm in a given year; the dispersion of analysts forecast; and, finally, the analyst forecast error. We divide our sample once into two sub-samples: a sub-sample of acquirers with higher than the median information cost index and a sub-sample of acquirers with lower than or equal to the median information cost index. For each of the sab-

samples we run the regression analysis in equation (3) to determine whether the effect on acquisition quality is different in the two subsamples. We report the results of the analysis in Table 6 for the acquisitions of listed firms.

[Please insert Table 6 about here]

The first three models are estimated for the sub-sample of firms with high information cost index; models 4-6 are estimated for the sub-sample of low information cost firms. The coefficients of the key proximity variables are negative and significant only in the high information cost sample, indicating a negative effect of distance between investors of the acquiring firm on abnormal returns, (see Panel A of Table 4). In the low information cost sample, *Investor_Distance* is never significant. The coefficients for the sub-sample of high information cost firms are economically, and but not statistically, significantly higher than those for the sub-sample of low information cost firms.[3] Despite the lack of statistical significance does not allow, the table documents that the geographic proximity between main institutional investors of the acquiring firm has greater effect on value created by the deal for the acquiring company in an environment with high information cost, than when information cost is low.

*3.4.2. Corporate governance*

We also examine whether the effect of geographic proximity between the main institutional shareholders is affected by the quality of corporate governance of the acquiring company. We employ the *Entrenchment Index* (*E-Index*) of Bebchuk, Cohen, and Ferrell (2009) as a proxy for the corporate governance quality of the acquiring company. Data to compute the entrenchment index are from RiskMetrics and are available only for large listed companies belonging to the

[3] We test for statistical significance each of the differences. Due to space concerns, we do not report the results for this analysis, but confirm that they will be provided by the authors upon request.

S&P500, the S&P Mid-Cap 400, and the S&P Small-Cap 600. We divide our sample once into two sub-samples: sub-sample of acquirers with higher than 3, and sub-sample of acquirers with lower or equal than 3 E-index value. For each of the sab-samples we run the CAR regression analysis. We report the results of the analysis in Table 7.

[Please insert Table 7 about here]

Models 1-3 are estimated for the sub-sample of firms with high E-index; models 4-6 – for the sub-sample with low E-index. The coefficients of our main proximity measure from models 1-3 are approximately twice higher than corresponding coefficients from models 4-6. Moreover, the estimates for the subsample of low E-index firms (reflecting better governance quality), are statistically insignificant. This result supports the view that the distance between investors has significantly stronger impact on the value created to the acquirer by acquisition deal when the quality of corporate governance of the acquiring company is lower. Proximity among investors is more helpful when corporate governance is poor, i.e. environments where the single institution has limited tools to make an impact.

## 4. Conclusions

Inspired by corporate finance theory arguing that institutional investors team up in order to actively monitor management and intervene in corporate affairs, this paper investigates whether coordinated monitoring performed by major institutional investors influence firms' acquisition policies.

Using geographic distance between institutions as a proxy for repeated interactions and information exchange, we find that the intensity of M&A activity and the quality of acquisitions are significantly higher when the major institutional investors are located nearby and better coordinate their monitoring efforts. We also find that firms with poor corporate governance and

high information asymmetries benefit more from coordinated monitoring than do firms with good governance and with more evenly distributed information. Our results are robust to the inclusion of a variety of controls, different econometric specifications, and the alternative measurement of our main variables.

An interesting and natural extension of our analysis would be to study the role of coordinated monitoring among the foreign and domestic institutional investors using cross-border mergers and acquisitions activity worldwide.

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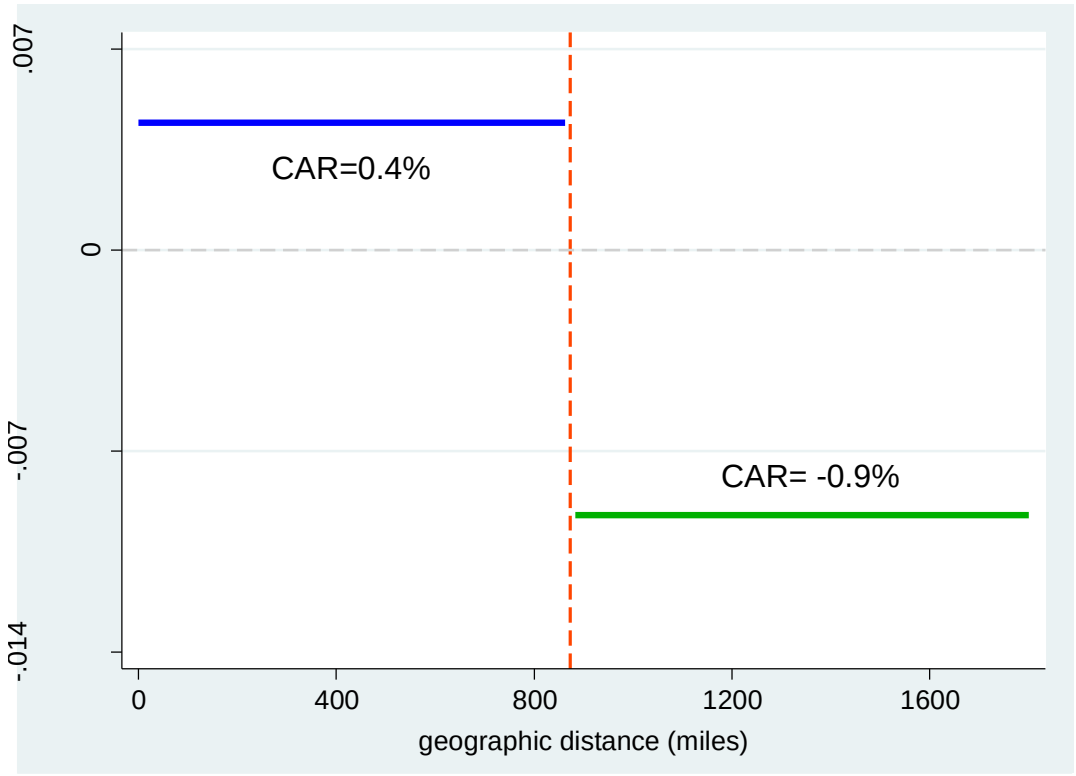


Fig. 1. This figure displays acquirer CARs for acquisitions of public targets between 1990 and 2014. The cutoff value of 873 miles is the sample median distance between three largest institutional investors of the acquirer. The 1.37% difference in CAR between the two subsamples is significant at the 1% level (p-value 0.000).

**Table 1**
**Summary statistics**
The table presents summary statistics for the variables used in the analysis. Our sample covers the period between 1990 and 2014. The number of observations varies based on data availability. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

| Variable | Mean | Median | Std | 10th Pctile | 90th Pctile | Obs. |
|---|---|---|---|---|---|---|
| Panel A: Geographic variables | | | | | | |
| *Investor_Distance (miles)* | 1,075 | 1,199 | 643.3 | 123.5 | 1,754 | 41,148 |
| *Firm_Distance (miles)* | 1,132 | 1,068 | 596.5 | 343.4 | 1,937 | 41,148 |
| *Distance_Acquirer_to_Target (miles)* | 946.6 | 718.7 | 840.1 | 17.62 | 2,400 | 6,710 |
| *Local_Target* | 0.161 | 0.000 | 0.367 | 0.000 | 1.000 | 6,710 |
| *Firm_Concentration* | 0.041 | 0.031 | 0.041 | 0.003 | 0.124 | 41,148 |
| *MSA* | 0.570 | 1.000 | 0.495 | 0.000 | 1.000 | 14,307 |
| Panel B: Institutional investor variables | | | | | | |
| *#_Blockholders* | 1.850 | 2.000 | 1.464 | 0.000 | 4.000 | 41,148 |
| *Blockholder_Ownership* | 0.157 | 0.135 | 0.134 | 0.000 | 0.347 | 41,148 |
| *Institutional_Ownership* | 0.496 | 0.515 | 0.272 | 0.106 | 0.857 | 41,148 |
| *Cross_Holdings* | 154.8 | 3.100 | 1,613 | 1.268 | 29.42 | 813 |
| Panel C: M&A intensity variables | | | | | | |
| *M&A_Incidence* | 0.204 | 0.000 | 0.403 | 0.000 | 1.000 | 41,148 |
| *Aggregate_M&A_Deal_Value* | 0.055 | 0.000 | 0.313 | 0.000 | 0.115 | 41,148 |
| *Number_of_M&A* | 0.379 | 0.000 | 1.090 | 0.000 | 1.000 | 41,148 |
| Panel D: M&A deal characteristics if target is public | | | | | | |
| *CAR (%)* | -0.252 | -0.207 | 7.548 | -9.352 | 8.691 | 1,548 |
| *Relative_Deal_Value* | 0.410 | 0.200 | 0.526 | 0.035 | 1.066 | 1,548 |
| *100%_Cash_Deal* | 0.342 | 0.000 | 0.479 | 0.000 | 1.000 | 1,548 |
| *Hostile* | 0.034 | 0.000 | 0.181 | 0.000 | 0.000 | 1,548 |
| *Diversifying* | 0.402 | 0.000 | 0.490 | 0.000 | 1.000 | 1,548 |
| Panel E: M&A deal characteristics if target is public, private, or sub | | | | | | |
| *CAR (%)* | 1.090 | 0.632 | 7.013 | -6.456 | 9.090 | 14,307 |
| *Relative_Deal_Value* | 0.298 | 0.132 | 0.460 | 0.027 | 0.719 | 14,307 |
| *100%_Cash_Deal* | 0.232 | 0.000 | 0.422 | 0.000 | 1.000 | 14,307 |
| *Hostile* | 0.003 | 0.000 | 0.061 | 0.000 | 0.000 | 14,307 |
| *Diversifying* | 0.415 | 0.000 | 0.492 | 0.000 | 1.000 | 14,307 |
| *Private_Target* | 0.891 | 1.000 | 0.310 | 0.000 | 1.000 | 14,307 |
| Panel F: Firm characteristics | | | | | | |
| *Firm_Size ($million)* | 2,625 | 307.8 | 7,519 | 18.74 | 5,469 | 41,148 |
| *Market_to_Book* | 1.687 | 1.220 | 1.434 | 0.630 | 3.247 | 41,148 |
| *Cash_Holdings* | 0.177 | 0.091 | 0.207 | 0.007 | 0.497 | 41,148 |
| *Leverage* | 0.207 | 0.171 | 0.199 | 0.000 | 0.476 | 41,148 |
| *Capex* | 0.060 | 0.041 | 0.062 | 0.010 | 0.133 | 41,148 |
| *ROA* | 0.104 | 0.124 | 0.149 | -0.036 | 0.239 | 41,148 |
| *Stock_Return* | 0.189 | 0.081 | 0.646 | -0.449 | 0.871 | 41,148 |
| *Volatility* | 0.034 | 0.030 | 0.017 | 0.015 | 0.057 | 41,148 |
| *Credit_Rating* | 0.292 | 0.000 | 0.454 | 0.000 | 1.000 | 41,148 |
| *Firm_Age (years)* | 18.19 | 13.42 | 16.02 | 3.254 | 38.52 | 41,148 |
| *Information_Cost_Index* | 0.374 | 0.330 | 0.146 | 0.240 | 0.600 | 1,491 |
| *Entrenchment_Index* | 2.477 | 3.000 | 1.481 | 0.000 | 4.000 | 1,023 |
| Panel G: Other variables | | | | | | |
| *Hedge_Fund_Activism* | 0.020 | 0.000 | 0.140 | 0.000 | 0.000 | 36,718 |
| *Variation_in_Ownership* | 0.026 | 0.019 | 0.026 | 0.004 | 0.051 | 41,165 |
| *Investment_Horizon* | 0.180 | 0.l66 | 0.086 | 0.091 | 0.276 | 32,566 |
| *Committed_Investors* | 0.908 | 1.000 | 0.287 | 1.000 | 1.000 | 40,640 |

**Table 2**
**The effect of coordinated monitoring on M&A intensity**

Coefficients in columns [1]-[4] are estimated by probit, whereas coefficients in columns [5]-[8] and [9]-[12] are estimated using Tobit and negative binomial, respectively. M&A Incidence is a dummy equal to 0 if the firm makes and acquisition, and zero otherwise. Aggregate M&A Deal Value is the sum of individual relative deal values by acquirer. We require each relative deal value to be at least 1% of acquirer market value of equity. Number of M&A is the number of M&A transactions by acquirer. Explanatory variables are measured at the firm level and are lagged one year relative to the dependent variable. Coefficient estimates on all distance variables have been multiplied by 10,000. Industries are defined by 2-digit SIC code. Standard errors are adjusted for heteroscedasticity and clustering at the firm level. The numbers in parentheses are *p*-values. Superscripts *a*, *b*, and *c* indicate significance at the 1, 5, and 10% levels, respectively. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

| Dependent Variable | M&A Incidence | | | | Aggregate M&A Deal Value | | | | Number of M&A | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] |
| ***Investor_Distance*** | -1.147$^{a}$ | -0.537$^{a}$ | -0.540$^{a}$ | -0.447$^{a}$ | -0.509$^{a}$ | -0.296$^{a}$ | -0.297$^{a}$ | -0.237$^{a}$ | -2.097$^{a}$ | -0.940$^{a}$ | -0.945$^{a}$ | -0.865$^{a}$ |
| | (0.000) | (0.000) | (0.000) | (0.001) | (0.000) | (0.000) | (0.000) | (0.003) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Firm_Distance* | | 0.085 | 0.086 | 0.101 | | -0.004 | -0.003 | 0.006 | | -0.165 | -0.166 | -0.107 |
| | | (0.614) | (0.607) | (0.549) | | (0.958) | (0.972) | (0.941) | | (0.575) | (0.571) | (0.721) |
| *# Blockholders* | | 0.012$^{c}$ | | | | 0.012$^{a}$ | | | | 0.002 | | |
| | | (0.066) | | | | (0.002) | | | | (0.810) | | |
| *Blockholder_Ownership* | | | 0.033 | | | | 0.067 | | | | -0.132 | |
| | | | (0.644) | | | | (0.114) | | | | (0.279) | |
| *Institutional_Ownership* | | | | 0.478$^{a}$ | | | | 0.330$^{a}$ | | | | 0.618$^{a}$ |
| | | | | (0.000) | | | | (0.000) | | | | (0.000) |
| *Firm_Size* | | 0.167$^{a}$ | 0.167$^{a}$ | 0.133$^{a}$ | | 0.044$^{a}$ | 0.044$^{a}$ | 0.020$^{a}$ | | 0.337$^{a}$ | 0.336$^{a}$ | 0.300$^{a}$ |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |
| *Market_to_Book* | | -0.040$^{a}$ | -0.041$^{a}$ | -0.032$^{a}$ | | -0.031$^{a}$ | -0.031$^{a}$ | -0.026$^{a}$ | | -0.078$^{a}$ | -0.079$^{a}$ | -0.066$^{a}$ |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |
| *Cash_Holdings* | | 0.033 | 0.036 | 0.001 | | 0.048 | 0.050 | 0.028 | | 0.027 | 0.034 | -0.022 |
| | | (0.609) | (0.575) | (0.991) | | (0.185) | (0.169) | (0.448) | | (0.825) | (0.783) | (0.859) |
| *Leverage* | | -0.183$^{a}$ | -0.182$^{a}$ | -0.190$^{a}$ | | -0.019 | -0.019 | -0.022 | | -0.094 | -0.092 | -0.100 |
| | | (0.004) | (0.004) | (0.003) | | (0.601) | (0.610) | (0.555) | | (0.399) | (0.411) | (0.374) |
| *Capex* | | -0.999$^{a}$ | -1.000$^{a}$ | -0.985$^{a}$ | | -0.607$^{a}$ | -0.607$^{a}$ | -0.595$^{a}$ | | -1.972$^{a}$ | -1.971$^{a}$ | -1.950$^{a}$ |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |
| *ROA* | | 0.602$^{a}$ | 0.604$^{a}$ | 0.550$^{a}$ | | 0.355$^{a}$ | 0.357$^{a}$ | 0.318$^{a}$ | | 0.875$^{a}$ | 0.877$^{a}$ | 0.800$^{a}$ |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Stock_Return* | | 0.123[a] | 0.123[a] | 0.119[a] | | 0.071[a] | 0.071[a] | 0.067[a] | | 0.228[a] | 0.228[a] | 0.222[a] |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) |
| *Volatility* | | -1.851[b] | -2.010[a] | -0.944 | | -1.119[b] | -1.227[a] | -0.560 | | -2.643[c] | -2.883[b] | -1.085 |
| | | (0.013) | (0.007) | (0.210) | | (0.019) | (0.010) | (0.246) | | (0.059) | (0.040) | (0.442) |
| *Credit_Rating* | | 0.148[a] | 0.147[a] | 0.144[a] | | 0.117[a] | 0.116[a] | 0.113[a] | | 0.178[a] | 0.177[a] | 0.173[a] |
| | | (0.000) | (0.000) | (0.000) | | (0.000) | (0.000) | (0.000) | | (0.001) | (0.001) | (0.002) |
| *Firm_Age* | | -0.003[a] | -0.003[a] | -0.002[b] | | -0.002[a] | -0.002[a] | -0.001[a] | | -0.004[a] | -0.004 | -0.003[b] |
| | | (0.001) | (0.000) | (0.003) | | (0.000) | (0.000) | (0.001) | | (0.001) | (0.001) | (0.013) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo R2 | 0.0300 | 0.0923 | 0.0922 | 0.0961 | 0.027 | 0.0554 | 0.0551 | 0.0605 | 0.0237 | 0.0790 | 0.0790 | 0.0806 |
| N | 49,450 | 41,203 | 41,203 | 41,203 | 49,454 | 41,204 | 41,204 | 41,204 | 49,454 | 41,204 | 41,204 | 41,204 |

**Table 3**
**The effect of coordinated monitoring on M&A intensity: Additional analysis**
Coefficients in columns [1]-[4] are estimated by probit, whereas coefficients in columns [5]-[8] and [9]-[12] are estimated using Tobit and negative binomial, respectively. M&A Incidence is a dummy equal to 0 if the firm makes and acquisition, and zero otherwise. Aggregate M&A Deal Value is the sum of individual relative deal values by acquirer. We require each relative deal value to be at least 1% of acquirer market value of equity. Number of M&A is the number of M&A transactions by acquirer. Explanatory variables are measured at the firm level and are lagged one year relative to the dependent variable. Coefficient estimates on all distance variables have been multiplied by 10,000. Industries are defined by 2-digit SIC code. Standard errors are adjusted for heteroscedasticity and clustering at the firm level. The numbers in parentheses are *p*-values. Superscripts *a*, *b*, and *c* indicate significance at the 1, 5, and 10% levels, respectively. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

**Panel A: Additional control variables**

| Dependent Variable | M&A incidence | | | | | Aggregate M&A deal value | | | | | Number of M&A | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] | [15] |
| ***Investor_Distance*** | -0.494$^a$ (0.000) | -0.457$^a$ (0.001) | -0.458$^a$ (0.001) | -0.449$^a$ (0.001) | -0.444$^a$ (0.001) | -0.269$^a$ (0.001) | -0.243$^a$ (0.002) | -0.232$^a$ (0.005) | -0.237$^a$ (0.002) | -0.235$^a$ (0.000) | -0.955$^a$ (0.000) | -0.884$^a$ (0.000) | -1.005$^a$ (0.000) | -0.865$^a$ (0.000) | -0.854$^a$ (0.000) |
| *Firm_Distance* | 0.123 (0.482) | 0.093 (0.583) | 0.214 (0.257) | 0.084 (0.621) | 0.096 (0.569) | 0.015 (0.874) | 0.001 (0.984) | 0.100 (0.306) | -0.001 (0.995) | -0.005 (0.954) | -0.064 (0.834) | -0.110 (0.714) | 0.056 (0.863) | -0.124 (0.678) | -0.121 (0.688) |
| *Institutional_Ownership* | 0.495$^a$ (0.000) | 0.532$^a$ (0.000) | 0.480$^a$ (0.000) | 0.454$^a$ (0.000) | 0.479$^a$ (0.000) | 0.352$^a$ (0.000) | 0.365$^a$ (0.000) | 0.304$^a$ (0.000) | 0.313$^a$ (0.000) | 0.330$^a$ (0.000) | 0.635$^a$ (0.000) | 0.708$^a$ (0.000) | 0.618$^a$ (0.000) | 0.579$^a$ (0.000) | 0.630$^a$ (0.000) |
| ***Hedge_Fund_Activism*** | -0.063 (0.270) | | | | | -0.047 (0.187) | | | | | -0.075 (0.430) | | | | |
| ***Variation_in_Ownership*** | | -1.697$^a$ (0.000) | | | | | -1.108$^a$ (0.000) | | | | | -3.032$^a$ (0.000) | | | |
| ***Investment_Horizon*** | | | 0.323$^a$ (0.004) | | | | | 0.243$^a$ (0.000) | | | | | 0.571$^a$ (0.001) | | |
| ***Committed_Investors*** | | | | -0.160$^a$ (0.000) | | | | | -0.107$^a$ (0.000) | | | | | -0.288$^a$ (0.000) | |
| ***Firm_Concentration*** | | | | | -0.037 (0.894) | | | | | -0.177 (0.255) | | | | | -0.106 (0.820) |
| *Firm_Size* | 0.136$^a$ (0.000) | 0.128$^a$ (0.000) | 0.139$^a$ (0.000) | 0.136$^a$ (0.000) | 0.133$^a$ (0.000) | 0.019$^a$ (0.000) | 0.016$^a$ (0.003) | 0.019$^a$ (0.000) | 0.021$^a$ (0.000) | 0.020$^a$ (0.000) | 0.308$^a$ (0.000) | 0.291$^a$ (0.000) | 0.309$^a$ (0.000) | 0.305$^a$ (0.000) | 0.299$^a$ (0.000) |
| *Market_to_Book* | -0.029$^a$ (0.001) | -0.032$^a$ (0.000) | -0.034$^a$ (0.000) | -0.037$^a$ (0.000) | -0.033$^a$ (0.000) | -0.024$^a$ (0.000) | -0.026$^a$ (0.000) | -0.025$^a$ (0.000) | -0.028$^a$ (0.000) | -0.026$^a$ (0.000) | -0.062$^a$ (0.000) | -0.066$^a$ (0.000) | -0.071$^a$ (0.000) | -0.073$^a$ (0.000) | -0.066$^a$ (0.000) |
| *Cash_Holdings* | 0.022 (0.742) | 0.004 (0.939) | -0.030 (0.684) | -0.015 (0.814) | 0.006 (0.920) | 0.039 (0.314) | 0.030 (0.408) | 0.011 (0.776) | 0.012 (0.741) | 0.035 (0.342) | -0.001 (0.988) | -0.014 (0.906) | -0.008 (0.955) | -0.049 (0.698) | -0.006 (0.959) |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Leverage* | -0.180[a] | -0.187[a] | -0.219[a] | -0.195[a] | -0.191[a] | -0.024 | -0.019 | -0.036 | -0.026 | -0.022 | -0.082 | -0.097 | -0.194 | -0.113 | -0.100 |
| | (0.007) | (0.004) | (0.002) | (0.003) | (0.003) | (0.532) | (0.606) | (0.344) | (0.480) | (0.544) | (0.484) | (0.389) | (0.117) | (0.316) | (0.374) |
| *Capex* | -0.901[a] | -0.990[a] | -1.059[a] | -0.970[a] | -0.989[a] | -0.557[a] | -0.599[a] | -0.592[a] | -0.574[a] | -0.602[a] | -1.846[a] | -1.955[a] | -1.687[a] | -1.896[a] | -1.952[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *ROA* | 0.585[a] | 0.539[a] | 0.473[a] | 0.555[a] | 0.552[a] | 0.333[a] | 0.310[a] | 0.249[a] | 0.313[a] | 0.318[a] | 0.797[a] | 0.785[a] | 0.627[a] | 0.799[a] | 0.808[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Stock_Return* | 0.109[a] | 0.118[a] | 0.138[a] | 0.110[a] | 0.119[a] | 0.064[a] | 0.067[a] | 0.072[a] | 0.061[a] | 0.067[a] | 0.208[a] | 0.221[a] | 0.244[a] | 0.204[a] | 0.221[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Volatility* | -0.195 | -0.939 | -1.568[c] | -1.389[c] | -0.911 | -0.179 | -0.550 | -1.191[b] | -0.917[b] | -0.533 | -0.047 | -1.072 | -2.817[c] | -1.983 | -0.985 |
| | (0.801) | (0.214) | (0.072) | (0.070) | (0.227) | (0.723) | (0.256) | (0.020) | (0.053) | (0.271) | (0.974) | (0.447) | (0.069) | (0.160) | (0.484) |
| *Credit_Rating* | 0.141[a] | 0.144[a] | 0.160[a] | 0.143[a] | 0.144[a] | 0.115[a] | 0.113[a] | 0.118[a] | 0.111[a] | 0.113[a] | 0.176[a] | 0.174[a] | 0.207[a] | 0.168[a] | 0.176[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.002) | (0.001) | (0.000) | (0.002) | (0.001) |
| *Firm_Age* | -0.002[a] | -0.002[a] | -0.002[b] | -0.002[a] | -0.002[a] | -0.001[a] | -0.001[a] | -0.001[b] | -0.001[a] | -0.001[a] | -0.003[b] | -0.003[b] | -0.002[b] | -0.003[b] | -0.003[b] |
| | (0.006) | (0.003) | (0.018) | (0.004) | (0.003) | (0.004) | (0.002) | (0.015) | (0.002) | (0.001) | (0.021) | (0.014) | (0.047) | (0.017) | (0.016) |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo R2 | 0.0958 | 0.0968 | 0.1047 | 0.0972 | 0.0958 | 0.0616 | 0.0615 | 0.0689 | 0.0630 | 0.0604 | 0.0829 | 0.0812 | 0.0884 | 0.0817 | 0.0804 |
| N | 36,718 | 41,164 | 32,551 | 40,639 | 41,147 | 36,718 | 41,165 | 32,566 | 40,640 | 41,148 | 36,718 | 41,165 | 32,566 | 40,640 | 41,148 |

**Panel B: Investor group, state, county, and MSA fixed effects**

| Dependent Variable | M&A incidence | | | | | Aggregate M&A deal value | | | | | Number of M&A deals | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] | [15] |
| ***Investor_Distance*** | -0.453[a] | -0.426[a] | -0.395[a] | -0.425[a] | -0.445[a] | -0.197[b] | -0.226[a] | -0.200[a] | -0.300[a] | -0.232[a] | -0.962[a] | -0.858[a] | -0.782[a] | -0.819[a] | -0.836[a] |
| | (0.010) | (0.002) | (0.003) | (0.002) | (0.000) | (0.032) | (0.004) | (0.010) | (0.003) | (0.003) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Firm_Distance* | 0.212 | 0.102 | 0.048 | 0.272 | 0.177 | -0.006 | 0.035 | -0.039 | 0.081 | 0.046 | 0.057 | 0.285 | -0.042 | 0.173 | 0.122 |
| | (0.371) | (0.599) | (0.791) | (0.273) | (0.336) | (0.958) | (0.760) | (0.706) | (0.668) | (0.654) | (0.882) | (0.401) | (0.887) | (0.695) | (0.705) |
| *Institutional_Ownership* | 0.519[a] | 0.469[a] | 0.480[a] | 0.490[a] | 0.497[a] | 0.296[a] | 0.322[a] | 0.328[a] | 0.336[a] | 0.336[a] | 0.635[a] | 0.601[a] | 0.626[a] | 0.643[a] | 0.646[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Firm_Size* | 0.122[a] | 0.134[a] | 0.135[a] | 0.129[a] | 0.130[a] | 0.004 | 0.020[a] | 0.020[a] | 0.017[a] | 0.018[a] | 0.269[a] | 0.303[a] | 0.298[a] | 0.289[a] | 0.291[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.481) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Market_to_Book* | -0.061[a] | -0.032[a] | -0.031[a] | -0.031[a] | -0.031[a] | -0.039[a] | -0.025[a] | -0.025[a] | -0.025[a] | -0.025[a] | -0.089[a] | -0.064[a] | -0.063[a] | -0.063[a] | -0.065[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| *Cash_Holdings* | 0.014 | 0.014 | 0.005 | -0.009 | -0.006 | 0.049 | 0.042 | 0.032 | 0.026 | 0.026 | 0.006 | 0.001 | -0.041 | -0.040 | -0.039 |
| | (0.849) | (0.824) | (0.933) | (0.887) | (0.923) | (0.220) | (0.246) | (0.374) | (0.300) | (0.464) | (0.961) | (0.998) | (0.732) | (0.740) | (0.738) |
| *Leverage* | -0.178[b] | -0.183[b] | -0.205[a] | -0.215[a] | -0.216[a] | 0.022 | -0.017 | -0.029 | -0.034 | -0.035 | 0.012 | -0.108 | -0.139 | -0.179 | -0.182[c] |
| | (0.019) | (0.004) | (0.001) | (0.001) | (0.001) | (0.574) | (0.638) | (0.430) | (0.503) | (0.337) | (0.919) | (0.332) | (0.209) | (0.110) | (0.096) |
| *Capex* | -0.969[a] | -1.009[a] | -1.020[a] | -0.993[a] | -1.016[a] | -0.519[a] | -0.598[a] | -0.606[a] | -0.588[a] | -0.594[a] | -1.740[a] | -1.951[a] | -1.937[a] | -1.922[a] | -1.953[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *ROA* | 0.543[a] | 0.553[a] | 0.547[a] | 0.566[a] | 0.584[a] | 0.296[a] | 0.320[a] | 0.314[a] | 0.324[a] | 0.336[a] | 0.664[a] | 0.806[a] | 0.775[a] | 0.832[a] | 0.860[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Stock_Return* | 0.138[a] | 0.118[a] | 0.119[a] | 0.118[a] | 0.118[a] | 0.066[a] | 0.066[a] | 0.067[a] | 0.066[a] | 0.066[a] | 0.223[a] | 0.217[a] | 0.223[a] | 0.222[a] | 0.219[a] |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Volatility* | -1.915[b] | -1.097 | -0.985 | -1.117 | -1.007 | -1.060[b] | -0.664 | -0.592 | -0.650 | -0.571 | -3.370[b] | -1.348 | -1.262 | -1.361 | -1.119 |
| | (0.040) | (0.149) | (0.196) | (0.141) | (0.187) | (0.049) | (0.173) | (0.225) | (0.180) | (0.236) | (0.043) | (0.345) | (0.371) | (0.338) | (0.423) |
| *Credit_Rating* | 0.062[c] | 0.144[a] | 0.140[a] | 0.149[a] | 0.154[a] | 0.046[a] | 0.113[a] | 0.112[a] | 0.114[a] | 0.116[a] | 0.081 | 0.167[a] | 0.152[a] | 0.186[a] | 0.193[a] |
| | (0.082) | (0.000) | (0.000) | (0.000) | (0.000) | (0.010) | (0.000) | (0.000) | (0.000) | (0.000) | (0.168) | (0.002) | (0.003) | (0.001) | (0.000) |
| *Firm_Age* | -0.001[c] | -0.002[a] | -0.002[a] | -0.002[a] | -0.002[a] | -0.001 | -0.001[a] | -0.001[a] | -0.001[a] | -0.001[a] | -0.003[b] | -0.003[b] | -0.002[b] | -0.003[a] | -0.003[a] |
| | (0.076) | (0.005) | (0.010) | (0.002) | (0.002) | (0.186) | (0.003) | (0.006) | (0.002) | (0.001) | (0.027) | (0.014) | (0.033) | (0.006) | (0.006) |
| Investor Group Fixed Effects | Yes | - | - | - | - | Yes | - | - | - | - | Yes | - | - | - | - |
| State Fixed Effects | - | Yes | - | - | - | - | Yes | - | - | - | - | Yes | - | - | - |
| County Fixed Effects | - | - | Yes | - | - | - | - | Yes | - | - | - | - | Yes | - | - |
| MSA Fixed Effects | - | - | - | Yes | - | - | - | - | Yes | - | - | - | - | Yes | - |
| MSA x Year Fixed Effects | - | - | - | - | Yes | - | - | - | - | Yes | - | - | - | - | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Pseudo R2 | 0.1345 | 0.0987 | 0.1025 | 0.0961 | 0.1021 | 0.2724 | 0.0637 | 0.0683 | 0.0619 | 0.0689 | 0.2125 | 0.0833 | 0.0864 | 0.0768 | 0.0807 |
| N | 27,702 | 41,047 | 40,916 | 40,936 | 40,936 | 39,305 | 41,061 | 41,061 | 40,937 | 40,937 | 39,305 | 41,061 | 41,061 | 40,937 | 40,937 |

**Table 4**
**The effect of coordinated monitoring on value created by M&A**

Regressions are estimated by ordinary least squares (OLS). Dependent variable is a five-day (-2, +2) cumulative abnormal return for the acquirer around the M&A announcement. The return is estimated using market-adjusted-return model relative to a CRSP value-weighted stock market index. We require each relative deal value to be at least 1% of acquirer market value of equity. Coefficient estimates on all distance variables have been multiplied by 10,000. Standard errors are adjusted for heteroscedasticity and clustering at the firm level. The numbers in parentheses are *p*-values. Superscripts *a*, *b*, and *c* indicate significance at the 1, 5, and 10% levels, respectively. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

**Panel A: Publicly traded targets**

| Dependent Variable | Acquirer's 5-day Cumulative Abnormal Return | | | |
|---|---|---|---|---|
| | [1] | [2] | [3] | [4] |
| ***Investor_Distance*** | -0.108$^a$ | -0.092$^a$ | -0.092$^a$ | -0.091$^a$ |
| | (0.000) | (0.003) | (0.003) | (0.004) |
| *Firm_Distance* | | -0.050$^c$ | -0.049$^c$ | -0.051$^c$ |
| | | (0.099) | (0.103) | (0.096) |
| *#_Blockholders* | | -0.000 | | |
| | | (0.969) | | |
| *Blockholder_Ownership* | | | -0.008 | |
| | | | (0.673) | |
| *Institutional_Ownership* | | | | 0.003 |
| | | | | (0.740) |
| *Firm_Size* | | -0.004$^a$ | -0.004$^a$ | -0.004$^a$ |
| | | (0.001) | (0.000) | (0.000) |
| *Market_to_Book* | | 0.001 | 0.001 | 0.001 |
| | | (0.530) | (0.534) | (0.512) |
| *ROA* | | 0.011 | 0.012 | 0.011 |
| | | (0.648) | (0.638) | (0.667) |
| *Stock_Return* | | 0.003 | 0.003 | 0.003 |
| | | (0.361) | (0.364) | (0.366) |
| *Leverage* | | 0.017 | 0.017 | 0.018 |
| | | (0.259) | (0.272) | (0.253) |
| *Relative_Deal_Value* | | -0.014$^a$ | -0.014$^a$ | -0.014$^a$ |
| | | (0.010) | (0.009) | (0.010) |
| *Hostile* | | -0.005 | -0.005 | -0.005 |
| | | (0.550) | (0.556) | (0.551) |
| *100%_Cash_Deal* | | 0.014$^a$ | 0.014$^a$ | 0.014$^a$ |
| | | (0.001) | (0.000) | (0.001) |
| *Diversifying* | | 0.005 | 0.005 | 0.005 |
| | | (0.175) | (0.177) | (0.166) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Adjusted R-squared | 0.0816 | 0.1125 | 0.1126 | 0.1126 |
| N | 1,645 | 1,548 | 1,548 | 1,548 |

**Panel B: Public, private, and subsidiary targets**

| Dependent Variable | Acquirer's 5-day Cumulative Abnormal Return | | | |
|---|---|---|---|---|
| | [1] | [2] | [3] | [4] |
| ***Investor_Distance*** | -0.012 | -0.024[b] | -0.024[b] | -0.024[b] |
| | (0.197) | (0.016) | (0.014) | (0.015) |
| *Firm_Distance* | | -0.013 | -0.013 | -0.014 |
| | | (0.185) | (0.185) | (0.184) |
| *#_Blockholders* | | -0.001[a] | | |
| | | (0.000) | | |
| *Blockholder_Ownership* | | | -0.019[a] | |
| | | | (0.000) | |
| *Institutional_Ownership* | | | | -0.004 |
| | | | | (0.242) |
| *Firm_Size* | | -0.003[a] | -0.003[a] | -0.003[a] |
| | | (0.000) | (0.000) | (0.000) |
| *Market_to_Book* | | 0.000 | 0.000 | 0.000 |
| | | (0.545) | (0.539) | (0.559) |
| *ROA* | | 0.012 | 0.011 | 0.011 |
| | | (0.137) | (0.149) | (0.151) |
| *Stock_Return* | | 0.001 | 0.001 | 0.001 |
| | | (0.149) | (0.153) | (0.129) |
| *Leverage* | | -0.001 | -0.001 | -0.001 |
| | | (0.802) | (0.799) | (0.813) |
| *Relative_Deal_Value* | | 0.011[a] | 0.011[a] | 0.011[a] |
| | | (0.000) | (0.000) | (0.000) |
| *Hostile* | | -0.001 | -0.002 | -0.002 |
| | | (0.837) | (0.822) | (0.804) |
| *100%_Cash_Deal* | | 0.003[b] | 0.002[b] | 0.002[b] |
| | | (0.029) | (0.032) | (0.037) |
| *Diversifying* | | -0.001 | -0.001 | -0.001 |
| | | (0.378) | (0.382) | (0.408) |
| *Private_Target* | | 0.013[a] | 0.013[a] | 0.013[a] |
| | | (0.000) | (0.000) | (0.000) |
| Year Fixed Effects | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes |
| Adjusted R-squared | 0.0136 | 0.0340 | 0.0339 | 0.0330 |
| N | 16,096 | 14,307 | 14,307 | 14,307 |

**Table 5**
**The effect of coordinated monitoring on value created by M&A: Additional analysis**
Regressions are estimated by ordinary least-squares (OLS). Dependent variable is a five-day (-2, +2) cumulative abnormal return for the acquirer around the M&A announcement. The return is estimated using market-adjusted-return model relative to a CRSP value-weighted stock market index. We require each relative deal value to be at least 1% of acquirer market value of equity. Coefficient estimates on all distance variables have been multiplied by 10,000. Standard errors are adjusted for heteroscedasticity and clustering at the firm level. The numbers in parentheses are *p*-values. Superscripts *a*, *b*, and *c* indicate significance at the 1, 5, and 10% levels, respectively. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

| Dependent Variable | Acquirer's 5-day Cumulative Abnormal Return | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Target Type | Public | All | Public | All | Public | All | Public | All | Public | All |
| | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] |
| ***Investor_Distance*** | -0.120$^{a}$ | -0.044$^{a}$ | -0.119$^{a}$ | -0.044$^{a}$ | -0.091$^{a}$ | -0.025$^{b}$ | -0.092$^{a}$ | -0.025$^{b}$ | -0.089$^{a}$ | -0.024$^{b}$ |
| | (0.001) | (0.003) | (0.001) | (0.003) | (0.004) | (0.012) | (0.003) | (0.014) | (0.004) | (0.015) |
| *Firm_Distance* | -0.035 | 0.001 | -0.034 | 0.003 | -0.046 | -0.012 | -0.046$^{c}$ | -0.014 | -0.036 | -0.015 |
| | (0.306) | (0.930) | (0.319) | (0.820) | (0.132) | (0.234) | (0.095) | (0.185) | (0.257) | (0.167) |
| *Institutional_Ownership* | 0.000 | -0.009$^{c}$ | 0.000 | -0.009$^{c}$ | 0.005 | -0.004$^{c}$ | 0.003 | -0.004 | 0.003 | -0.004 |
| | (0.944) | (0.072) | (0.937) | (0.066) | (0.655) | (0.260) | (0.731) | (0.243) | (0.740) | (0.244) |
| ***Local_Target*** | 0.000 | 0.003 | | | | | | | | |
| | (0.958) | (0.135) | | | | | | | | |
| ***Distance_Acquirer_Target*** | | | 0.021 | -0.005 | | | | | | |
| | | | (0.400) | (0.608) | | | | | | |
| ***Firm_Concentration*** | | | | | 0.077 | 0.028$^{c}$ | | | | |
| | | | | | (0.109) | (0.093) | | | | |
| ***Cross_Holdings*** | | | | | | | 0.133 | 0.160$^{b}$ | | |
| | | | | | | | (0.332) | (0.049) | | |
| ***MSA*** | | | | | | | | | 0.006 | -0.001 |
| | | | | | | | | | (0.169) | (0.734) |
| *Firm_Size* | -0.005$^{a}$ | -0.003$^{a}$ | -0.006$^{a}$ | -0.003$^{a}$ | -0.005$^{a}$ | -0.003$^{a}$ | -0.004$^{a}$ | -0.003$^{a}$ | -0.004$^{a}$ | -0.003$^{a}$ |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Market_to_Book* | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 |
| | (0.288) | (0.800) | (0.279) | (0.772) | (0.483) | (0.502) | (0.504) | (0.556) | (0.469) | (0.565) |
| *ROA* | 0.009 | 0.006 | 0.010 | 0.005 | 0.014 | 0.012 | 0.011 | 0.011 | 0.012 | 0.011 |
| | (0.737) | (0.593) | (0.722) | (0.611) | (0.570) | (0.118) | (0.667) | (0.151) | (0.635) | (0.155) |
| *Stock_Return* | -0.000 | 0.001 | -0.000 | 0.001 | 0.003 | 0.001 | 0.003 | 0.001 | 0.003 | 0.001 |
| | (0.968) | (0.355) | (0.968) | (0.362) | (0.379) | (0.137) | (0.379) | (0.131) | (0.412) | (0.128) |

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| *Leverage* | 0.009 | 0.006 | 0.010 | 0.006 | 0.018 | -0.001 | 0.018 | -0.000 | 0.019 | -0.000 |
| | (0.591) | (0.323) | (0.572) | (0.338) | (0.255) | (0.763) | (0.242) | (0.826) | (0.229) | (0.817) |
| *Relative_Deal_Value* | -0.017[a] | 0.008[a] | -0.017[a] | 0.008[a] | -0.013[b] | 0.011[a] | -0.014[a] | -0.011[a] | -0.014[b] | -0.011[a] |
| | (0.006) | (0.004) | (0.006) | (0.005) | (0.016) | (0.000) | (0.010) | (0.000) | (0.009) | (0.000) |
| *Hostile* | -0.012 | -0.013 | -0.011 | -0.013 | -0.006 | -0.002 | -0.005 | -0.002 | -0.006 | -0.002 |
| | (0.298) | (0.211) | (0.317) | (0.209) | (0.509) | (0.793) | (0.553) | (0.813) | (0.529) | (0.806) |
| *100% Cash_Deal* | 0.014[a] | 0.006[a] | 0.014[a] | 0.006[a] | 0.014[a] | 0.002[b] | 0.014[a] | 0.002[a] | 0.014[a] | 0.002[a] |
| | (0.003) | (0.001) | (0.003) | (0.001) | (0.000) | (0.040) | (0.000) | (0.037) | (0.001) | (0.037) |
| *Diversifying* | 0.005 | -0.000 | 0.005 | -0.000 | 0.005 | -0.001 | 0.005 | -0.001 | 0.005 | -0.001 |
| | (0.223) | (0.762) | (0.234) | (0.771) | (0.220) | (0.377) | (0.161) | (0.412) | (0.198) | (0.411) |
| *Private_Target* | | 0.016[a] | | 0.016[a] | | 0.014[a] | | 0.014[a] | | 0.013[a] |
| | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted R-squared | 0.1319 | 0.0492 | 0.1324 | 0.0489 | 0.1132 | 0.0336 | 0.1130 | 0.0331 | 0.1138 | 0.0330 |
| N | 1,249 | 6,710 | 1,249 | 6,710 | 1,543 | 14,241 | 1,548 | 14,307 | 1,548 | 14,307 |

**Table 6**
**Coordinated monitoring and the cost of acquiring information about the firm**
Regressions are estimated by ordinary least squares (OLS). Dependent variable is a five-day (-2, +2) cumulative abnormal return for the acquirer around the M&A announcement. The return is estimated using market-adjusted-return model relative to a CRSP value-weighted stock market index. The information cost is defined as in Duchin, Matsusaka, and Ozbas (2010), and classified as "high" if its value is greater than the median, and "low" otherwise. We require each relative deal value to be at least 1% of acquirer market value of equity. Coefficient estimates on all distance variables have been multiplied by 10,000. Standard errors are adjusted for heteroscedasticity and clustering at the firm level. The numbers in parentheses are *p*-values. Superscripts *a*, *b*, and *c* indicate significance at the 1, 5, and 10% levels, respectively. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

| Dependent Variable | Acquirer's 5-day Cumulative Abnormal Return | | | | | |
|---|---|---|---|---|---|---|
| | Information Cost High | | | Information Cost Low | | |
| | [1] | [2] | [3] | [5] | [6] | [7] |
| ***Investor_Distance*** | -0.115$^{b}$ | -0.115$^{b}$ | -0.110$^{b}$ | -0.055 | -0.054 | -0.057 |
| | (0.017) | (0.018) | (0.024) | (0.163) | (0.168) | (0.146) |
| *Firm_Distance* | -0.049 | -0.050 | -0.049 | -0.060$^{c}$ | -0.060$^{c}$ | -0.061 |
| | (0.359) | (0.348) | (0.347) | (0.096) | (0.097) | (0.096) |
| *#_Blockholders* | 0.002 | | | -0.001 | | |
| | (0.369) | | | (0.473) | | |
| *Blockholder_Ownership* | | 0.026 | | | -0.041 | |
| | | (0.323) | | | (0.158) | |
| *Institutional_Ownership* | | | 0.028$^{c}$ | | | 0.000 |
| | | | (0.096) | | | (0.999) |
| *Firm_Size* | -0.010$^{a}$ | -0.010$^{a}$ | -0.012$^{a}$ | -0.001 | -0.002 | -0.001 |
| | (0.000) | (0.000) | (0.000) | (0.412) | (0.254) | (0.659) |
| *Market_to_Book* | -0.003 | -0.003 | -0.003 | 0.001 | 0.001 | 0.001 |
| | (0.226) | (0.223) | (0.286) | (0.295) | (0.304) | (0.293) |
| *ROA* | 0.019 | 0.019 | 0.015 | -0.012 | -0.012 | -0.013 |
| | (0.584) | (0.584) | (0.677) | (0.693) | (0.693) | (0.671) |
| *Stock_Return* | 0.003 | 0.003 | 0.002 | 0.001 | 0.001 | 0.001 |
| | (0.518) | (0.509) | (0.567) | (0.828) | (0.808) | (0.841) |
| *Leverage* | 0.038$^{b}$ | 0.039$^{b}$ | 0.039$^{b}$ | 0.030 | 0.029 | 0.031 |
| | (0.034) | (0.033) | (0.030) | (0.201) | (0.213) | (0.181) |
| *Relative_Deal_Value* | -0.010 | -0.010 | -0.010 | -0.033$^{a}$ | -0.033$^{a}$ | -0.033$^{a}$ |
| | (0.152) | (0.153) | (0.120) | (0.001) | (0.001) | (0.001) |
| *Hostile* | -0.014 | -0.013 | -0.013 | -0.003 | -0.003 | -0.003 |
| | (0.242) | (0.265) | (0.258) | (0.838) | (0.855) | (0.833) |
| *100%_Cash_Deal* | 0.022$^{a}$ | 0.022$^{a}$ | 0.022$^{a}$ | 0.001 | 0.001 | 0.001 |
| | (0.001) | (0.000) | (0.001) | (0.794) | (0.765) | (0.799) |
| *Diversifying* | 0.003 | 0.003 | 0.003 | 0.005 | 0.005 | 0.005 |
| | (0.623) | (0.621) | (0.590) | (0.263) | (0.257) | (0.256) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.1781 | 0.1783 | 0.1805 | 0.1789 | 0.1810 | 0.1782 |
| N | 763 | 763 | 763 | 728 | 728 | 728 |

**Table 7**
**Coordinated monitoring and corporate governance**
Regressions are estimated by ordinary least squares (OLS). Dependent variable is a five-day (-2, +2) cumulative abnormal return for the acquirer around the M&A announcement. The return is estimated using market-adjusted-return model relative to a CRSP value-weighted stock market index. Corporate governance is classified as "good" if the value of the entrenchment index as defined in Bebchuk, Cohen, and Ferrell (2009) is lower or equal to 3, and "bad" otherwise. We require each relative deal value to be at least 1% of acquirer market value of equity. Coefficient estimates on all distance variables have been multiplied by 10,000. Standard errors are adjusted for heteroscedasticity and clustering at the firm level. The numbers in parentheses are *p*-values. Superscripts *a*, *b*, and *c* indicate significance at the 1, 5, and 10% levels, respectively. All variables are winsorized at the 1st and 99th percentiles. Appendix A contains a complete list of variable definitions and their sources.

| Dependent Variable | Acquirer's 5-day Cumulative Abnormal Return | | | | | |
|---|---|---|---|---|---|---|
| | Bad Governance | | | Good Governance | | |
| | [1] | [2] | [3] | [5] | [6] | [7] |
| ***Investor_Distance*** | -0.177$^{b}$ | -0.177$^{b}$ | -0.158$^{b}$ | -0.049 | -0.050 | -0.051 |
| | (0.029) | (0.028) | (0.049) | (0.220) | (0.215) | (0.199) |
| *Firm_Distance* | -0.127 | -0.124 | -0.129 | -0.051 | -0.050 | -0.051 |
| | (0.142) | (0.148) | (0.115) | (0.160) | (0.168) | (0.163) |
| *#_Blockholders* | -0.001 | | | -0.002 | | |
| | (0.701) | | | (0.230) | | |
| *Blockholder_Ownership* | | -0.051 | | | -0.055$^{b}$ | |
| | | (0.344) | | | (0.050) | |
| *Institutional_Ownership* | | | 0.108$^{b}$ | | | -0.000 |
| | | | (0.028) | | | (0.985) |
| *Firm_Size* | -0.001 | -0.001 | 0.001 | -0.004$^{b}$ | -0.005$^{a}$ | -0.003$^{c}$ |
| | (0.886) | (0.732) | (0.833) | (0.022) | (0.009) | (0.053) |
| *Market_to_Book* | -0.012 | -0.011 | -0.014$^{c}$ | 0.001 | 0.001 | 0.001 |
| | (0.139) | (0.154) | (0.077) | (0.531) | (0.526) | (0.551) |
| *ROA* | 0.079 | 0.078 | 0.073 | 0.039 | 0.037 | 0.039 |
| | (0.392) | (0.400) | (0.429) | (0.313) | (0.335) | (0.318) |
| *Stock_Return* | 0.018 | 0.017 | 0.015 | 0.003 | 0.003 | 0.003 |
| | (0.393) | (0.396) | (0.472) | (0.520) | (0.516) | (0.518) |
| *Leverage* | 0.017 | 0.017 | 0.012 | 0.049$^{b}$ | 0.049$^{b}$ | 0.051$^{b}$ |
| | (0.699) | (0.703) | (0.789) | (0.023) | (0.023) | (0.019) |
| *Relative_Deal_Value* | -0.024 | -0.024 | -0.027 | -0.018$^{c}$ | -0.018$^{c}$ | -0.017$^{c}$ |
| | (0.132) | (0.125) | (0.113) | (0.074) | (0.079) | (0.080) |
| *Hostile* | -0.001 | -0.001 | -0.014 | -0.004 | -0.004 | -0.004 |
| | (0.940) | (0.984) | (0.578) | (0.659) | (0.657) | (0.648) |
| *100%_Cash_Deal* | 0.009 | 0.010 | 0.008 | 0.012$^{b}$ | 0.012$^{b}$ | 0.012$^{b}$ |
| | (0.372) | (0.364) | (0.427) | (0.020) | (0.016) | (0.023) |
| *Diversifying* | -0.005 | -0.005 | -0.007 | -0.001 | -0.001 | -0.001 |
| | (0.541) | (0.554) | (0.443) | (0.838) | (0.825) | (0.842) |
| Year Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry Fixed Effects | Yes | Yes | Yes | Yes | Yes | Yes |
| R-squared | 0.3672 | 0.3704 | 0.3883 | 0.1477 | 0.1515 | 0.1457 |
| N | 241 | 241 | 241 | 782 | 782 | 782 |

**Appendix A. Variable names, definitions, and sources of data**

| | |
|---|---|
| | Geographic variables |
| *Investor_Distance* | Equally-weighted geographic distance between the three largest institutional investors (Source: Thomson Reuters, Lipper Marketplace, Compact Disclosure, survey of websites) |
| *Firm_Distance* | Equally-weighted geographic distance between the firm and its three largest institutional investors (Source: Compustat, Thomson Reuters, Lipper Marketplace, Compact Disclosure, survey of websites) |
| *Distance_Acquirer_to_Target* | Geographic distance between the acquirer and the target in the M&A (Source: SDC) |
| *Local_Target* | Dummy equal to one if the target is headquartered within the 60 mile radius of the acquirer, and zero otherwise (Source: SDC) |
| *Firm_Concentration* | Number of firms headquartered within the 60 mile radius from the acquirer divided by the number of all firms reported in Compustat (Source: Compustat) |
| *MSA* | Dummy equal to one if the acquirer is headquartered within 100 miles of one of the ten largest metropolitan statistical areas according to the 2010 United States Census (Source: https://www.census.gov/) |
| | Institutional investor variables |
| *# Blockholders* | Number of institutional investors owning individually at least 5% of firm's common equity (Source: Thomson Reuters) |
| *Blockholder_Ownership* | Total ownership of firm's common equity by all institutional investors identified as blockholders (Source: Thomson Reuters) |
| *Institutional_Ownership* | Total ownership of firm's common equity by institutional investors (Source: Thomson Reuters) |
| *Cross_Holdings* | Fraction of equity invested by institutional investors in the acquirer to the fraction of equity invested by the same institutional investors in the M&A target (Source: Thomson Reuters) |
| | M&A variables |
| *M&A_Incidence* | Dummy equal to one if the firm undertakes an acquisition, and zero otherwise (Source: SDC) |
| *Aggregate_M&A_Deal_Value* | Sum of individual relative deal values by acquirer (Source: SDC) |
| *Number_of_M&A* | Number of M&A transactions by acquirer (Source: SDC) |
| *CAR* | Five-day (-2, +2) cumulative abnormal return for the acquirer around the M&A announcement. The return is estimated with a market-adjusted-return model relative to a CRSP value-weighted stock market index (Source: CRSP) |
| *Relative_Deal_Value* | Deal value divided by acquirer market value of equity (Source: SDC) |
| *100%_Cash_Deal* | Dummy equal to one if M&A is all cash deal, and zero otherwise (Source: SDC) |
| *Hostile* | Dummy equal to one if M&A attitude is classified as hostile, and zero otherwise (Source: SDC) |
| *Diversifying* | Dummy equal to one if the acquirer and the target belong to a different 2-digit SIC category, and zero otherwise (source: SDC) |
| *Private_Target* | Dummy equal to one if the M&A target is a private firm or subsidiary, and zero otherwise (Source: SDC) |

| | |
|---|---|
| | Firm characteristics |
| *Firm_Size* | Logarithmic transformation of the market capitalization of common equity (Source: Compustat) |
| *Market_to_Book* | The sum of the market value of common equity and the book value of total debt divided by the book value of total assets (Source: Compustat) |
| *Cash_Holdings* | Cash and short-term investments divided by the book value of total assets (Source: Compustat) |
| *Leverage* | The sum of long-term debt and debt in current liabilities divided by the book value of total assets (Source: Compustat) |
| *Capex* | Capital expenditures divided by the book value of total assets (Source: Compustat) |
| *ROA* | Operating income before depreciation divided by the book value of total assets (Source: Compustat) |
| *Stock_Return* | Return on common equity measured over a 12-month period using daily data (Source: CRSP) |
| *Volatility* | Standard deviation of daily stock returns over 252 trading days (Source: CRSP) |
| *Credit_Rating* | Dummy equal to one if the borrower has an S&P credit rating, and zero otherwise (Source: Compustat Ratings) |
| *Firm_Age* | Number of years the firm is recorded in CRSP (Source: CRSP) |
| *Information_Cost_Index* | Duchin et al. (2010) measure of the cost of acquiring information about the firm (Source: I/B/E/S) |
| *Entrenchment_Index* | Bebchuk et al. (2009) index of corporate governance (Source: ISS) |
| | Other variables |
| *Hedge_Fund_Activism* | Dummy equal to one if the company is targeted by activist hedge fund, and zero otherwise (Source: Brav, Jiang, and Hyunseob, 2013; Brav, Jiang, and Hyunseob, 2015) |
| *Variation_in_Ownership* | Standard deviation of the equity ownership of the three largest institutional investors (Source: Thomson Reuters) |
| *Investment_Horizon* | This measure is constructed in two steps. First, following Gaspar, Massa, and Matos (2005), we compute the portfolio churn ratio as $\frac{\sum_{j\in Q}\left\lvert N_{j,i,t}P_{j,t} - N_{j,i,t}P_{j,t-1} - N_{j,i,t-1}\Delta P_{j.t}\right\rvert}{\sum_{j\in Q}\frac{N_{j,i,t}P_{j,t} + N_{j,i,t-1}P_{j,t-1}}{2}}$ where $P_{j,t}$ and $N_{j,i,t}$ represent the price and the number of shares of company *j* owned by institutional investor *i* in quarter *t*. Second, we take the weighted average of the total portfolio churn rates of the three largest investors of company *j* over the four consecutive quarters (Source: Thomson Reuters) |
| *Committed_Investors* | Dummy variable equal to one if the majority of the three largest institutional investors are long-term. We follow Bushee (2001) and Bushee and Noe (2000) and consider an institution to be a long-term investor, if it is classified as either "dedicated" or "quasi-indexer". (Source: http://acct.wharton.upenn.edu/faculty/bushee/IIclass.html) |