

# Governance Through Trading on Acquisitions of Public Firms

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## Abstract

We identify an important channel, i.e., acquisitions of public targets, via which the governance through trading (GTT) improves firm values. The disciplinary effect of GTT is more pronounced for firms with higher managerial wealth-performance sensitivity and moderate institutional ownership concentration. Firms with higher GTT also have higher subsequent Tobin's Q and ROA. The effect is stronger after Decimalization and robust to using two instrumental variables. We conduct several exercises to rule out alternative explanations, such as institutional superior information, investor activism, and momentum. Additional tests show that the disciplinary effect of GTT only exists for less-financially-constrained firms and non-all-cash M&As where the agency problem is more likely to be prevalent.

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# 1 Introduction

Previous studies suggest that institutional investors would directly intervene to voice concerns and then influence corporate control. A burgeoning literature proposes the idea of “governance through trading,” in which competitive trading among informed investors also disciplines managers and enhances firm values (Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2011)). For example, Edmans and Manso (2011) argue that the competitive trading could serve as a commitment device to reward and punish managerial decisions and thus elicit efforts ex-ante. In this paper, we propose a governance-through-trading (GTT) measure and investigate whether firms with high GTT are less likely to make value-destroying merger and acquisition (M&A) decisions, particularly on acquisitions of public targets.

The intuition of governance through trading is as follows. If a manager engages in a value-destroying acquisition, then blockholders can express their discontent with the deal by selling the shares. Competition for trading profits among blockholders drives down the stock price accordingly. In contrast, if a manager conducts a value-enhancing acquisition, then blockholders would buy more shares, leading to a higher stock price. As long as a manager’s personal wealth is linked to stock prices, informed trading could credibly penalize or reward the manager after the deal is taken. Assuming the dynamic consistency of this mechanism, managers would have less incentives to engage in value-destroying mergers and acquisitions ex ante because they know that once they really pursue the bad deals, their misconducts would be punished ex post via trading.<sup>1</sup> Essentially, the intensity of competitive trading activities manifests the ability and willingness of informed investors to adopt governance through trading.

The reason why we focus on M&As, especially on acquisitions of public targets, is that they are the large and readily observable forms of corporate investments with value implications and heightened agency conflicts. There are many economically-motivated or shareholder-driven incentives for M&A decisions, such as economies of scale, vertical integration, and expertise. However,

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<sup>1</sup>Edmans and Manso (2011) state that “...multiple blockholders trade aggressively, augmenting price informativeness, and thus constitute a commitment device to reward the manager ex-post for his actions... In effect, blockholders trading rewards managerial effort ex-post by impounding its effects into the stock price, therefore inducing it ex-ante.”

as discussed in Jensen (1986), managers might be tempted to conduct M&As in order to enjoy higher pay and more prestige of running a larger firm, even if the deal does not maximize shareholder values. Similarly, Morck, Shleifer, and Vishny (1990) find evidence that bidding firms' managers tend to sacrifice shareholders' values if the investment (M&A) provides managers with large private benefits.<sup>2</sup> Moreover, the prior literature also have shown that, comparing to private targets, acquisitions of public target are on average more likely to be value-destroying (e.g., Fuller, Netter, and Stegemoller (2002) and Moeller, Schlingemann, and Stulz (2004)). We thus focus on deals of public firms and propose our hypothesis that *the GTT of an acquiring firm is positively correlated to the subsequent M&A abnormal announcement return, particularly for deals of acquiring public targets.*

To test our hypothesis, we construct a measure to capture the intense of informed trading. Edmans and Manso (2011, p.2402) note that “Our model does not assume that blockholders have control rights... It thus can apply to shareholders with less than 5% and suggests that empirical studies of blockholders may wish to use data sources other than 13D filings to identify sizable shareholders below the 5% threshold.” Besides, Gallagher, Gardner, and Swan (2013) also argue that since a 5% stake might be a prerequisite for exerting control, defining blockholder as a shareholder who owns more than 5% shares of a firm might capture the confounding effect of governance through voice. Hence, to focus on institutional investors who are more likely to exert governance through trading and to provide a large-sample evidence, we employ the Thomson-Reuters 13F data for the construction of our GTT measure.

In particular, we first sum up the absolute quarterly change of each institutional investors' holding over quarters  $-4$  to  $-1$  prior and adjacent to the quarter of the M&A announcement and divide this summation by the total stock trading volume. We then use the natural logarithm of this ratio as our GTT measure. As we use the snapshots of quarterly institutional holding data for the construction, GTT could also be viewed as a measure of institutional trading liquidity. Specifically,

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<sup>2</sup>For example, Morck et al. (1990) show that managers would conduct an unrelated acquisition even when it harms firms' value to reduce the risk of their human capital (Amihud and Lev (1981)). In particular, Morck et al. (1990) also state that “Other things equal, the net present value of an acquisition with high private benefits should be lower than that of an acquisition with no such benefits.”

a high GTT reflects that institutional investors of the acquiring firm have traded competitively prior to the M&A announcement. It demonstrates that investors are sufficiently vigilant and also capable of credibly rewarding or exiting.<sup>3</sup> Hence, managers would be incentivised to make value-enhancing M&A decisions ex-ante given their significant interests in the firm's stock price, even without actual exit of institutional investors ex-post.<sup>4</sup>

We collect U.S. mergers and acquisitions observations from the Securities Data Corporation (SDC). We then match the M&A observations with GTT measure and obtain 9,132 mergers and acquisitions between 1981 and 2013, with 1,558 deals of public targets. Overall, we find supportive evidence on our hypothesis that GTT is positively and significantly associated with acquirers' 5-day abnormal announcement returns. More importantly, we find that this positive effect exists only for acquisitions of public firms but not for acquisitions of non-public firms, including private and subsidiary targets. This finding is consistent with the literature that acquisitions of public targets are more likely to be value-destroying and bear agency costs of managerial discretion such that our disciplining effect of governance through trading would be discernible (e.g., Morck et al. (1990)).<sup>5</sup> Moreover, the economic magnitude of GTT's disciplining effect is substantial. For the acquisitions of public targets, we find that a one-standard-deviation increase in GTT leads to an increase in 5-day abnormal announcement returns of 7.9% after controlling for a set of firm and deal characteristics. As our hypothesis is regarding the disciplining force of GTT on managerial behavior, the rest of our analyses will focus on the acquisitions of public targets, among which severe agency problems are more likely to exhibit.<sup>6</sup>

To better link our hypothesis with empirical findings, we investigate the economic mechanism behind the disciplining force of our GTT measure. Institutional trading would not directly reward

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<sup>3</sup>In Section 2.2, we show that the GTT measure is positively related to price informativeness.

<sup>4</sup>Our argument is similar to that in Gallagher et al. (2013) who argue that "...informed trading activity credibly rewards (penalizes) the manager whose stock holdings are exogenously given and whose hidden actions are likely to be personally costly if beneficial to firm value."

<sup>5</sup>Our results are also consistent with the argument in Admati and Pfleiderer (2009) that the governance impact of trading (exit) only disciplines managers in agency problems where managers conduct value-destroying actions for their own private benefits but not in situations where managers carry personal costs to take on valuable actions for shareholders.

<sup>6</sup>We find similar results by using the full sample of mergers and acquisitions for all the analysis in our paper. The result is available upon request.

or punish a manager unless the manager has a significant interest in stock prices. We thus adopt the measure of wealth–performance sensitivity (WPS), proposed by Edmans, Gabaix, and Landier (2009), to gauge the extent to which managerial personal wealth is related to stock prices. We find that the impact of GTT on M&A announcement returns is more pronounced for firms with higher WPS. This result provides an important check on the economic mechanism as it directly links our GTT measure with the managerial incentive and behavior.

Next, we investigate whether the disciplining effect of GTT exhibits the pattern implied in the model of Edmans and Manso (2011). They argue that when the institutional ownership structure is very concentrated, institutional investors prefer to undertake direct interventions (voice) rather than governance through trading owing to an alleviated free-rider problem of intervention as well as a heightened price impact of trading. On the other hand, when the ownership structure is very diffused, the competition for trading profits among investors is too severe such that investors lose incentives to gather information about the firm. Hence, if our GTT measure indeed represents the disciplining force of institutional trading, we expect a hump-shaped relationship between Institutional Ownership Concentration ratio (IOC) and the impact of GTT on M&A announcement returns. In particular, when regressing acquirer returns on the interaction terms both of  $GTT \times IOC$  and of  $GTT \times IOC^2$ , we find supportive evidence for the hump-shaped relationship. This result lends support to the model implication of Edmans and Manso (2011) that governance through trading is mostly effective when institutional ownership is mildly diffused and corroborates the interpretation of governance through trading for our main findings as well.

Further, we find that there is a positive effect of GTT on firm operating performance (proxied by industry-adjusted return on asset) and firm value (proxied by industry-adjusted Tobin's Q). This set of tests could be viewed as a validity check that GTT measure provides consistent results with those in Bharath, Jayaraman, and Nagar (2013). We also find that GTT is negatively related to the future abnormal capital expenditure and hazard rates between two investment spikes, the measures for over-investments in Titman, Wei, and Xie (2004) and Billett, Garfinkel, and Jiang (2011), respectively. Nevertheless, these two alternative over-investment measures do not have

direct value implications.<sup>7</sup> On the contrary, relying on announcement returns, we could directly test whether GTT indeed improves firm value via M&A investments.

As our GTT measure is constructed based on snapshots of each institutional investors' position changes, the potential endogeneity concern might arise when some unobserved factors simultaneously affect investors' trading decisions and firms' M&A decisions. To address this concern, we employ Decimalization as an exogenous positive shock to overall liquidity. In our context, we expect that after Decimalization, the credibility of the disciplining effect of institutional trading would be strengthened as institutional investors' overall trading costs become reduced. We find consistent evidence that the positive association between GTT and acquirer returns is stronger after Decimalization.<sup>8</sup>

One may still concern that our results are driven by certain reasons why institutional investors trade, such as institutional investors' selection (picking), activism (direct monitoring), or momentum trading. Given that none of these explanations could be attributed to managerial compensations, our evidence regarding the influence of WPS on GTT helps to rule out these alternative explanations (Section 3.2). Nevertheless, we perform two exercises to tackle these issues.

First, we address the first two alternative explanations by using subsample analysis based on the changes in institutional ownership ratio (IOR). If institutional investors select (pick) a firm whose manager is going to engage in value-enhancing M&A, they would have been increasing their equity positions, thereby leading to a positive association between the lagged GTT and acquirer returns. Hence, if our results are mainly driven by the selection of institutional investors, we should not observe the GTT effect for firms with reduced IOR. The same test can also be used to address the concern on shareholder activism because institutional investors tend to accumulate large stakes before they start to intervene in firms' operations (e.g., Maug (1998) and Gantchev and Jotikasthira (2017)), similar to what they do before picking a firm with good performance. Hence, if it is because of investors' activism that GTT positively relates to acquirer returns, we are

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<sup>7</sup>These results are not reported for brevity and available upon request.

<sup>8</sup>We find similar results when using a short window of time, i.e. three years before and after Decimalization (1998-2000 as pre-Decimalization and 2002-2004 as post-Decimalization).

supposed to observe the level of institutional ownership (IOR) either being unchanged (activists buying shares from other institutional investors) or being increased (activists buying shares from retail investors.) In other words, we are supposed to observe an insignificant relation between GTT and acquirer returns for firms with reduced IOR if our aforementioned results reflect only the benefits of activism. However, both concerns are alleviated as our results remain significant and qualitatively similar for firms with reduced IOR.

Second, we examine whether the momentum trading drives our previous findings by decomposing GTT based on institutional investors' investment horizons. The literature has shown that momentum traders, who tend to buy or sell shares based on stocks' past returns, are more likely to have short investment horizons (Bushee (1998)). Bushee (2001) classifies institutional investors into different types based on their investment horizons. According to this classification, transient institutional investors have short investment horizon and high portfolio turnover. Accordingly, we decompose GTT measure into "transient GTT" and "non-transient GTT." If momentum trading mainly drives our results, we should observe a significant correlation between "transient GTT" and M&A abnormal announcement returns. In contrast, we only find significant results when using "non-transient GTT." This finding is also consistent with the argument in Edmans and Manso (2011) that long-term investors' trading has a stronger disciplining effect on managerial behavior. Collectively, these two sets of tests help to rule out that our findings are driven by other possible determinants of institutional trading and further support the governance-through-trading interpretation of our main findings.

Moreover, we perform two additional tests to investigate how the level of firms' financial constraints and the payment method of M&A deals affect the disciplining effect of GTT. First, prior studies suggest that financially constrained firms are less likely to experience self-interested investments due to limited managerial discretion (e.g., Jensen (1986), Stulz (1990), and Richardson (2006), etc.) We adopt the WW index (Whited and Wu (2006)) to gauge the level of financial constraints. Consistent with the literature, we find that the governance effect of GTT exists only at less financially constrained firms. Second, Jensen (2005) argues that equity overvaluation could be

a root cause of agency problems. Specifically, he suggests that managers might exploit overvalued equity (cheap equity capital) to make acquisitions that harm shareholders' value in order to appear to justify the high growth expectations. Accordingly, we find that the positive association between GTT and CAR (-2,2) exists only for M&A deals whose payment method is at least partially by equity. Both sets of results provide corroborative evidence that our findings can be attributed to the disciplining effect of governance through trading. Finally, prior research has shown that anti-takeover provisions influence corporate investments, in particular, mergers and acquisitions (e.g., Gompers, Ishii, and Metrick (2003), Bebchuk, Cohen, and Ferrell (2009), and Masulis, Wang, and Xie (2007)). Thus, we control for G-index and E-index and find that our main result still holds with a smaller sample that has the anti-takeover provisions data.

Our paper sheds light on two strands of literature. Primarily, our findings add to the governance-through-trading literature on how liquidity affects the credibility of exit threat, thereby improving the subsequent firm value (e.g., Bharath et al. (2013), Gallagher et al. (2013), and Edmans, Fang, and Zur (2013)).<sup>9</sup> Our paper contributes to this literature by probing deeper into the channel, i.e., M&As, through which firm value increases. We find that governance through trading disciplines managers from conducting value-destroying acquisitions, particularly for deals of public targets. Our paper is also related to Dou, Hope, Thomas, and Zou (2016) and Chemmanur, Hu, Li, and Xie (2018) who find that governance through trading affects earnings manipulation and the nature of a CEO turnover, respectively.

Second, our paper contributes to the M&A literature on the determinants of acquirer returns, such as business diversification and unlisted target (e.g., Graham, Lemmon, and Wolf (2002) and Hazelkorn, Zenner, and Shivdasani (2004)). In particular, our results complement Masulis et al. (2007) and Chen, Harford, and Lin (2015) who show that anti-takeover provisions and analyst coverage have governance effect on the M&A decisions, respectively. In this regard, our paper

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<sup>9</sup>The concept of governance-through-trading closely relates to the studies on institutional investors' voting with feet (e.g., Parrino, Sias, and Starks (2003), Gillan and Starks (2007), and McCahery, Sautner, and Starks (2016)), theories on the threat of exit (e.g., Edmans (2009) and Admati and Pfleiderer (2009)), as well as recent theoretical papers about the interaction between intervention and exit (e.g., Dasgupta and Piacentino (2014), Levit (2014), and Fos and Kahn (2015)).



is closely related to Roosenboom, Schlingemann, and Vasconcelos (2014) who find a negative association between stock liquidity (Amihud (2002)) and acquirer returns for private targets. They argue that the finding is consistent with the notion that liquidity impedes institutional monitoring (governance through “voice”). Our paper differs from them in two ways. First, we find that the effect of GTT on the acquirer returns exists only among deals of the public targets but not for the private targets. As the existing literature has shown that acquisitions of public targets are more likely to be value-destroying and susceptible to agency problems (e.g., Fuller et al. (2002) and Moeller et al. (2004)), we would be able to attribute the finding to the governance effect of trading. Second, we document a significant impact of the wealth-performance sensitivity on the positive association between GTT and acquirer returns. The existing models of governance through trading indicate that the monitoring effect is less relevant if the CEO’s wealth is insufficiently linked to stock price (Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2011)). Our findings are in line with the models’ implications while they only find weak evidence on how CEO incentives mitigate the effect from liquidity.<sup>10</sup>

## 2 Data and Key Variables

### 2.1 Data

We follow Masulis et al. (2007) and Chen et al. (2015) to apply filters to obtain observations from the U.S. Mergers and Acquisitions database provided by the Securities Data Corporation (SDC). More specifically, we impose the following restrictions: (1) the acquisition must be completed; (2) the acquiring firms must own less than 50% of the target firms’ shares before the acquisition and

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<sup>10</sup>Roosenboom et al. (2014) derive data from Thomson-Reuters 13F filings and define blockholders as the institutions that hold more than 5% of shares outstanding of the acquiring firms. Since investors having a large block are more likely to exert direct intervention (“voice”), Roosenboom et al.’s (2014) empirical setup tends to capture the governance effect from voice. Besides, although Roosenboom et al. (2014) find the negative association between liquidity and acquirer returns to be strengthened for firms with a lower number of blockholders, to attribute this finding to the mitigating effect of governance through trading, it is expected that CEO incentives have a significant impact. As they do not find a significant effect of the continuous interaction between stock liquidity and CEO incentives on acquirer returns, we argue that Roosenboom et al.’s (2014) results are more likely to be consistent with the arguments of Coffee (1991) and Bhide (1993) that when there are fewer investors, they might have more interest in exercising a “voice.”

more than 50% of the target firms' shares after the acquisition; (3) the deal value disclosed in the SDC database must be more than \$1 million and more than 1% of the market value of the acquiring firm; (4) the acquiring firm must have corresponding data from Thomson-Reuters Institutional Holdings (13F) database; (5) the acquiring firm must have corresponding financial information in COMPUSTAT and CRSP. Since we are interested in the effect of lagged GTT on acquirer returns, we focus on time period between 1981 and 2013. After imposing these restrictions, we identify 9,132 mergers and acquisitions transactions with deal types of public targets, private targets, and subsidiary targets. In particular, we have 1,558 deals involve public targets.

We obtain stock prices, stock returns, trading volume data, and the number of shares outstanding from the Center for Research in Security Prices. Relevant accounting data are from COMPUSTAT. We use the data from Thomson-Reuters Institutional Holdings (13F) database to construct our main variable of interest GTT (1980 to 2012). The scaled wealth-performance sensitivity (Scaled-WPS) is from Alex Edmans's website. Governance index (G-index) is obtained from Andrew Metrick's website. Managerial entrenchment index (E-index) is obtained from Lucian Bebchuk's website. In addition, AdjPIN is from Jefferson Duarte's website.

## **2.2 Measure of Governance through Trading**

As Edmans and Manso (2011) suggest, once the managerial action has taken place, blockholders are concerned only with their own portfolio performance by trading aggressively to compete for a profit. It is the competitive informed trades that drive stock prices to firms' fundamental values based on managers' actions. When stock prices reflect the true effects of manager's actions, managers who are incentivized by stock compensation would exert more effort on behalf of shareholders ex-ante, thereby enhancing firm values. The improved firm value is due to the better managerial motivation.<sup>11</sup>

The prior literature has shown that noise trading is less likely to contain information. Thus,

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<sup>11</sup>Gallagher et al. (2013) find that the "swing trade" of institutional investors, a significant portion of overall stock trading volume, is positively related to the future stock performance. Their results are consistent with the notion that governance through trading improves firm values.

we attempt to find a measure to capture only the trading intensity of institutional investors who are most likely to be the informed traders (e.g., Gompers and Metrick (2001), Sias, Starks, and Titman (2006), and Boehmer and Kelley (2009)). In particular, we use the aggregate institutional investors' absolute position changes divided by total stock trading volume as the proxy for the effect of governance through trading (GTT). When GTT is high, it means that investors trade intensively, thereby improving stock price informativeness. In this case, stock prices decrease more severely following bad managerial actions and rise more quickly following good actions. Unlike purely exiting a stock position that would have no disciplinary impact by nature, we argue that high GTT suggests that institutional investors could credibly reward or penalize managers whose compensation is linked with stock prices.

We obtain the institutional investors' holding data from Thomson-Reuters Institutional Holdings (13F) database. More specifically, we construct the measure of GTT as follows:

$$GTT_i = \log\left(\frac{\sum_{q=1}^4 \sum_{j \in Q} |N_{j,i,q} - N_{j,i,q-1}|}{\sum_{q=1}^4 VOL_{i,q}} \times 100\right), \quad (1)$$

where  $N_{j,i,q}$  denotes the number of shares held by institutional investor  $j$  at the end of quarter  $q$ .  $Q$  denotes all institutional investors who hold the stock of firm  $i$  in quarter  $q$ .  $VOL_{i,q}$  denotes the trading volume of firm  $i$  during quarter  $q$ . We pinpoint the quarter of the acquiring announcement, and then we sum up the absolute quarterly change of each institutional investor's holding over quarters -4 to -1 prior and adjacent to the quarter of the M&A announcement.

In the theory of Edmans and Manso (2011), it is presumably that the proxy for governance through trading should be positively related to price informativeness. Stock prices responding to managerial decisions suggests that investors trade in a competitive or, equivalently, non-strategic manner. Therefore, governance through trading could consistently reward or penalize the stock-incentivized manager, thereby leading to less value-destroying activities. One may be concerned that GTT is based on all institutional investors' trading activities, so it might be unclear how many of these institutional investors really hold private information. To address this issue, we conduct

tests to examine the association between GTT and two proxies for price informativeness, namely, AdjPIN (Duarte and Young (2009)) and price nonsynchronicity ( $1-R^2$ ).<sup>12</sup>

[Insert Table A-1 and A-2 here]

Table A-1 and Table A-2 provide supportive evidence on the significantly positive correlation between GTT and price informativeness. Under our context, when GTT is high, it suggests that institutional investors have traded competitively and aggressively prior to the M&A announcement. Given the findings in Tables A-1 and A-2, high GTT leads to high price informativeness and thus manifests investors' ability and willingness to punish and reward managers as long as the compensation of managers is linked to stock price. Hence, managers are incentivized to take value-enhancing M&As ex-ante, even without actual exit in the future. This set of results helps to rule out the possibility that GTT increases because institutional investors are on average uninformed and simply trade against each other for liquidity reasons and justify the usage of GTT as a suitable measure for testing Edmans and Manso's (2011) model.

There are two reasons why we use Thomson-Reuters 13F data for the construction of GTT measure. First, Edmans and Manso (2011) suggest that empirical studies may wish to use data sources other than 13D filings to identify sizable shareholders below the 5% threshold. Accordingly, we employ 13F data to identify a large amount of shareholders who not only have the intention to intervene but also have the ability to acquire and trade on the information about the firm's operation, which is justified by the assumption of their model. Second, as we aim to empirically study the disciplining effect of governance through trading, it is important to ask which type of institutional investors is more likely to do so. Since Thomson-Reuters data provides us the categorization of institutions, we take advantage of this feature linking the characteristics of institutional investors to the effectiveness of governance through trading. In particular, we adopt the Bushee's (1998) institutional investors class to examine whether the trading from long-term institutional investors has stronger disciplining effect. Table 1 presents the summary statistics for the variables used in our analyses. It is noteworthy that Table 1 shows that the abnormal announcement returns

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<sup>12</sup>See Chen, Goldstein, and Jiang (2007) for the detailed discussion of these two measures of stock price informativeness.

for acquiring firms are slightly positive for our full sample of M&As and slightly negative for acquisitions of public targets.<sup>13</sup> This is consistent with the literature that acquisitions of public firms are more likely to be value-destroying (e.g., Fuller et al. (2002) and Moeller et al. (2004)). Besides, we also present the CAR for constrained and unconstrained firms, respectively, based on whether firms' WW index (Whited and Wu (2006) ) is above or below the median. Our results show that the average CAR for unconstrained firms is negative, while it is positive for constrained firms. This result provides supporting evidence on the intuition of the analysis in Section 6.1 that financially unconstrained firms are more likely to conduct value-destroying M&As.

[Insert Table 1 here]

### 3 Main Empirical Results

#### 3.1 Governance Through Trading and Abnormal Announcement Returns of Acquiring Firms

In the literature, numerous studies investigate the inefficient or value-destroying corporate investment decisions from a standpoint of mergers and acquisitions. Jensen's (1986) free cash flow hypothesis states that managers build empire by purchasing a target firm because they would rather overinvest than pay out excess cash flow to shareholders. Paying out cash flow to shareholders cuts the resources that otherwise at management discretion, thereby reducing managers' power. Lang, Stulz, and Walkling (1991) provide empirical evidence on this form of value-destroying investment.

To examine whether the GTT has disciplining effect on M&A decisions, we conduct the following regression model:

$$CAR(-2, 2)_{i,q_0} = a_0 + a_1 \times GTT_{i,q-4-q-1} + a_2 \times X_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

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<sup>13</sup>In untabulated tests, the difference between the CARs for acquisitions of non-public firms and the CARs for acquisitions of public firms is significantly positive (t-value=4.9).

where  $CAR(-2,2)_{i,q_0}$  refers to the cumulative 5-day abnormal announcement return for acquiring firm  $i$  in quarter  $q_0$ . In particular,  $CAR(-2,2)_{i,q_0}$  is computed as the residuals of the market model based on a 5-day event window  $(-2,2)$ , where day 0 is the announcement date. We use the CRSP value-weighted return as the market return. The coefficients derived from pre-announcement period of  $(-210, -11)$  are used to compute the residuals from the market model during the announcement window  $(-2,2)$ .<sup>14</sup>  $GTT_{i,q-4-q-1}$  refers to the measure for the effect of governance through trading prior to the quarter of the acquiring announcement (quarters -4 to -1).  $X_{i,t-1}$  represents a battery of control variables. Acquirer-specific control variables include firm size, institutional ownership ratio, leverage ratio, fixed asset ratio, return on asset, R&D expenditure, industry-adjusted Tobin's Q, compounded daily excess returns over previous year (PastStockReturn), free cash flow (FreeCashFlow), non-cash working capital (NonCashWorking), and stock liquidity. Deal Characteristics include the ratio of deal value to the market value of the acquirers' total assets (RelaDealSize), a friendly deal attitude dummy variable (FriendlyDeal), a high-tech dummy (HiTech), a diversification dummy (Diversification), a tender offer dummy (TenderOffer), a cash deal dummy (CashDeal), interaction between HiTech dummy and RelaDealSize.<sup>15</sup> We also control for year and two-digit industry dummies and cluster standard errors at firm level.

[Insert Table 2 here]

We report the results in Table 2. Column (1) shows a full sample result that the coefficient on GTT is positive and significant, suggesting that higher GTT deters managers from conducting value-destroying M&As. We then separate our observations based on deal types, i.e., public targets and non-public targets. Non-public targets include private targets and subsidiary targets. Consistent with our prediction, we find that the positive effect of GTT exists only for acquisitions of public firms but not for acquisitions of non-public firms, which is in line with the literature that acquisitions of public target are more likely to be value-destroying such that the disciplining effect of GTT is more effective (e.g., Fuller et al. (2002), and Moeller et al. (2004)).

<sup>14</sup>We require that the acquiring firm has more than 100 observations for the pre-announcement estimation and more than three observations for the announcement period estimation.

<sup>15</sup>The construction of control variables are largely based on Chen, Harford, and Lin (2015).

The positive effect of GTT on acquirer returns for acquisitions of public targets is also economically meaningful. In particular, we find that a one-standard-deviation increase in GTT (0.849) corresponds to an increase in 5-day abnormal announcement returns of 7.90% ( $0.849 \times 0.093 = 0.079$ ). As our hypothesis is regarding the disciplining force of GTT on managerial self-dealing behavior, the remaining of the analyses will focus on the acquisitions of public targets, which is more likely to bear the agency costs of managerial discretion.

### **3.2 Economic Mechanism of Governance Through Trading**

The economic mechanism of governance through trading presumes that institutional trading influences stock prices, in turn affecting managerial M&A decisions owing to managers' significant interest in stock prices. Therefore, the effectiveness of governance through trading largely hinges on the extent to which managerial compensation is related to stock prices. In this section, we investigate the impact of managerial wealth performance sensitivities (WPS) on the association between lagged GTT and M&A abnormal announcement returns. Columns (1) and (2) of Table 3 show a positive and significant correlation between GTT and acquirer returns. In addition, the coefficient estimate of the interaction term of  $GTT \times HighWPS$  is also significantly positive, which is consistent with our expectation. Also, the magnitude of the coefficient estimates in column (2) suggest that a one-standard-deviation increase in GTT (0.849) leads to an increase of 7.2% ( $0.849 \times 8.49\% = 7.2\%$ ) in CAR (-2,2) for low WPS firms. Meanwhile, high WPS firms experience a significantly higher increase of 18.1% ( $0.849 \times (8.49\% + 12.8\%) = 18.1\%$ ) in CAR (-2,2) when GTT increases by one standard deviation. In line with the theoretical framework of Edmans and Manso (2011), the results show that high WPS enhances the positive association between lagged GTT and acquirer returns, indicating that it is through managers' interest in stock prices that GTT imposes the disciplining effect on managers' M&A decisions.

[Insert Table 3 here]

### 3.3 Institutional Ownership Concentration and Governance Through Trading

Traditional theories argue that a lower institutional ownership concentration (IOC) might impede the direct intervention of institutional investors, as the benefits from the activism (intervention) might not be sufficient to offset the costs incurred (e.g., Grossman and Hart (1980)).<sup>16</sup> However, Edmans and Manso (2011) argue that although a lower IOC hinders the direct intervention, it reinforces governance through trading by encouraging competitive trading among institutional investors. Nevertheless, they also argue that the institutional ownership could not be too dispersed. Otherwise, the trading competition would be too severe to encourage all institutional investors to gather information. Based on this argument, we expect a hump-shaped relation between IOC and the effect of governance through trading.

Following Hartzell and Starks (2003) and Kim and Lu (2011), we use the sum of the top five institutional investors ownership (in %) as the proxy for IOC. Columns (3) and (4) of Table 3 present the estimates. The results show a significant hump-shaped relationships between IOC and the positive effect of GTT on acquirer returns as predicted. The result implies that, compared with a single large institutional investor, multiple small institutional investors strengthen the effect of governance through trading. However, when the ownership is too diffused, the competition in institutional trading becomes too severe to provide sufficient profits for investors who then no longer have the incentive to acquire information. This result lends support to the model implication of Edmans and Manso (2011) that governance through trading is mostly effective when institutional ownership is moderately concentrated.

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<sup>16</sup>Previous studies provide mixed evidence on institutional activism. On one hand, empirical studies provide evidence that institutional investors lack the ability to intervene (e.g., Black (1990), La Porta, Silanes, and Shleifer (1999), and Becht, Franks, Mayer, and Rossi (2010)). On the other hand, other studies show that institutional investors influence firm decisions (e.g., Chen, Harford, and Li (2007) and Cronqvist and Fahlenbrach (2009)).



### 3.4 Firm profitability and firm value as a large sample exercise

In this subsection, we provide new evidence on the positive association between GTT and firm operating performance. Moreover, we also re-examine the correlation between governance through trading and firm value as shown in Bharath et al. (2013) to provide a validation check of our GTT measure.<sup>17</sup> The descriptive statistics of the dataset used in this section are presented in Table A-3. These two tests help to reassure us that our hypothesis and the GTT measure are also relevant in a representative sample beyond the M&A events.

We expect that better corporate mergers and acquisitions decisions due to the disciplining effect of GTT should be reflected in greater profitability in a large sample examination. Following Cohen, Dey, and Lys (2008), we employ industry-adjusted return on assets (Ind-Adj ROA) as the proxy for firm operating performance. Ind-Adj ROA is defined as net income divided by total book value of asset less the value-weighted average industry ROA. We also include control variables of firm size, institutional ownership ratio, capital expenditure, leverage ratio, book-to-market ratio, lagged industry-adjusted ROA, and dividend dummy. The construction of this set of control variables is largely based on Roll, Schwartz, and Subrahmanyam (2009). Standard errors are clustered at firm level.

[Insert Table 4 here]

We present the results in column (1) of Table 4 and find that the coefficient on GTT is 0.0116 at 1% significance level. In column (2) of Table 4, we further control for the firm and year dummies, and find that the positive and significant correlation between GTT and subsequent industry-adjusted ROA still remains. More specifically, a one-standard-deviation increase in GTT leads to a 1.94% standard deviation increase in the subsequent ROA. This result supports our proposition that firms subject to high governance through trading would experience greater profitability.

Moreover, we also investigate whether firm value would be improved due to the disciplining effect of GTT. Following Kaplan and Zingales (1997), Gompers et al. (2003), and Bebchuk and Cohen (2005), firm value is proxied by the industry-adjusted Tobin's Q, which is the ratio of the

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<sup>17</sup>Our results hold when we use the changes in Tobin's Q and ROA as dependent variables.

market value of assets and the book value of assets, subtracting the value-weighted average industry Tobin's Q.<sup>18</sup> GTT is constructed according to Eq.(1). We sum up the absolute quarterly change of each institutional investor's holding over one fiscal year. We regress industry-adjusted Tobin's Q (Ind-Adj Tobin's Q) on lagged GTT and other control variables, including insider ownership ratio, squared insider ownership ratio, natural logarithm of sales, squared natural logarithm of sales, fixed asset ratio, squared fixed asset ratio, ratio of EBITDA to sales, R&D expenditure, advertisement expenditure, firm size, institutional ownership ratio, capital expenditure, and leverage ratio.<sup>19</sup> Our control variables are based on Kim and Lu (2011). We also cluster standard errors at firm level.<sup>20</sup>

Column (3) of Table 4 indicates that GTT is significantly and positively associated with industry-adjusted Tobin's Q in the subsequent year after controlling for the control variables aforementioned. Column (4) shows that the association between GTT and Tobin's Q still remains after we further control for the year and firm fixed effects.<sup>21</sup>

## 4 Addressing Endogeneity Concerns

A concern of our previous findings is that GTT and acquirer returns are endogenously determined. In this section, we attempt to employ Decimalization as a quasi-natural experiment to capture an exogenous positive shock to liquidity. In early 2001, both NYSE and AMEX started to quote and trade listed shares in cents in place of a sixteenth of a dollar. Subsequently, NASDAQ also started to use decimal prices instead of fractional prices. The literature has shown that Decimalization leads to lower transaction cost. For example, Furfine (2003) find that the bid-ask spreads for actively traded shares drop over 35% after Decimalization. Bessembinder (2003) also find that

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<sup>18</sup>The market value of assets is calculated as the summation of the market value of common stocks, the book value of preferred stocks, the book value of short-term debt, and the book value of long-term debt.

<sup>19</sup>Gompers and Metrick (2001) find a positive association between the institutional ownership and future stock returns. Therefore, one might be concerned that more institutional trading results in higher firm value is driven by the relation between IOR and corporate performance. To rule out this possible explanation, we include the institutional ownership ratio in our regression, and examine whether the effect of GTT on firm value will be subsumed.

<sup>20</sup>The summary statistics for the variables used in Tobin's Q and ROA tests are included in Table A-3

<sup>21</sup>Adding firm dummies in the regressions indicates that our identification is mainly from within-firm variation over time.

quoted bid-ask spreads reduce significantly in the post-Decimalization period. Decimalization can thus be viewed as an exogenous liquidity shock leading to lower cost of trading.

In a related strand of literature, Bharath et al. (2013) and Edmans et al. (2013) employ Decimalization as an exogenous positive shock to stock liquidity for identifying the causal effects of the governance through trading on the firm values. Bharath et al. (2013) examine the impact of Decimalization on the association between blockholder and Tobin's Q and find that the positive liquidity shock improves firm value. In a similar vein, Edmans et al. (2013) find that given hedge funds acquiring a stake, liquidity increases the likelihood of filing Schedule 13G (passive investment) instead of filing Schedule 13D (active investment). Moreover, the announcement of the 13G filing leads to a positive stock return, liquid stocks in particular.

We follow these two studies and use Decimalization to mitigate the endogeneity concern. In our context, because the realized institutional trading could serve as a commitment device to reward and punish managerial actions, we expect that an exogenous positive shock to overall liquidity would strengthen the credibility of this commitment device. In other words, the reduced institutional investors' trading cost reinforces the dynamic consistency of this mechanism. In particular, we define DECEMAL1 as a dummy variable that equals one for observations where fiscal year ends after January 2001. We also use a short window of time, i.e. three years before and after Decimalization (1998-2000 as pre-Decimalization and 2002-2004 as post-Decimalization), to identify the Decimalization dummy (DECIMAL2). We then examine whether the effect of GTT on acquirer returns become stronger in the post-decimalization period.

[Insert Table 5 here]

Columns (1) and (2) of Table 5 present the results.<sup>22</sup> In column (1), we indeed find that the positive association between GTT and acquirer returns is more pronounced in the post-Decimalization period, as evidenced by the positive and significant coefficient on the interaction term of  $GTT \times DECEMAL1$ . In column (2), we find similar results with an even stronger coefficient on  $GTT \times DECEMAL2$ . Overall, these findings indicate that the exogenous liquidity shock of Decimalization strengthens

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<sup>22</sup>We do not include DECEMAL dummy variables in our regression due to multicollinearity after adding the year fixed effect.

the governance effect of institutional trading on firms' M&A decisions and provide additional evidence in support of the disciplining interpretation of our main findings.

## **5 Supporting Evidence on Ruling out Alternative Interpretations**

Given the construction of GTT measure, one may concern that our results are driven by other reasons why institutional investors trade, such as superior information, activism (direct intervention), trading preference (e.g., tracking of certain benchmarks), and momentum. As none of these explanations are related to managerial compensation, our previous evidence that higher WPS strengthens governance through trading helps to rule out these explanations (Section 3.2). Nevertheless, we further conduct two sets of tests to evaluate the validity of these alternative explanations.

### **5.1 Governance Through Trading and Changes in IOR**

Both Nofsinger and Sias (1999) and Yan and Zhang (2009) find a positive relation between institutional investors' ownership and future stock returns, indicating that some institutional investors possess valuable information about firm's future performances.<sup>23</sup> Therefore, one may be concerned that the lead-lag relation between GTT and acquirer returns might simply reflect the private information held by institutional investors rather than the disciplining effect of institutional trading on managerial behavior. Specifically, when institutional investors anticipate a higher abnormal announcement return for acquiring firm, they would increase their stake in advance. To address this concern, we divide our sample into two subgroups based on the changes in institutional ownership ratio ( $\Delta IOR$ ) over one year before the acquisition announcement. The intuition is that if the positive correlation between lagged GTT and CAR (-2,2) is purely information driven, then we should observe that for firms with reduced institutional ownership ratio ( $\Delta IOR < 0$ ), GTT negatively relates

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<sup>23</sup>Gompers and Metrick (2001) also document a positive association between institutional holding and future stock returns, which they attribute to the demand of institutional investors.

to acquirer returns.

[Insert Table 6 here]

The results in columns (1) and (2) of Table 6 reveal the opposite. Specifically, we find that the coefficient estimates for GTT are positive and significant in both subgroups, indicating that our main findings are unlikely to be driven by the private positive information held by institutional investors.

The same set of tests could be used to disentangle the effect of governance through trading from the effect of activism. The prior literature has shown that institutional investors (activists) might continuously increase their holdings before they start to intervene in firms' operations (e.g., Maug (1998) and Gantchev and Jotikasthira (2017)), which causes possible association between GTT and acquirer returns. Activists could buy their shares either from other institutional investors or from retail investors. As a result, it is less likely that the position accumulation prior to the intervention would lead to a reduction in IOR. Hence, when we focus on the subsample with reduced IOR, we mitigate the concern that the association between GTT and CAR (-2, 2) is driven by activism.

Moreover, in Section 3.2, we have shown that higher WPS strengthens the disciplining effect of GTT. This finding suggests that it is the link between managers' wealth and the potential selling pressure from institutional trading that alters managerial incentives as well as managerial behavior, which is inconsistent with activism explanation. Additionally, if the association between GTT and acquirer returns are caused by intervention, then a concentrated institutional ownership would enhance this association as argued in the literature. However, in Section 3.3, we found a hump-shaped relation between the institutional ownership concentration and the effect of GTT on CAR (-2,2), indicating that the concentrated institutional ownership mitigate the effectiveness of governance through trading rather than enhance it. Collectively, these two sets of findings, along with the results in the this section, help further point our findings to the governance-through-trading interpretation.

## 5.2 Bushee Institutional Investors Type

Momentum traders tend to buy or sell shares based on stocks' past returns, i.e., buying (selling) firms with good (bad) past performance. Hence, one concern is that momentum trading strategy is responsible for the positive association between lagged GTT and acquirer returns. To tackle this issue, we take advantage of the information on the classification of institutional investors (Bushee (1998) and Bushee (2001)). In particular, Bushee categorizes institutional investors into groups based on their past portfolio behavior, i.e., investment horizon (portfolio turnover). He also argues that short-term, i.e., transient, institutional investors are more likely to engage in momentum trading strategies. Accordingly, we decompose GTT measure into transient GTT and non-transient GTT based on the classification of the institutional investor and explore whether investors' investment horizon would influence the disciplining effect of GTT on acquirer returns.<sup>24</sup>

In particular, we re-estimate our main regression model (column (2) of Table 2) by using transient GTT and non-transient GTT, respectively. Panel B of Table 6 present the results. The coefficient estimates in column (3) show that acquiring firms with one-unit higher non-transient GTT would experience an increase of 7.15% in 5-day abnormal announcement returns. Meanwhile, the coefficient estimates in column (4) indicate that the effect of transient GTT on acquirer returns is positive yet insignificant. The absence of evidence that trading from short-term institutional investors disciplines M&A decisions not only helps us to rule out the alternative explanation that attributes the positive relation between lagged GTT and acquirer returns to momentum trading but also provides supportive evidence on the prediction in Edmans and Manso (2011).<sup>25</sup>

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<sup>24</sup>In particular, we first match Thomson-Reuters 13F database to Bushee's Institutional Investors Classification (IIC), and then use quarterly dedicated and quasi-indexer (transient) institutional investor's holding to compute non-transient (transient) GTT based on Eq. (1).

<sup>25</sup>Harford, Kecskés, and Mansi (2017) also argue that monitoring by long-term investors generates decision making that maximizes shareholder value.

## 6 Additional Tests and Robustness Checks

In this section, we conduct two additional tests to better attribute our findings to the disciplining effect of GTT. We examine the effect of governance through trading for firms with higher degree financial constraints and in M&A deals financed exclusively with cash. As robustness check, we also include G-index, E-index, and proxies for stock price informativeness as control variables.

### 6.1 Financial Constraints

Prior studies suggest that managers at financially constrained firms are lack of resources under their control, thereby being less likely to engage in value-destroying mergers and acquisitions (e.g., Jensen (1986), Stulz (1990), Harford (1999), and Billett et al. (2011), etc.) Because our main hypothesis is that managers are disciplined by GTT, failing to find significant relation between lagged GTT and CAR (-2,2) at financially constrained firms can serve as a placebo test for our hypothesis. In particular, we utilize the WW index in Whited and Wu (2006, p.543) to gauge the extent to which firm is financially constrained. In particular, we compute the WW index as follows:

$$WW_{i,t} = -0.091 \times CF_{i,t} - 0.062 \times DIV_{i,t} + 0.021 \times LEV_{i,t} - 0.044 \times SIZE_{i,t} + 0.102 \times ISG_{i,t} - 0.035 \times SG_{i,t} \quad (3)$$

where CF equals the cash flow divided by previous year's total assets. DIV is a dummy indicating whether the firm pays dividend. LEV equals total debt divided by total assets. SIZE equals logarithm of the total assets. ISG equals the average growth rate of sales for all firms in the three-digit SIC where the firm belongs. SG is the growth rate of sales for the firm.

We adopt this measure of financial constraints, and partition our sample into two subgroups based on whether WW index is below the median. Then, we re-estimate the regression model (2) of Table 2 for the high and low WW index subgroups, respectively.

[Insert Table 7 here]

Columns (1) and (2) of Panel A show that the positively significant association between GTT and

CAR (-2,2) only exists in the subgroup where WW index is below the median (less-financially-constrained), which is consistent with our conjecture.<sup>26</sup> These results suggest that the governance effect is only present at firms whose managers have more resources and then are more likely to conduct value-destroying mergers and acquisitions.

## 6.2 Payment Methods of M&A deals

Moeller, Schlingemann, and Stulz (2005) find that those large-loss bidders use significantly less of cash for the transaction. Fu, Lin, and Officer (2013) find that, on average, a stock-financed bidder is more overvalued compared with a cash-financed bidder, and the latter is less likely to experience negative announcement returns. These empirical results are consistent with the view of Jensen (2005) that managers tend to take advantage of the high equity valuations by using their overvalued equity as currency and make poor acquisition decision at the expense of shareholder wealth.<sup>27</sup> Therefore, we partition our sample of M&A deals into two subsamples based on whether the method of the transaction payment is 100% in cash. We expect that the disciplining effect of GTT would not be discernible for transactions exclusively paying with cash because lower agency costs are associated with cash-financed acquisitions.

Panel B of Table 7 present the regression results. In column (3), we only include transactions paid exclusively with cash. Column (4) refers to the rest of the deals that use at least some stocks as payment method.<sup>28</sup> We find that the positive association between GTT and CAR(-2,2) only exists in non-all-cash deals. Our finding indicates that the effect of governance through trading can only be observed for M&A deals using at least a portion of equity as payment, through which managers are more likely to take advantage of overvalued stocks to engage in value-destroying acquisitions.

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<sup>26</sup>We find similar results using a variation of KZ index in Hadlock and Pierce (2010, p.1919).

<sup>27</sup>Similarly, Shleifer and Vishny (2003) theorize that when mispricing is taken as given, shareholders at firms with overvalued equity would benefit by using their shares to acquire less overvalued firms.

<sup>28</sup>In our sample, the minimum value of the percentage of stock payment is 16%.



### 6.3 The Effect of Shareholder Rights and Price informativeness

Masulis et al. (2007) document that both G-index (proposed by Gompers et al. (2003)) and E-index (proposed by Bebchuk et al. (2009)) are negatively related to acquirer returns, indicating that firms whose managers are harder to be replaced due to weaker shareholders rights (more anti-takeover defenses) would be more likely to experience value-destroying acquisitions. To rule out the effect of IRRC provisions on our main results, we control for both the G-index and the E-index and re-estimate our main regressions. After merging with IRRC provisions, our sample size reduces by 80% - 85% but the governance effect of GTT remains.<sup>29</sup> We report the results in Table A-4.

[Insert Table A-4 here]

We find that the coefficient of GTT is 0.0264 at 10% significance level after controlling for E-index (column (1)). In terms of economic magnitude, a one-standard-deviation increase in GTT (0.564) associates to a 18.2% standard deviation increase in the subsequent CAR (-2,2).<sup>30</sup> Similarly, including G-index does not subsume the effect of GTT on CAR (-2,2) as well, which is presented in column (2). Importantly, in columns (1) and (2), the coefficients of E-index and G-index both have negative sign, which is in line with the results in Masulis et al. (2007). This set of results suggests that our earlier findings do not appear to be driven by shareholder rights.

In addition, Chen et al. (2007) show that price informativeness affects corporate investments. Therefore, we include two proxies for price informativeness to rule out the possibility that our main results are purely driven by the price informativeness. More specifically, we employ AdjPIN introduced in Duarte and Young (2009) and price nonsynchronicity ( $1-R^2$ ) in Chen et al. (2007) to proxy for price informativeness. We re-run our main tests regarding the associations between GTT and CAR (-2,2) and control for AdjPIN and  $1-R^2$ , respectively. We present the results in column (3) and column (4) of Table A-4. Our results show that the effect of GTT still holds across all specifications. Given that the GTT is positively correlated with price informativeness (Section 2.2)

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<sup>29</sup>Because IRRC does not publish the data every year, we assume that the provisions remain unchanged between the two adjacent data point.

<sup>30</sup>In this small data set, the standard deviation of GTT and CAR (-2,2) are 0.564 and 0.082, respectively. The descriptive statistics for the sample merged with G-index, E-index, and price informativeness are unreported for brevity, but available upon request.

and our main results hold after controlling for AdjPIN and  $1-R^2$ , it suggests that the disciplining effect of GTT is related to but not subsumed by price informativeness.

## 7 Conclusion

We identify an important channel, acquisitions of public targets, through which governance through trading improves firm values. We propose a GTT measure and find that firms with higher GTT whose managers are less likely to engage in value-destroying M&As. We show that a higher level of wealth-performance sensitivity enhances the disciplining effect of GTT. We also find a hump-shaped relationship between institutional ownership concentration ratio and the effect of GTT. Further, we find that GTT is positively associated with subsequent firm operating performance and firm value, indicating that the relevance of our hypothesis and of GTT measure per se is beyond the M&A events. These results provide supportive evidence to our interpretation of governance through trading.

To address the endogeneity concern, we find that the disciplining effect of GTT is more prominent after a positive exogenous liquidity shock of Decimalization. We also find that our key findings are largely driven by the trading of non-transient institutional investors. This set of results helps us to rule out the alternative explanations, such as superior information, investor activism, and momentum trading, which might account for the documented association between the lagged GTT and M&As announcement returns.

Additionally, the positive association between GTT and acquirer returns only exists for firms with less financial constraints and for M&A deals whose payment method is at least partially by equity. Finally, our main results remain after controlling for G-index, E-index, price nonsynchronicity ( $1-RSQ$ ) and probability of informed trading (AdjPIN), which have been shown to be related to corporate investments (e.g., Gompers et al. (2003), Bebchuk et al. (2009), Masulis et al. (2007) and Chen, Goldstein, Jiang (2007)). Collectively, our results indicate that governance through trading disciplines managers from conducting value-destroying M&As and helps to im-

prove firm value and performance.

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## Appendix A: Variable Definitions

Variables	Definitions
Panel A: Mergers and Acquisitions Sample	
CAR(-2,2)	The cumulative 5-day abnormal returns of mergers and acquisitions for acquiring firms using the market model. The market model parameters are estimated over the period (-210, -11) with the CRSP value-weighted return as the market index.
GTT	GTT is our main variable of interest, constructed according to Eq.(1).
SIZE	The logarithm of the firm's total assets.
IOR	The ratio of total institutional investors' ownership to total shares outstanding.
Leverage	The ratio of firms book value of long-term debt (item 9) and short-term debt (item 34) to market value of total assets.
FixedAsset	The ratio of property, plant, and equipment to total assets.
ROA	The ratio of net income to total assets.
R&D	The ratio of R&D expenditure to total asset (set zero for missing).
PastStockReturn	Compounded daily stock returns over previous year of the merger and acquisition (in logarithm).
FreeCashFlow	The difference between operating income before depreciation and the summation of the interest expense, income taxes, and capital expenditure, scaled by total asset (set zero for missing).
NonCashWorking	The difference between the current assets and the sum of the current liabilities and cash and cash equivalents, scaled by total assets.
Liquidity	Liquidity equals to: $\log(\text{Amihud's (2002) measure of illiquidity}) \times -1$ .
RelaDealSize	The ratio of the deal value (from SDC) and the acquiring firm's market value of total assets.
FriendlyDeal	A dummy variable equals one when the deal attitude is friendly, and zero otherwise.
High-tech	A dummy variable equals one when both acquirer and target are from high-tech industries (from SDC), and zero otherwise.
Diversification	A dummy variable equals one if bidder and target do not share a Fama French 48 industry code, and zero otherwise.
TenderOffer	A dummy variable equals one when the deal involves a tender offer, and zero otherwise.
CashDum	A dummy variable equals one when the payment method is one-hundred-percent cash, and zero otherwise.
Private	A dummy variable equals one for private targets, and zero otherwise.
DECIMAL1	A dummy variable that equals one for firms whose fiscal year end after January, 2001 and otherwise zero.
DECIMAL2	A dummy variable that equals one for firms with fiscal year from 2002 to 2004 and zero from 1998 to 2000.
ScaledWPS	The dollar change in CEO wealth for a 1% change in firm value, scaled by annual flow compensation.
IOC	The sum of the top five institutional investors share ownership (in %).
Non-transient GTT	Matching Thomson-Reuters 13F database to Bushee's institutional investors classification, and then using quarterly dedicated and quasi-indexer institutional investor's holding to compute non-transient GTT based on Eq. (1).
Transient GTT	Matching Thomson-Reuters 13F database to Bushee's institutional investors classification, and then using quarterly transient institutional investor's holding to compute transient GTT based on Eq. (1).
E index	Managerial entrenchment index (Bebchuk et al. (2009)).
G index	Governance index (Gompers et al. (2003)).
Panel B: Ind-Adj ROA Sample	
Ind-Adj ROA	Ind-Adj ROA is defined as net income divided by total book value of asset less the value-weighted average of industry ROA.
GTT	GTT is our main variable of interest, constructed according to Eq.(1). We sum up the absolute quarterly change of each institutional investor's holding over one fiscal year.
SIZE	The logarithm of the firm's market capitalization.
IOR	The ratio of total institutional investors' ownership to total shares outstanding.
CAPX	The ratio of capital expenditures to sales.
Leverage	The ratio of firms book value of long-term debt (item 9) and short-term debt (item 34) to book values of total assets.
BM	The logarithm of the book-to-market ratio.
LagROA	One year lagged industry-adjusted ROA.
DivDUM	A dummy variable equals one when a firm distributes dividends in the year.
Panel C: Ind-Adj Tobin's Q Sample	
Ind-Adj Tobin's Q	Ind-Adj Tobin's Q is defined as the book value of assets minus the book value of equity plus the market value of equity divided by the book value of total assets less the value-weighted average of industry Q.
GTT	GTT is our main variable of interest, constructed according to Eq.(1). We sum up the absolute quarterly change of each institutional investor's holding over one fiscal year.
INS.OWN	The fraction of shares held by insiders (CEO, CFO, CO, President).
INS.OWN <sup>2</sup>	The square of InsiderOwn.
SALE	The natural logarithm of sales.
SALE <sup>2</sup>	The square of SALE.
FixedAsset	The ratio of property, plant, and equipment to sales.
FixedAsset <sup>2</sup>	The square of FixedAsset
EBITDA/Sale	The ratio of EBITDA (earnings before interest, tax, depreciation, and amortization) to sales.
R&D	The ratio of R&D expenditure to property, plant, and equipment (set zero for missing).
AdEx	The ratio of advertising expenditures to property, plant, and equipment (set zero for missing).
SIZE	The logarithm of the firm's total assets.
IOR	The ratio of total institutional investors' ownership to total shares outstanding.
CAPX	The ratio of capital expenditures to property, plant, and equipment.
Leverage	The ratio of firms book value of long-term debt (item 9) and short-term debt (item 34) to book values of total assets.

Table 1. Descriptive Statistics

This table presents the summary statistics of variables. Panel A reports the summary statistics for variables in mergers and acquisitions (full sample). Panel B reports the summary statistics for variables in mergers and acquisitions (sample of public targets). CAR for constrained firm includes firms with WW index above the median. CAR for unconstrained firm includes firms with WW index below the median. GTT is our main variable of interest, constructed according to Eq.(1). Detailed definitions of other variables are reported in Appendix A.

Descriptive Statistics				
	(1) Obs. No.	(2) Mean	(3) Std. Dev.	(4) Median
Panel A: Mergers and Acquisitions (All Targets Sample)				
CAR(-2,2)	9,132	0.011	0.171	0.008
GTT	9,132	3.503	0.997	3.708
SIZE	9,132	5.758	1.807	5.700
IOR	9,132	0.471	0.276	0.473
Leverage	9,132	0.140	0.144	0.102
FixedAsset	9,132	0.268	0.225	0.197
ROA	9,132	0.027	0.142	0.053
R&D	9,132	0.039	0.069	0.000
Tobin's Q	9,132	-1.343	2.574	-0.730
PastStockReturn	9,132	0.033	0.496	0.031
FreeCashFlow	9,132	0.011	0.111	0.020
NonCashWorking	9,132	0.251	0.222	0.225
Liquidity	9,132	-0.292	0.566	-0.041
RelaDealSize	9,132	0.160	0.260	0.072
FriendlyDeal	9,132	0.993	0.084	1.000
High-tech	9,132	0.449	0.497	0.000
Diversification	9,132	0.384	0.486	0.000
TenderOffer	9,132	0.050	0.218	0.000
CashDum	9,132	0.292	0.455	0.000
HiTech×RelaDealSize	9,132	0.076	0.182	0.000
Panel B: Mergers and Acquisitions (Public Targets Sample)				
CAR(-2,2)	1,558	-0.008	0.316	-0.008
CAR(-2,2) (Constrained)	569	0.002	0.133	-0.003
CAR(-2,2) (Unconstrained)	569	-0.028	0.185	-0.014
GTT	1,558	3.612	0.849	3.753
SIZE	1,558	6.780	1.927	6.807
IOR	1,558	0.544	0.252	0.563
Leverage	1,558	0.130	0.132	0.092
FixedAsset	1,558	0.276	0.217	0.211
ROA	1,558	0.033	0.146	0.058
R&D	1,558	0.050	0.080	0.018
Tobin's Q	1,558	-1.438	2.697	-0.770
PastStockReturn	1,558	0.016	0.449	0.022
FreeCashFlow	1,558	0.016	0.111	0.027
NonCashWorking	1,558	0.233	0.210	0.210
Liquidity	1,558	-0.611	0.830	-0.214
RelaDealSize	1,558	0.270	0.367	0.130
FriendlyDeal	1,558	0.972	0.162	1.000
High-tech	1,558	0.372	0.483	0.000
Diversification	1,558	0.380	0.486	0.000
TenderOffer	1,558	0.280	0.449	0.000
CashDum	1,558	0.331	0.471	0.000
HiTech×RelaDealSize	1,558	0.110	0.247	0.000

Table 2. GTT and Abnormal Announcement Returns of Acquiring Firms

This table presents the results of regressions of abnormal announcement stock returns of acquiring firms on GTT and other control variables. CAR (-2,2) is the 5-day announcement-period abnormal returns for acquiring firms. GTT is our main variable of interest, constructed according to Eq.(1). In column (1), we include all acquisitions of different type of targets, including public, private, and subsidiary. In column (2), we include acquisitions of public targets. In column (3), we include acquisitions of non-public targets. In column (4), we include acquisitions of private targets. In column (5), we include acquisitions of subsidiary targets. Detailed definitions of other variables are reported in Appendix A. We also include year dummies and two-digit industry dummies to control for year and industry effects, while their coefficients are omitted. In all models, standard errors are clustered at firm level and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: CAR (-2,2)				
	All Targets	Public	Nonpublic	Nonpublic	
	(1)	(2)	(3)	Private	Subsidiary
GTT	0.0163** (0.0069)	0.0930*** (0.0302)	0.0043 (0.0032)	0.0052 (0.0047)	0.0035 (0.0032)
SIZE	-0.0182*** (0.0058)	-0.0556*** (0.0135)	-0.0074** (0.0033)	-0.0109** (0.0055)	-0.0048** (0.0024)
IOR	-0.0165*** (0.0063)	-0.0696* (0.0401)	-0.0135** (0.0067)	-0.0123 (0.0098)	-0.0152* (0.0091)
Leverage	0.0578*** (0.0196)	0.1953** (0.0911)	0.0218* (0.0115)	0.0024 (0.0158)	0.0325* (0.0176)
FixedAsset	0.0027 (0.0088)	-0.0248 (0.0522)	0.0171 (0.0134)	0.0335* (0.0189)	-0.0117 (0.0114)
ROA	-0.0344 (0.0224)	-0.1858** (0.0849)	0.0180 (0.0148)	0.0078 (0.0186)	0.0023 (0.0254)
R&D	0.0502 (0.0526)	0.8760*** (0.3056)	-0.2375** (0.0975)	-0.3148*** (0.1113)	0.0522 (0.0677)
Ind-adj Tobin's Q	0.0027*** (0.0009)	0.0091** (0.0039)	0.0012* (0.0007)	0.0010 (0.0009)	0.0023 (0.0024)
PastStockReturn	-0.0017 (0.0038)	0.0792** (0.0340)	-0.0159*** (0.0052)	-0.0262*** (0.0075)	0.0027 (0.0048)
FreeCashFlow	0.0220 (0.0180)	-0.1002 (0.0984)	0.0413* (0.0218)	0.0629** (0.0273)	0.0144 (0.0248)
NonCashWorking	-0.0003 (0.0081)	-0.1528** (0.0636)	0.0331** (0.0149)	0.0483** (0.0189)	-0.0069 (0.0149)
Liquidity	-0.0253* (0.0130)	-0.0820*** (0.0244)	-0.0077 (0.0094)	-0.0151 (0.0158)	-0.0117 (0.0053)
RelaDealSize	-0.1821*** (0.0690)	-0.3893*** (0.0960)	-0.0120 (0.0292)	-0.0622* (0.0374)	0.0439** (0.0209)
FriendlyDeal	-0.0563*** (0.0203)	-0.1010*** (0.0358)	-0.0211 (0.0324)	-0.0589 (0.0405)	0.0557 (0.0359)
HiTech	-0.0247*** (0.0080)	-0.0565*** (0.0214)	-0.0126** (0.0055)	-0.0155** (0.0061)	-0.0010 (0.0052)
Diversification	0.0150* (0.0088)	0.0643*** (0.0233)	-0.0001 (0.0033)	0.0036 (0.0049)	-0.0037 (0.0036)
TenderOffer	-0.0132 (0.0091)	0.0096 (0.0131)	-0.0808*** (0.0212)	-0.0371** (0.0180)	-0.1137*** (0.0357)
CashDum	0.0023 (0.0029)	-0.0270 (0.0168)	0.0058** (0.0029)	0.0016 (0.0040)	0.0030 (0.0033)
HiTech × RelaDealSize	0.2215*** (0.0722)	0.4051*** (0.1064)	0.0638** (0.0303)	0.1171*** (0.0391)	0.0020 (0.0266)
Year Dummies	Y	Y	Y	Y	Y
Ind Dummies	Y	Y	Y	Y	Y
No. of Obs	9132	1558	7574	4425	3149
R <sup>2</sup>	0.0721	0.3269	0.0727	0.1260	0.0827

Table 3. The Impact of Manager's Wealth-Performance Sensitivity (WPS) and Firm's Institutional Ownership Concentration (IOC) on the effect of GTT on abnormal announcement returns of acquiring firms

This table presents the impact of manager's wealth-performance sensitivity (WPS) and firm's institutional ownership concentration on the association between GTT and abnormal announcement returns of acquiring firms. The sample includes the period from 1980 to 2012 and acquisitions of public targets. The dependent variable is 5-day abnormal announcement returns of acquiring firms. GTT is our main variable of interest, constructed according to Eq.(1). Following Edmans, Gabaix, and Landier (2009), we employ scaled wealth-performance sensitivity to capture the sensitivity of the manager's wealth to the stock price (WPS). HighWPS is a dummy variable that equals one if firms' WPS is above the median of the sample and zero otherwise. IOC measures the institutional ownership concentration, as the sum of the top five institutional investors share ownership (in %), following Kim and Lu (2011).  $IOC^2$  is squared IOC. Detailed definitions of other variables are provided in Appendix A. Year dummies and two-digit industry dummies are also used to control for year and industry effects, while their coefficients are omitted. Standard errors are clustered at firm level and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable: CAR (-2,2)				
	Panel A: ScaledWPS		Panel B: IOC	
	(1)	(2)	(3)	(4)
GTT	0.1619** (0.0632)	0.0849** (0.0334)	0.0510* (0.0278)	0.1080*** (0.0322)
GTT×HighWPS		0.1280** (0.0527)		
HighWPS	-0.0136 (0.0129)	-0.4984** (0.2071)		
GTT×IOC				0.0061** (0.0026)
GTT×IOC <sup>2</sup>				-0.0072* (0.0043)
IOC			-0.0285*** (0.0108)	-0.0114** (0.0052)
IOC2			0.0348 (0.0288)	0.0190* (0.0106)
SIZE	-0.0681*** (0.0220)	-0.0665*** (0.0204)	-0.0519*** (0.0119)	-0.0595*** (0.0145)
IOR	0.0659* (0.0381)	0.0794** (0.0399)	0.0177 (0.0708)	0.0693 (0.0753)
Leverage	0.1672* (0.0890)	0.1668* (0.0870)	0.2092** (0.0815)	0.2487*** (0.0892)
FixedAsset	0.0352 (0.0480)	0.0245 (0.0494)	-0.0954 (0.0643)	-0.0973 (0.0606)
ROA	-0.3042** (0.1291)	-0.2321** (0.1041)	-0.1827** (0.0916)	-0.1806** (0.0860)
R&D	0.0817 (0.1627)	0.0037 (0.1438)	0.9651*** (0.3218)	0.8626*** (0.2828)
Ind-adj Tobin's Q	-0.0015 (0.0044)	-0.0026 (0.0058)	0.0088* (0.0049)	0.0068* (0.0040)
PastStockReturn	0.0268 (0.0169)	0.0337* (0.0178)	0.0814** (0.0351)	0.0819** (0.0346)
FreeCashFlow	0.2591** (0.1232)	0.1967* (0.1173)	-0.0750 (0.1202)	-0.0573 (0.1104)
NonCashWorking	-0.0518 (0.0404)	-0.0426 (0.0384)	-0.1017 (0.0710)	-0.0993 (0.0678)
Liquidity	-0.1451*** (0.0488)	-0.1399*** (0.0447)	-0.0866*** (0.0231)	-0.0824*** (0.0227)
RelaDealSize	-0.0560* (0.0339)	-0.0618* (0.0325)	-0.1581*** (0.0377)	-0.1559*** (0.0356)
FriendlyDeal	0.0114 (0.0266)	0.0150 (0.0320)	-0.0672** (0.0254)	-0.0721*** (0.0259)
HiTech	0.0360 (0.0231)	0.0301 (0.0218)	0.0024 (0.0140)	-0.0042 (0.0141)
Diversification	0.0199* (0.0120)	0.0180 (0.0114)	0.0580*** (0.0221)	0.0641*** (0.0238)
TenderOffer	0.0345** (0.0137)	0.0363*** (0.0139)	0.0033 (0.0127)	-0.0040 (0.0135)
CashDum	-0.0013 (0.0119)	0.0047 (0.0123)	-0.0096 (0.0131)	0.0014 (0.0116)
HiTech*RelaDealSize	0.0682 (0.0581)	0.0869 (0.0601)	0.1471*** (0.0423)	0.1510*** (0.0412)
Year Dummies	Y	Y	Y	Y
Ind Dummies	Y	Y	Y	Y
No. of Obs	858	858	1542	1542
R <sup>2</sup>	0.2895	0.3156	0.3699	0.3726

Table 4. GTT and Subsequent Industry-Adjusted ROA and Industry-Adjusted Tobin's Q

This table presents the results of regressions of subsequent industry-adjusted ROA and industry-adjusted Tobin's Q on GTT and other control variables. In Panel A, dependent variable is industry-adjusted ROA. The construction of the set of control variables is based on Roll et al. (2009). In Panel B, dependent variable is industry-adjusted Tobin's Q. The construction of the set of control variables are based on Kim and Lu (2011). GTT is our main variable of interest, constructed according to Eq.(1). Detailed definitions of other variables are provided in Appendix A. In columns (2) and (4), year and firm dummies are also included to control for year and firm effects, and their coefficients are omitted. Constant is also omitted. In all columns, standard errors are clustered at firm level, corrected for heteroscedasticity, and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Panel A: ROA		Panel B: Tobin's Q	
	(1)	(2)	(3)	(4)
GTT	0.0116*** (0.0008)	0.0053*** (0.0011)	0.1711*** (0.0231)	0.0828*** (0.0239)
SIZE	0.0001 (0.0005)	-0.0128*** (0.0018)	0.0261 (0.0177)	-0.8144*** (0.0745)
IOR	0.0200*** (0.0028)	0.0032 (0.0066)	-0.4222*** (0.0876)	0.4219*** (0.1534)
CAPX	-0.0673*** (0.0034)	-0.0519*** (0.0057)	-0.4743*** (0.0961)	0.1335 (0.1117)
Leverage	0.0437*** (0.0035)	-0.0586*** (0.0078)	-0.4671*** (0.1174)	-0.2179 (0.1542)
BM	-0.0020* (0.0011)	-0.0526*** (0.0021)		
LagROA	0.7406*** (0.0070)	0.3495*** (0.0107)		
DivDUM	0.0241*** (0.0013)	0.0030 (0.0024)		
INS_OWN			-0.7065** (0.2965)	0.4460 (0.3241)
INS_OWN <sup>2</sup>			0.1103 (0.4311)	-0.5216 (0.4621)
SALE			-0.2168*** (0.0603)	-0.0845 (0.0999)
SALE <sup>2</sup>			0.0147*** (0.0048)	0.0340*** (0.0085)
FixedAsset			0.1650*** (0.0402)	0.1471* (0.0841)
FixedAsset <sup>2</sup>			-0.0299*** (0.0077)	-0.0204** (0.0084)
EBITDA/Sale			0.0377** (0.0177)	0.0395 (0.0252)
R&D			0.0222*** (0.0083)	0.0401*** (0.0147)
AdEx			0.0278 (0.0886)	-0.1040 (0.1522)
Firm Dummies	N	Y	N	Y
Year Dummies	N	Y	N	Y
No. Observations	103393	103393	42998	42998
R <sup>2</sup>	0.6339	0.4598	0.0105	0.4171

Table 5. Positive Liquidity Shock (Decimalization)

This table reports the results of the impact of positive liquidity shock (Decimalization) on the association between GTT and abnormal announcement returns of acquiring firms and the results of instrument variables estimations. The sample includes the period from 1980 to 2012 and acquisitions of public targets. The dependent variable is 5-day abnormal announcement returns of acquiring firms. GTT is our main variable of interest, constructed according to Eq.(1). In column (1), Decimalization (DECIMAL1) is a dummy variable that equals one for firms with fiscal year end after January 31, 2001, and zero otherwise. In column (2), Decimalization (DECIMAL2) is a dummy variable that equals one for firms with fiscal year from 2002 to 2004 and zero from 1998 to 2000. Detailed definitions of other variables are provided in Appendix A. Year dummies and two-digit industry dummies are also used to control for year and industry effects, while their coefficients are omitted. Standard errors are clustered at firm level and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Dependent Variable: CAR (-2,2)	
	(1) DECIMAL1	(2) DECIMAL2
GTT	0.0894*** (0.0299)	0.2011*** (0.0497)
GTT×DEC	0.0261* (0.0142)	0.0599** (0.0265)
SIZE	-0.0551*** (0.0135)	-0.1163*** (0.0246)
IOR	-0.0710* (0.0405)	-0.2883** (0.1262)
Leverage	0.2015** (0.0919)	0.6058*** (0.2076)
FixedAsset	-0.0250 (0.0520)	-0.2118 (0.1804)
ROA	-0.1900** (0.0853)	0.0719 (0.1899)
R&D	0.8878*** (0.3073)	2.1211*** (0.4529)
Ind-adj Tobin's Q	0.0092** (0.0039)	0.0135** (0.0065)
PastStockReturn	0.0798** (0.0340)	0.1546*** (0.0535)
FreeCashFlow	-0.0948 (0.0979)	-0.7313*** (0.2589)
NonCashWorking	-0.1497** (0.0632)	-0.4464*** (0.1196)
Liquidity	-0.0828*** (0.0245)	-0.1765*** (0.0478)
RelaDealSize	-0.3896*** (0.0957)	-0.6591*** (0.1167)
FriendlyDeal	-0.0983*** (0.0365)	0.0434 (0.1665)
HiTech	-0.0566*** (0.0215)	-0.1045 (0.0692)
Diversification	0.0633*** (0.0230)	0.1371*** (0.0482)
TenderOffer	0.0116 (0.0131)	0.0492 (0.0457)
CashDum	-0.0292* (0.0171)	-0.0789* (0.0416)
HiTech×RelaDealSize	0.4051*** (0.1062)	0.7622*** (0.1721)
Year Dummies	Y	Y
Ind Dummies	Y	Y
No. of Obs	1558	457
R <sup>2</sup>	0.3284	0.5707

Table 6. The impact of changes in IOR and Bushee Institutional Investors Class on Governance Through Trading

This table presents the impact of changes in IOR and Bushee Institutional Investors Class on the effect of GTT on abnormal announcement returns of acquiring firms. The sample includes the period from 1980 to 2012 and acquisitions of public targets. The dependent variable is 5-day abnormal announcement returns of acquiring firms. GTT is our main variable of interest, constructed according to Eq.(1). Panel A includes the results of the impact of changes in IOR on the effect of GTT on abnormal announcement returns of acquiring firms. Column (1) includes firms with negative  $\Delta IOR$ . Column (2) includes firms with positive  $\Delta IOR$ . Panel B includes results of the impact of Bushee institutional investors class on the effect of GTT on abnormal announcement returns of acquiring firms. Based on Bushee's (2001) institutional investors' classification, we decompose GTT measure into two components: non-transient GTT and transient GTT. In column (3), non-transient GTT is the GTT measure constructed from the position changes of the dedicated and quasi-indexer institutional investors. In column (4), transient GTT is the GTT measure constructed from the position changes of the transient institutional investors. Detailed definitions of other variables are provided in Appendix A. Year dummies and two-digit industry dummies are also used to control for year and industry effects, while their coefficients are omitted. Standard errors are clustered at firm level and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		Dependent Variable: CAR(-2,2)			
		Panel A: Changes in IOR		Panel B: Bushee Institutional Investors Class	
		(1) Reduced IOR	(2) Increased IOR	(3) Non-transient GTT	(4) Transient GTT
GTT		0.1073** (0.0480)	0.0911** (0.0413)	0.0715*** (0.0246)	0.0312 (0.0459)
SIZE		-0.0836*** (0.0230)	-0.0453*** (0.0163)	-0.0531*** (0.0151)	-0.0543* (0.0280)
IOR		-0.0623 (0.0991)	-0.0565 (0.0441)	0.0341 (0.0356)	0.0998 (0.0724)
Leverage		0.3279 (0.2110)	0.1356 (0.1044)	0.0221 (0.0631)	-0.0164 (0.1221)
FixedAsset		-0.0860 (0.1101)	0.0027 (0.0611)	-0.0527 (0.0437)	-0.0541 (0.1173)
ROA		-0.0224 (0.1141)	-0.1638 (0.1461)	-0.1295 (0.1014)	-0.1135** (0.0572)
R&D		1.3319*** (0.4555)	0.5832 (0.4015)	0.8573** (0.3683)	0.5044 (0.5551)
Ind-adj Tobin's Q		0.0313*** (0.0096)	0.0015 (0.0030)	0.0137*** (0.0053)	0.0038 (0.0033)
PastStockReturn		0.1849*** (0.0644)	0.0309 (0.0276)	0.0275 (0.0239)	0.0832** (0.0387)
FreeCashFlow		-0.6438*** (0.2093)	0.0017 (0.0968)	-0.1026 (0.1346)	-0.4455 (0.3763)
NonCashWorking		-0.2846** (0.1316)	-0.0924 (0.0799)	-0.1487** (0.0614)	-0.0901 (0.1070)
Liquidity		-0.1249*** (0.0412)	-0.0578* (0.0323)	-0.0909*** (0.0324)	-0.0820 (0.0735)
RelaDealSize		-0.5540*** (0.1450)	-0.3124*** (0.1072)	-0.0116 (0.0078)	-0.1622*** (0.0508)
FriendlyDeal		-0.1183 (0.0890)	-0.0956** (0.0454)	-0.0350* (0.0191)	-0.1200* (0.0648)
HiTech		-0.0675 (0.0411)	-0.0489* (0.0260)	0.0471** (0.0192)	0.0635 (0.0633)
Diversification		0.0386 (0.0329)	0.0564* (0.0302)	0.0357** (0.0156)	0.0427 (0.0330)
TenderOffer		0.0256 (0.0318)	0.0083 (0.0173)	0.0134 (0.0136)	-0.0035 (0.0243)
CashDum		0.0025 (0.0317)	-0.0296 (0.0205)	0.0145 (0.0133)	0.0299 (0.0256)
HiTech×RelaDealSize		0.5607*** (0.1612)	0.3224*** (0.1239)	-0.0212 (0.0136)	0.1335** (0.0558)
Year Dummies		Y	Y	Y	Y
Ind Dummies		Y	Y	Y	Y
No. of Obs		499	1059	1113	404
R <sup>2</sup>		0.4806	0.2698	0.2555	0.2491



Table 7. The Impacts of Financial Constraints and Payment Method on Governance Through Trading

This table reports the results of the effects of financial constraints and payment method on the association between GTT and abnormal announcement returns of acquiring firms. The sample includes the period from 1980 to 2012 and acquisitions of public targets. The dependent variable is 5-day abnormal announcement returns of acquiring firms. GTT is our main variable of interest, constructed according to Eq.(1). In Panel A, we use WW index as the proxy for the degree of financial constraints. We put a firm in the more financially constrained subsample if WW index is above the median of the sample, and in the less financially constrained subsample otherwise. We construct WW index by using the methodology described in Whited and Wu (2006). In Panel B, we divide samples based on whether the deal uses 100% cash for payment as reported in SDC. Column (3) includes deals that use 100% cash for payment. Column (4) refers to the complement sample. Detailed definitions for the variables are provided in Appendix A. Year dummies and two-digit industry dummies are also used to control for year and industry effects, while their coefficients are omitted. Standard errors are clustered at firm level and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Dependent Variable: CAR(-2,2)				
	Panel A: WW Index		Panel B: Cash Deal	
	(1) Constrained	(2) Non-constrained	(3) All-cash Deal	(4) Non-all-cash Deal
GTT	0.0078 (0.0149)	0.0697** (0.0347)	0.0172 (0.0187)	0.1201*** (0.0382)
WW Index	-0.0020 (0.0298)	-0.3524* (0.1879)		
SIZE	-0.0070 (0.0077)	-0.0804*** (0.0280)	-0.0269** (0.0118)	-0.0614*** (0.0165)
IOR	-0.0477 (0.0358)	0.0234 (0.0369)	0.0484 (0.0360)	-0.1012* (0.0607)
Leverage	0.0057 (0.0674)	0.1018 (0.0978)	-0.0541 (0.0636)	0.3092** (0.1351)
FixedAsset	-0.0708 (0.0445)	0.1469** (0.0642)	0.0420 (0.0430)	-0.0003 (0.0674)
ROA	0.0341 (0.1149)	-0.1960** (0.0873)	0.2371** (0.0994)	-0.2951** (0.1253)
R&D	-0.0323 (0.1497)	-0.1842 (0.1237)	-0.3379** (0.1437)	1.2332*** (0.3735)
Ind-adj Tobin's Q	-0.0016 (0.0054)	0.0027 (0.0085)	0.0148* (0.0082)	0.0081* (0.0048)
PastStockReturn	0.0183 (0.0254)	0.0171 (0.0191)	0.0476 (0.0316)	0.0999** (0.0422)
FreeCashFlow	0.0268 (0.1074)	0.1273 (0.0895)	-0.0526 (0.0966)	-0.0623 (0.1194)
NonCashWorking	-0.0969* (0.0495)	0.0830 (0.0521)	0.0925* (0.0542)	-0.2298*** (0.0820)
Liquidity	0.0278 (0.0210)	-0.1358*** (0.0468)	-0.0314 (0.0245)	-0.1062*** (0.0343)
RelaDealSize	-0.1841*** (0.0599)	-0.1337*** (0.0496)	-0.1784*** (0.0478)	-0.3529*** (0.0835)
FriendlyDeal	-0.1116*** (0.0298)	-0.0184 (0.0325)	-0.0839** (0.0361)	-0.0464 (0.0637)
HiTech	-0.0436** (0.0205)	-0.0290 (0.0287)	-0.0217 (0.0183)	-0.0581** (0.0283)
Diversification	0.0106 (0.0123)	0.0049 (0.0165)	0.0007 (0.0134)	0.0928*** (0.0309)
TenderOffer	0.0132 (0.0130)	0.0040 (0.0171)	-0.0081 (0.0134)	0.0238 (0.0215)
CashDum	-0.0055 (0.0138)	0.0252 (0.0189)		
HiTech×RelaDealSize	0.1996*** (0.0694)	0.1201* (0.0642)	0.1908*** (0.0552)	0.3963*** (0.1096)
Year Dummies	Y	Y	Y	Y
Ind Dummies	Y	Y	Y	Y
No. of Obs	569	569	516	1042
R <sup>2</sup>	0.4474	0.4860	0.5524	0.3878

Table A-1. GTT and Stock Price Informativeness (AdjPIN)

This table reports the effect of GTT on the contemporaneous stock price informativeness. AdjPIN, the measure of adjusted probability of information based trading (Duarte and Young (2009)), is used to proxy for stock price informativeness. GTT is our main variable of interest, constructed according to Eq.(1). SIZE is defined as logarithm of market capitalization. BM ratio is the ratio of book value of equity and the market value of equity. IOR is the institutional ownership ratio, based on 13F data. Age is derived from the date when the firm's total asset data first appeared in Compustat. StkRet refers to the compounded annual stock return. StdRet refers to the annualized standard deviation of monthly stock return. StkPrc refers to the average monthly stock price. Year and firm dummies are also used to control for year and firm effects, while their coefficients are omitted. Standard errors are clustered at firm level, corrected for heteroskedasticity, and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		Dependent Variable: AdjPIN							
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GTT	0.0031** (0.0016)	0.0060*** (0.0016)	0.0062*** (0.0016)	0.0074*** (0.0017)	0.0075*** (0.0017)	0.0080*** (0.0017)	0.0078*** (0.0017)	0.0080*** (0.0017)	
SIZE		-0.0212*** (0.0009)	-0.0240*** (0.0011)	-0.0224*** (0.0011)	-0.0224*** (0.0011)	-0.0232*** (0.0011)	-0.0234*** (0.0011)	-0.0247*** (0.0012)	
BM			-0.0074*** (0.0015)	-0.0069*** (0.0015)	-0.0069*** (0.0015)	-0.0044*** (0.0016)	-0.0043*** (0.0016)	-0.0043*** (0.0016)	
IOR				-0.0280*** (0.0060)	-0.0279*** (0.0060)	-0.0259*** (0.0060)	-0.0260*** (0.0060)	-0.0280*** (0.0062)	
AGE					-0.0005 (0.0020)	-0.0010 (0.0019)	-0.0010 (0.0019)	-0.0011 (0.0019)	
StkRet						0.0109*** (0.0010)	0.0112*** (0.0010)	0.0110*** (0.0010)	
StdRet							-0.0137 (0.0100)	-0.0124 (0.0100)	
StkPrc								0.0002** (0.0001)	
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Firm Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
No. of Obs	40288	40252	40250	40250	40245	40245	40245	40245	
R <sup>2</sup>	0.5957	0.6118	0.6124	0.6131	0.6131	0.6153	0.6153	0.6158	

Table A-2. GTT and Stock Price Informativeness (1-R<sup>2</sup>)

This table reports the effect of GTT on the contemporaneous stock price informativeness. 1-R<sup>2</sup> proxies for price nonsynchronicity, which measures the firm-specific stock return variation (Roll (1988), Morck et al. (2000), Durnev et al. (2003), Durnev et al. (2004), and Chen, Goldstein, and Jiang (2007)). GTT is our main variable of interest, constructed according to Eq.(1). SIZE is defined as logarithm of market capitalization. BM ratio is the ratio of book value of equity and the market value of equity. IOR is the institutional ownership ratio, based on 13F data. Age is derived from the date when the company's total asset data first appeared in Compustat. StkRet refers to the compounded annual stock return. StdRet refers to the annualized standard deviation of monthly stock return. StkPrc refers to the average monthly stock price. Year and firm dummies are also used to control for year and firm effects, while their coefficients are omitted. Standard errors are clustered at firm level and corrected for heteroskedasticity, and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% level, respectively.

	Dependent Variable: 1-R <sup>2</sup>							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
GTT	0.0271*** (0.0068)	0.0835*** (0.0062)	0.0861*** (0.0062)	0.1186*** (0.0066)	0.1162*** (0.0066)	0.1206*** (0.0066)	0.1017*** (0.0066)	0.1010*** (0.0066)
SIZE		-0.4409*** (0.0072)	-0.4607*** (0.0083)	-0.3863*** (0.0086)	-0.3861*** (0.0086)	-0.3978*** (0.0087)	-0.4166*** (0.0087)	-0.4053*** (0.0093)
BM			-0.0555*** (0.0109)	-0.0240** (0.0107)	-0.0309*** (0.0109)	-0.0089 (0.0111)	-0.0031 (0.0110)	-0.0030 (0.0109)
IOR				-1.0576*** (0.0509)	-1.0814*** (0.0498)	-1.0425*** (0.0502)	-1.0485*** (0.0493)	-1.0398*** (0.0493)
AGE					0.0912*** (0.0168)	0.0841*** (0.0169)	0.0764*** (0.0166)	0.0759*** (0.0166)
StkRet						0.1014*** (0.0065)	0.1394*** (0.0068)	0.1395*** (0.0068)
StdRet							-1.3811*** (0.0841)	-1.3812*** (0.0841)
StkPrc								-0.0015*** (0.0005)
Year Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No. of Obs	135632	135405	135401	135401	135344	135323	135298	135298
R <sup>2</sup>	0.6724	0.7084	0.7086	0.7129	0.7131	0.7145	0.7185	0.7187

Table A-3. Descriptive Statistics

This table presents the summary statistics of variables. Panel A reports the summary statistics for variables in industry-adjusted Tobin's Q sample. Panel B reports the summary statistics for variables in industry-adjusted ROA sample. GTT is our main variable of interest, constructed according to Eq.(1). Detailed definitions of other variables are reported in Appendix A.

Descriptive Statistics				
	(1) Obs. No.	(2) Mean	(3) Std. Dev.	(4) Median
Panel A: Industry-adjusted Tobin's Q Sample				
Ind-Adj Tobin's Q	42,998	-0.679	2.393	-0.290
GTT	42,998	3.484	0.935	3.660
INS_OWN	42,998	0.074	0.130	0.022
INS_OWN <sup>2</sup>	42,998	0.022	0.090	0.000
SALE	42,998	5.492	2.080	5.389
SALE <sup>2</sup>	42,998	34.531	23.768	29.050
FixedAsset	42,998	0.514	0.953	0.203
FixedAsset <sup>2</sup>	42,998	1.175	5.431	0.041
EBITDA/Sale	42,998	-0.081	1.636	0.151
R&D	42,998	0.622	2.431	0.000
AdEx	42,998	0.073	0.255	0.000
SIZE	42,998	6.222	2.067	6.139
IOR	42,998	0.426	0.276	0.405
CAPX	42,998	0.237	0.210	0.184
Leverage	42,998	0.191	0.175	0.154
Panel B: Industry-adjusted ROA Sample				
Ind-Adj ROA	103,393	-0.100	0.256	-0.027
GTT	103,393	3.214	1.288	3.550
SIZE	103,393	0.355	0.281	0.299
IOR	103,393	5.067	2.083	4.933
CAPX	103,393	0.121	0.298	0.041
Leverage	103,393	0.211	0.190	0.181
BM	103,393	-0.713	0.847	-0.636
LagROA	103,393	-0.089	0.214	-0.029
DivDUM	103,393	0.420	0.494	0.000

Table A-4. Controlling for the Effect from Shareholder Rights and Price Informativeness

This table presents the main results after controlling for the effect of shareholder rights and price informativeness. Dependent variables are subsequent abnormal announcement returns of acquiring firms (CAR(-2,2)), and control variables are composed based on specification (2) of Table 2. GTT is our main variable of interest, constructed according to Eq.(1). We sum up the absolute quarterly change of each institutional investor's holding over quarters -4 to -1 prior and adjacent to the quarter of the M&A announcement. Columns (1) include E index, the managerial entrenchment index (Bebchuk et al. (2009)), as control variable. Columns (2) include G index, the governance index (Gompers et al. (2003)), as control variable. Columns (3) include AdjPIN, the measure of adjusted probability of information based trading (Duarte and Young (2009)), as control variable. Columns (4) include 1-R<sup>2</sup> (price nonsynchronicity), the measure the firm-specific stock return variation (Roll (1988), Morck et al. (2000), Durnev et al. (2003), Durnev et al. (2004), and Chen, Goldstain, and Jiang (2007)), as control variable. Detailed definitions for the variables are provided in Appendix A. Year and two-digit industry dummies are included to control for year and industry effects. Standard errors are clustered at firm level and reported in parentheses. \*, \*\*, and \*\*\* indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	CAR(-2,2)			
	(1) E-index	(2) G-index	(3) AdjPIN	(4) 1-RSQ
GTT	0.0264* (0.0155)	0.0230* (0.0129)	0.0154* (0.0093)	0.1038*** (0.0320)
E-index	-0.0015 (0.0034)			
G-index		-0.0010 (0.0013)		
AdjPIN			-0.0610 (0.0939)	
1-RSQ				-0.2425* (0.1277)
SIZE	-0.0139 (0.0096)	-0.0134* (0.0081)	-0.0035 (0.0034)	-0.0693*** (0.0179)
IOR	-0.0292 (0.0403)	-0.0345 (0.0290)	-0.0224 (0.0216)	-0.0753* (0.0415)
Leverage	0.0269 (0.0721)	-0.0239 (0.0547)	-0.0098 (0.0370)	0.2463*** (0.1019)
FixedAsset	0.0249 (0.0440)	0.0038 (0.0304)	-0.0235 (0.0260)	-0.0641 (0.0560)
ROA	-0.0924 (0.0901)	-0.0635 (0.0753)	-0.1647** (0.0663)	-0.1677** (0.0794)
R&D	0.0343 (0.1113)	0.0765 (0.0937)	-0.1301 (0.1103)	0.7619*** (0.2479)
Ind-adj Tobin's Q	0.0045 (0.0032)	0.0005 (0.0032)	-0.0037 (0.0029)	0.0070** (0.0028)
PastStockReturn	0.0174 (0.0141)	0.0114 (0.0120)	-0.0113 (0.0117)	0.0753** (0.0322)
FreeCashFlow	0.2010** (0.0981)	-0.0122 (0.0735)	0.1102* (0.0636)	-0.1426 (0.0866)
NonCashWorking	0.1289** (0.0505)	0.0144 (0.0293)	-0.0482* (0.0280)	-0.1644** (0.0687)
Liquidity	-0.0178** (0.0082)	-0.0064 (0.0068)	-0.0205** (0.0085)	-0.0827*** (0.0239)
RelaDealSize	-0.0765** (0.0320)	-0.1356*** (0.0282)	-0.0744*** (0.0240)	-0.3779*** (0.0783)
FriendlyDeal	-0.0288 (0.0289)	-0.0352** (0.0150)	-0.0238 (0.0158)	-0.1254*** (0.0368)
HiTech	0.0353* (0.0204)	-0.0011 (0.0123)	-0.0065 (0.0110)	-0.0589*** (0.0195)
Diversification	0.0003 (0.0107)	-0.0013 (0.0071)	-0.0044 (0.0071)	0.0627*** (0.0225)
TenderOffer	0.0326*** (0.0116)	0.0063 (0.0085)	0.0108 (0.0087)	0.0027 (0.0133)
CashDum	0.0224* (0.0118)	0.0130 (0.0089)	-0.0032 (0.0089)	-0.0203 (0.0144)
HiTech×RelaDealSize	0.0325 (0.0521)	0.0790** (0.0323)	0.0669** (0.0304)	0.3910*** (0.0875)
Ind. Dummies	Y	Y	Y	Y
Firm Dummies	N	N	N	N
Year Dummies	Y	Y	Y	Y
No. Observations	343	579	738	1553
R <sup>2</sup>	0.3723	0.1946	0.2385	0.3578