Blockholder Governance

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Abstract

By using Web Crawler and Textual Analysis programs to create a unique and extensive blockholder dataset, my Ph.D. dissertation examines the impact of blockholders governance related to the financial market, corporate governance, and the short-selling activities at the firm-level. The first chapter introduces the notion of blockholder governance.

In the second chapter, we find that blockholder activism decreases two measures of information quality of stock prices. These effects are concentrated among blockholders who intend to improve either corporate governance or manager performance. By contrast, those who acquire their blocks through family bequests or gifts do not influence information quality. Our findings show that uncertainty in activism outcomes and the market's valuation of this activity are how activism influences stock price information quality. We also find that the degree of ownership and the number of active blockholders improve information quality.

In the third chapter, we classify blockholders into reputation conscious (RC) and reputation unconscious (RU) blockholders. Whereas some blockholders managing other investors' assets care more about reputation and become RC, others, who primarily rely on their own capital, are RU. We find that heterogeneous blockholder structure (i.e., a mix of RU and RC blockholders) is associated with better firm performance than all other blockholder structures. As RC (RU) blockholders are more likely to remain passive (become active), these findings highlight an important governance role for passive large shareholders: passive blockholders strategically complement active blockholders.

In the last chapter, by using a quasi-natural experiment and a comprehensive blockholder dataset from the U.S. market, we investigate how short selling affects blockholder governance. We find the effect of short selling depends crucially on blockholder type: Short-selling seems to substitute out passive blockholders but encourage more activism events and goals from active blockholders, which are related to monitoring managers and providing expertise and advise to help managers. Further analyses reveal that blockholders that choose to stay in the firm with increasing short selling can improve the firm's value. These detailed purposes of activism lead to better firm performance compared with other active blockholders that focus on investment goals.

Declaration

This thesis contains no material which has been accepted for the award of any other degree or diploma at any university or equivalent institution and that, to the best of my knowledge and belief, this thesis contains no material previously published or written by another person, except where due reference is made in the text of the thesis.

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Chapter One - Introduction to Blockholder Governance

Blockholder governance is one of the most effective mechanisms used to alleviate the agency problem when ownership and control are separate (Edmans and Holderness, 2017). Blockholders can directly intervene in the incumbent management by raising their "Voice" (i.e., through shareholder activism or by disciplining managers through activism). The other blockholders, which remain passive, also can "Threat to Quit," to discipline managers if the target firm does not perform well (i.e., they can discipline managers by trading).[1]

Three main streams of research are being conducted in the field of blockholder governance. The first is related to how active blockholders, such as hedge funds, affect target firms' performance via the "Voice" channel. Brav et al. (2008, 2015) and Bebchuk et al. (2016) find that hedge fund activism stimulates positive stock price reactions in the short term and improved firm performance in the long term. The second is related to passive blockholders. Edmans (2009), Edmans et al. (2011, 2013), and Appel et al. (2016a) document that passive blockholders can improve firms' value and corporate governance by threating to sell their stocks. Passive blockholders can also support or motivate other active blockholders to engage more in governance (Appel et al., 2016b; Song, 2017). Edmans et al. (2013) further find that high liquidity increases blockholders' willingness to remain passive, because the cost of selling stocks is reduced. The third and final stream is related to the externality of blockholder governance. Aslan and Kumar (2016) find that hedge fund activism has negative spillover effects on peer firms in the same industry. Hege and Zhang (2019) document that hedge fund activism can affect firms that have not yet been targeted by activists.

But some other issues, which are considered to be first-order questions in the blockholder literature, have not yet been completely and satisfactorily addressed. For example, if there is a stock price reaction toward active hedge funds acquisitions, what else in the

[1] "Threat to Quit" is also reflected in "Wall Street Walk" (Edmans, 2009). Shareholders sell their stocks to leave the firm, so managers are disciplined when the stock price declines.

financial market could be affected by blockholder activism? Are structures of blockholders, in addition to individual blockholder governance, important to affect firm performance? Do any important determinations, other than stock liquidity, influence the strength of blockholder governance? This dissertation aims to address these questions.

Blockholders are an important point of study, because virtually every firm has them (Edmans and Holderness, 2017). The prior literature has tended to use 5% ownership as the threshold to define blockholders. In the United States, when blockholders acquire ownership greater than or equal to 5%, they must file SEC 13D (active filing) or SEC 13G (passive filing). 13D filings are chosen by blockholders that want to intervene in a target firm or directly influence the current management. Alternatively, 13G filings are used by blockholders that acquire the target firm for investment purposes only.

All blockholder filings are stored on the Edgar database managed by the SEC. This dissertation uses Web-crawler programs to download all blockholder filings (13D and 13G) from the Edgar database between 1994 and 2015. We download approximately 150,000 filings for the 13D and 13D amendments and 420,000 filings for the 13G and 13G amendments. We further deploy textual analysis programs to read the content of each filing and extract the specific information about the percentage of ownership, changes in ownership, blockholder type, sources of funds (13D only), and purposes of transactions (13D only) from each filing.[2]

Chapter 2 is coauthored with Stephen J. Brown, Elaine Hutson, and Jin Yu. We study the impact of blockholder activism on stock price information quality. We find that the information quality of stock prices is negatively affected by active blockholders in 1 month before and in the same month of activism events. However, the larger ownership held by active

[2] SEC Section 13(g) does not require passive blockholders to disclose the source of funds and purposes of transaction (intuitively, the purpose of passive blockholders is investment). A change of ownership is only required to be disclosed when it is more than 5%.

blockholders and a greater number of active blockholders would lead to the higher information quality of stock prices. We find the noises created by uncertainties in market valuations about blockholder activism and the uncertainties in outcomes of blockholder activism are the channels through which active blockholders affect the information quality of stock prices. The main contribution of Chapter 2 is to explore the impact of blockholder activism on stock prices in the financial market. Although Scholes (1972) and Edmans (2014) prove that investors know the direction of price impact upon blockholders trading, we show that investors are uncertain about the extent that stock prices move.

Chapter 3 is coauthored with Stephen J. Brown and Jin Yu. This chapter examines blockholder structures. We use blockholders' reputation consciousness to classify blockholders and their structures. Active blockholders are those with low reputation consciousness, and passive blockholders are those with high reputation consciousness. Heterogenous structures include both active and passive blockholders, and homogenous structures include one kind of blockholder. The key research output in Chapter 3 flows in two directions: (1) blockholders who tend to remain passive could improve blockholder governance by motivating other active blockholders to engage more in governance. The hetergoenous structure, which is mix of active and passive blockholders, is found to perform better than the homogenous structures, which contains one kind of blockholder. (2) Stock liquidity is the key determinant of dynamic change in blockholder structures.

Chapter 3 makes two main contributions. First, we are among the very few studies to examine the effectiveness of blockholder structures and total blockholder governance. Our study complements the prior literature focusing on active blockholders and passive blockholders separately. Second, we also extend previous explanations of the role of stock liquidity in blockholder governance. We find that lower stock liquidity can be ideal in a heterogenous structure, to prompt active blockholders in the firm to intervene, and higher stock liquidity can also attract active blockholders to intervene in the firm with an ineffective blockholder structure (the structure includes all passive blockholders). The impact of stock liquidity on blockholder governance interacts with the blockholder structures.

Chapter 4 is coauthored with Jin Yu. We investigate how the prospect of short-selling activities distinctively affects active and passive blockholders. We find that a great number of passive blockholders will leave a target firm if the prospect of short selling is increased, but more active blockholders will intervene in the same situation. Both active and passive blockholders being confronted by the great prospect of short-selling leads to better firm performance. Chapter 4 mainly contributes to the literature by illustrating how the high short-selling tendency pushes the remaining blockholders to become more active, and these remaining blockholders resist the price decline caused by short sellers. Therefore, to improve firms' performance, it is important that blockholders are educated and motivated to stay, are cooperative, and put more effort into activism in the target firm with high short-selling pressure.

By accessing the complete profiles of blockholder filings in the U.S. market, this dissertation contributes to the literature by shedding new light on blockholder governance.

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Chapter Two- Blockholder Activism and Stock Price Information Quality

> [N]oise makes it very difficult to test either practical or academic theories about the way that financial or economic markets work. We are forced to act largely in the dark.
>
> —Professor Fischer Black,
>
> President of the American Finance Association[1]

2.1. Introduction

Information released through blockholder trading and activism significantly affects stock prices (Scholes, 1972; Barclay and Holderness, 1992; Edmans, 2009). Because blockholder activism has significant governance implications for the target firm, stock market investors tend to positively react to hedge fund activism (Brav et al., 2008; Edmans, 2014). Equally important is the fact that blockholder activism can alter the quality of information. One plausible inference is that blockholders are traders with access to private and firm-specific information and for this reason can make prices more informative (Morck, Yeung, and Yu, 2000). By contrast, if market investors are unable to fully, efficiently comprehend the private information released by blockholder activism, the quality of stock price information can be impaired in the short run. Our paper focuses on how blockholder activism affects stock price information quality over a 13-month event window around activism events.

A tremendous rise in blockholder activism makes our focus on information quality critical to financial economists and regulators. A survey conducted by Edmans and Holderness (2017) finds that more than 96% of public firms in the U.S. market are occupied by at least one blockholder. A large number of blockholders are activists who initiate a plan to change the

[1] See Black (1986).

management and/or the business of their target firms.[2] Morck, Shleifer, and Vishny (1990) show that hedge fund activism is not just a "stock market side-show." However, the impact of total blockholder activism on the financial market is still not well understood. For this reason, the recent and dramatic increase in blockholder activism has led the Security and Exchange Commission (SEC) to demand more empirical analysis to investigate the comprehensive impact of this activism within the U.S. market (Bebchuk et al., 2015; Bebchuk and Jackson, 2012).

Following Ang et al. (2006, 2009), Chatterjee, John and Yan (2012), Cao, Liang, Lo, and Petrasek (2018), and Busch and Obernberger (2017), we use various proxies to measure information quality along two different dimensions. First, we consider idiosyncratic volatility (*IVOL*) as a proxy for the noise of stock prices.[3] For robustness, we use analysts' dispersions on 1-year-ahead EPS to measure the noise of financial analysts' opinions. Second, we use various measures of *DELAY* to evaluate the speed with which the available information is incorporated into stock prices. These measures of *DELAY* capture the extent of the explanatory power of the previous weekly market return toward the current firm's stock return. The larger the explanatory power from the previous weekly market return, the less efficient is the information incorporated into stock prices.

We follow prior studies in using Schedule 13D filings to measure blockholder activism in the U.S. market[4] and use a web crawler program to construct a comprehensive database of activism events. We capture 45,000 blockholder activism events and 110,000 amendments to those events

[2] According to the EDGAR database, approximately 42,000 activism events (13D filings) occurred between 1994 to 2015 in the U.S. market.

[3] As we will explain, this is not the only possible interpretation of IVOL. Our findings remain qualitatively unchanged when we measure information quality as the R^2 from the market model (Busch and Obernberger, 2017) and the dispersion of financial analysts' forecast (Diether, Malloy, and Scherbina, 2002).

[4] SEC Section 13(d) mandatorily requests that an active blockholder who possesses 5% or more of the total shares and intends to change the way the firm is managed must submit a 13D form to the SEC within 10 business days. Blockholders must lodge a 13D/A form within 10 business days of any amendments.

for the 1994–2015 period. We further use Perl to build textual analysis algorithms to read each 13D and 13D/A document to extract information, such as the purpose of the transaction, the type of blockholder, fund source, the total percentage of ownership, the number of active blockholders in the same target firm, and other information.

We find a sharp impairment for all stock price information quality measures in one month before and the month of the blockholder activism event during a 13-month period around the month of activism. However, all information quality measures rapidly reduce after the month of activism. The results are robust to varying the length of the event window and to the use of alternative measures of information accuracy and information efficiency. We also address firm and time fixed effects as well as issues of causality.

Our main stock price information quality measures are *IVOL* and *DELAY*. *DELAY* captures how slowly systematic information is incorporated in stock prices: the greater the *DELAY*, the poorer the quality of information. However, *IVOL* could be positively or negatively associated with stock price information quality. One strand of literature asserts that informed trades impound private and firm-specific information into prices. For this reason, blockholder trading activity should improve price informativeness measured by *IVOL* (Morck, Yeung, and Yu, 2000; Wurgler, 2000; Durnev, Morck, and Yeung, 2004). Another school of thought, however, points out that *IVOL* is a form of noise in the financial market and, to this extent, reflects impaired information quality (Danielsen and Sorescu, 2001; Diether et al., 2002; Boehme, Danielsen, and Sorescu, 2006; Chatterjee, John, and Yan, 2006). Therefore, increases in *IVOL* could be driven by private information and/or noise.

Our evidence is more consistent with the noise interpretation of *IVOL*. In the first place, we find that *IVOL* continues to increase in the 12 months following active blockholders' quit.

Since we have removed firm-month observations that are contaminated by other blockholder activism events, it is hard to contribute the continual increase in *IVOL* after active blockholders' quit to information. In the second place, if private information were responsible for the increase in *IVOL*, we would expect to see a more pronounced relation when active blockholding is larger and the number of active blockholders is greater. Our evidence does not support this conjecture. Finally, we split the sample into internal and external blockholders. If the information interpretation of *IVOL* were correct, we would expect to find that the relation between *IVOL* and the trading activity of internal blockholders with access to private information would be greater than that implied by the trading activity of external blockholders. We do not find this to be the case.

Our findings are in line with the recent literature concerning the costs associated with blockholder activity. The costly nature of blockholding (e.g., costly monitoring and intervention and a lack of diversification benefits) implies that we need to allow outside blockholders—who otherwise would not engage in blockholding—to extract control rents (Bebchuk et al., 2012, 2015; Dhillon and Rossetto, 2015). Put together, the net value of outside block ownership depends on both the value created by and rents extracted by blockholders. Given the potential information asymmetry between the market and a target firm and that between the market and a blockholder, both the value creation and control rents could be a challenging estimation task. In the short run, investors' estimates could diverge on the extent to which firm value can be improved and how much negative impact is caused by rents extraction. As a consequence, information quality decreases upon active blockholder entrance.

Further, information efficiency is impaired because of the high cost of information acquisition (Grossman and Stiglitz, 1980; Hou and Moskow, 2005). For instance, the SEC allows active blockholders to defer disclosing material information about activism for up to 10 days [SEC

13(d) rule]. This pre-disclosure delay provides opportunities for blockholders to keep accumulating stocks for up to 10 days after the event day.[5] Resultantly, desynchronizing the timing of the disclosure and the date of events forces market investors to receive delayed material information about blockholder activism, such as the purpose of the transaction, which increases the cost for market participants to access the timely information about firms being targeted by active blockholders.

We further examine the impact of blockholder activism based on the purpose of the transaction. We show that the impact of activism on information quality is much stronger when active blockholders undertake disciplinary roles to influence the careers of incumbent managers. On the contrary, active blockholders who assume advisory roles weakly affect information quality.[6] These findings imply that information quality greatly declines when the purpose of blockholder activism relates to changing the incumbent management. Changes in management potentially result in greater financial market uncertainties about the future performance of target firms. Therefore, another proposed channel underlying our findings is the uncertainty of the outcome of blockholder activism.

Our paper makes three main contributions to the existing blockholder literature. First, this paper explores the impact of blockholder activism on stock prices in the financial market. Scholes (1972) and Edmans (2014) show that investors know the direction of price impact upon blockholders trading. We find that investors are uncertain about the extent that stock prices move. Cao, Liang, Lo, and Petrasek (2018) find that hedge funds invest in inefficiently priced stocks and

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[5] Active blockholders could continue to affect the stock price within 10 days before a 13(d) is announced to the market.
[6] We use textual analysis programs to read the content of each 13D filing and classify activism by disciplinary role: mergers and acquisition, corporate governance, or using "exiting" to threaten managers. We also classify activism by advisory/investment roles, which are related to business strategies, investment only purposes only, or heritage from family members.

their holdings improve stock price efficiency. We extend their analyses to explore the effects of both blockholder activism events (13D filings) and active blockholdings. In accordance with Cao, Liang, Lo, and Petrasek (2018), we document that active blockholdings lead to an increase in stock price efficiency. Interestingly, our results also reveal that there is a negative short-term effect of blockholder activism on stock price information quality.

Brockman and Yan (2009) show that total blockholder ownership increases *IVOL* and the probability of informed trading (*PIN*). Given the persistent nature of blockholder ownership, their findings likely capture the cross-sectional relation between blockholder activity and information quality. Unlike Brockman and Yan's (2009) sample, which features firm-year observations, we focus on firm-month observations and use a 13-month event window around the filing month (Month 0). This difference allows us to provide novel evidence of the effect of blockholding on stock price information quality. We find that on average *IVOL* increases by 5 to 6 percentage points when a blockholder activism event occurs, but active blockholding actually reduces *IVOL*. In addition to *IVOL*, we also examine financial analysts' forecast dispersion, R^2 from the standard market model, and the efficiency with which information is transmitted into the stock price (*DELAY*), and we obtain similar results. To the best of our knowledge, we are the first to demonstrate that noise is another important channel through which active blockholders influence the stock market.

Second, there is a strand of literature studying the relation between block trading and stock market liquidity. Collin-Dufresne and Fos (2016), Back, Collin-Dufresne, Fos, Li and Ljungqvist, (2018) provide theory justification for activists timing stock market liquidity.[7] Cao, Chen, Liang,

[7] Fos and Kahn (2019) develop a theory model that shows, when activists can choose their toehold, the effect of market liquidity on firm performance depends upon the timing of liquidity trading.

and Lo (2013), Norli, Ostergaard, and Schindele (2014), Collin-Dufresne and Fos, (2015) and Gantchev and Jotikasthira (2019) show active blockholders increase their holdings when stock market liquidity is high. We hypothesize that the stock market finds it difficult to quickly filter out the noise and impound the information contained in block trades as activists camouflage their trades by timing stock liquidity. The negative short-term effect of 13D filings on stock price information quality and efficiency we document in this paper seems supportive of the hypothesis.

Third, and finally, we are among the very few studies that examine the multidimensional blockholder heterogeneity for the entire active blockholders in the U.S. market (see, e.g., Di Maggio, Franzoni, Kermani, and Sommavilla, 2019; Hadlock and Schwartz-Ziv, 2019, and Von Lilienfeld-Toal and Schnitzler, 2019). Using programming techniques, we create a comprehensive and complete dataset for blockholder activism in the U.S. market. Doing so allows us to shed light on active blockholders.

The remainder of the paper proceeds as follows. Section 2 describes the data, sample, programs, and variables used in the paper. Section 3 presents the detailed data analysis, and Section 4 concludes.

2.2. Data, sample, and key variables

2.2.1. Blockholder activism data

We use web crawling programs to collect all non-duplicated 13D (47,010 events) and 13D/A (115,000 events) filings from the EDGAR database, managed by the SEC, from 1994 to 2015 inclusive.[8,9] Our sample begins in 1994, which is the first year that the SEC required public firms to submit all key filings on an electronic platform. We include observations mutually covered by the three main databases used in this study: Compustat (accounting variables), Crsp (financial variables), and Edgar (blockholder variables). Next, by following the literature to construct the main sample,[10] we delete observations with a negative book value of equity. The sample includes all public firms, excluding utilities and financial industries, as defined by the Fama-French 48-industries classification. Finally, we delete all non-target firm observations and target firm observations beyond the 13-month event window around the month of activism. The purpose of doing so is to remove the impact of other non-target firms and target firms' observations not related to the blockholder activism event. The final dataset comprises 95,595 firm-month observations. We winsorize all continues variables at the 1% and the 99% level.

Further, we use textual analysis programs to extract specific information from 13D and 13D/A filings. We extract the following information: blockholder type, fund source, the percentage of the total shares held (including every change greater than 1%, which must be disclosed on the 13D/A forms), the number of active blockholders jointly signing one activism filing, and the purpose of the activism.[11]

We measure blockholder activism along three different dimensions. Similar to Brav et al. (2015), we construct a 13-month event window centered around activism events defined based on

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[8] According the SEC Section 13(D), an active blockholder is defined as a large shareholder possessing more than 5% of total shares in the target firm with the intention to change the management of the target firm. The 13D form must be electronically filed within 10 business days of the acquisition of the blockholding. In the 13D form, the blockholder must disclose important information, including what changes they intend to make in the target company.

[9] Following the initial 13D filing, the activist blockholder is required to file a 13D/A (amendment) if their holding changes more than 1% (either positively or negatively). A final 13D/A filing is also required when the active blockholder's holding falls below 5%, which indicates that they are no longer a blockholder.

[10] Fig. 3 and Table 5 extend the sample to 12 months before and 12 months after the blockholder activism event or blockholders exiting.

[11] The appendix explains in detail key sections of the 13D and 13D/A documents.

13D filings and a set of 13 firm-month dummy variables.[12] In addition to using the individual event-month dummies, we split the 13-month event window into the Prior-Period (Month -6 to Month -2), Month -1, Month 0 (activism event month), and the Post-Period (Month 1 to Month 6) and create a dummy variable for each of the four periods.

The second and third variables of blockholder activism are as follows. The prior literature uses 5% as the threshold to measure blockholder activism (Brav et al., 2008, 2016; Edmans, Fang, and Zur, 2013). Greater holdings imply that an active blockholder has a larger interest in the firm, so they should have a stronger intention to implement changes in the target firm. We use textual analysis programs to collect the percentage of shares held by each active blockholder in each filing. The variable *13D_Size* measures the total percentage of shares held by active blockholders in each month. *Number_13D* measures the total number of active blockholders in the target firm in each month. This variable not only counts the total 13D filers in each firm and month but also aggregates the number of individuals or entities that jointly sign the 13D form. For both variables, we also apply the time weight factor to adjust the value of *13D_Size* and *Number_13D*. The time-weight factor is calculated as the number of days each active blockholder holds their investment in the target firm, divided by 28, 30, or 31 days as the length of each different month.

[Figure 2.1 goes here]

Five main sources of funds are used to finance the acquisitions of activist blocks in a target firm. Fig. 2.1 depicts the five main funding sources used by active blockholders to obtain holdings from 1994 to 2015. The *y*-axis measures the proportions of each funding source. Funding sources are not mutually exclusive; one blockholder activism event can involve multiple funding sources.

[12] For robustness, in Figure 2.3 we also use a 25-month event window (12 months before and 12 months after blockholder activism events).

Funds from the parenting firms or subsidiaries of target firms (Internal funds) and bank loans provide the first two sources of funds. The next three—affiliates, working capital, and personal funds—are related to active blockholders' own capital. Bank loans and funds from blockholders' affiliates, working capital, or personal funds are considered to be external sources.[13] We find that active blockholders tend to rely most on blockholders' own capital. This reliance could be explained by the fact that other fund providers, such as banks and parents or subsidiaries of target firms, may impose restrictions on the use of the funds, such as loan convents. Active blockholders tend to avoid funding channels with strong restrictions. The effect of the source of funds on information quality will be examined in section 2.3.3.2.

[Figure 2.2 goes here]

Fig. 2.2 illustrates the involvement of the 12 main types of active blockholder in the U.S. market from 1994 to 2015. The *y*-axis measures the proportions of each type of blockholder in the U.S. market. Again, types of active blockholders reported in Fig. 2.2 are not mutually exclusive. In one blockholder activism event, different types of entities of blockholders could be involved, effectively enabling multiple blockholders to jointly acquire the stocks of target firms and sign the 13D. Some scholars anticipate that some types of blockholders tend to be very active in raising the activism mechanism and that others are hesitant to engage in activism (Brav et al., 2008, 2015; Edmans et al., 2017). For instance, banks and insurance companies are the smallest players, with a participation rate of less than 0.1%. Investment firms and investment advisors more frequently launch interventions. However, the participation rate among investment firms and investment advisors is much lower than that among the dominate activists: corporations, partnerships, and, in

[13] In the further analysis, we aggregate affiliates, working capital and personal funds of blockholders as one source of funds, which is blockholders' self-funding.

particular, individuals. The effects of activism from individuals and corporations have not been thoroughly investigated in the literature.

2.2.2. Idiosyncratic volatility variable and other noise variables

We use *IVOL* as the first proxy for stock price information quality. We obtain daily stock return and value-weighted market return data for all U.S. firms from Crsp for the period 1994–2015. Following Ang et al. (2006, 2009), we measure *IVOL* according to the Fama-French three-factor model as follows:

$$r_i = \alpha_0 + \beta_i MKT + \gamma_i SMB + \theta_i HML + \varepsilon_i, \qquad (1)$$

where r_i represents the daily excess stock return in each month; *MKT* is the value-weighted excess market return over the risk-free rate; and *SMB* and *HML* are size and value factors (obtained from French's data library). *IVOL* is measured as the standard deviation of the residual ε_i from the monthly rolling regression (1). We multiple *IVOL* by the square root of 22 as the monthly *IVOL*.

As *IVOL* could capture both firm-specific information and noise, we use two more alternative information quality measures, both of which are robustness tests correlated with noise. The first measure is analysts' forecast dispersion (Diether, Malloy, and Scherbina, 2002). Higher analysts' forecast dispersion is interpreted as a greater divergence of opinion or noise among financial analysts (Chatterjee et al., 2012). Analysts' forecast dispersion is calculated as the standard deviation of analysts' estimation on 1-year-ahead EPS, divided by the absolute value of the average EPS forecast in each month reported via I/B/E/S summary.

We also follow Busch and Obernberger (2017) and use R^2 from the market model (model 2 in Section 3.3) to measure the degree of comovement (synchronicity) of individual stock returns with the market return. A higher value of R^2 indicates higher synchronicity and lower firm-specific information incorporated, so we multiply R^2 by -1, which enables us to interpret its regression coefficients the same way as the other two stock price information quality measures. That is, a higher value of R^2 indicates lower synchronicity (correspondingly higher *IVOL*) in this study.

2.2.3. Information efficiency variable

We follow Busch and Obernberger (2017) and Hou and Moskowitz (2005) and measure two variants of *DELAY* in information efficiency. The two *DELAY* measures use lagged daily returns in an extended market model to explain how fast new information is incorporated into stock prices.[14] The base and extended market models are estimated at the firm and month levels. We follow Busch and Obernberger (2017) and use five lags (days) in the extended market model:

$$r_{i,t} = \alpha_i + \beta_i^0 r_{m,t} + \varepsilon_{i,t} \ (base\ model), \tag{2}$$

$$r_{i,t} = \alpha_i + \beta_i^0 r_{m,t} + \sum_{n=1}^{5} \beta_i^n r_{m,t-n} + \varepsilon_{i,t} \ (extended\ market\ model). \tag{3}$$

Therefore, the two *DELAY* measurements are estimated like in Equations. (4) and (5):

$$DELAY = 1 - \frac{R^2_{base}}{R^2_{extend}}. \tag{4}$$

The first *DELAY* measure was initially suggested by Hou and Moskowitz (2005). It is the ratio of R^2 estimated from the two models (the base model and the extended model). The higher the value in *DELAY*, the less information efficiency in stock prices.

$$Coefficient - based\ DELAY = \frac{\sum_{n=1}^{5} n \times \frac{abs(\beta_i^n)}{se(\beta_i^n)}}{\frac{abs(\beta_i^0)}{se(\beta_i^0)} + \sum_{n=1}^{5} \frac{abs(\beta_i^n)}{se(\beta_i^n)}} \tag{5}$$

[14] See Busch and Obernberger (2017, p. 334) for a detailed explanation of the models and the two measurements of delay.

The second *DELAY* measure is adjusted by the coefficients of the two models. It is estimated as the ratio of the lag-weighted sum of the absolute value of coefficients of the lagged market returns relative to the aggregate value of all coefficients, which is also scaled by the standard error of each coefficient. We use *COE_DELAY* as a shorter form in the later sections of this paper.

2.2.4. Control variables data

We obtain the data used to measure the other control variables from the Compustat and Crsp databases. Most control variables are estimated following Busch and Obernberger (2017). The control variables are either at the quarterly level or at the monthly level to be consistent with our panel dataset. They are (1) accounting variables, including total assets; cash, divided by total assets; EBIT, divided by total assets; total dividend, divided by total assets; and the leverage ratio; (2) stock market variables, including the book-to-market ratio; positive or negative monthly stock return; and the absolute difference between the stock price and $30; and (3) liquidity variables, including trading volumes and the relative spread. We also follow Fink et al. (2010) to control for firm age, because the older firms can have less *IVOL*. Table A1 lists a detailed explanation of all controls.

2.2.5. Summary statistics

Table 2.1 reports the summary statistics for the key variables used in this study. Panel A presents information about the number of activism events by the purpose of the transactions in each year from 1994 to 2015. An activism event is admitted when a new 13D form is submitted to the SEC. Any amended documents (13D/A) following the initial 13D are not considered to be new activism events. Blockholders commonly disclose multiple purposes of their transaction (item 4 from 13D) when filing a 13D. Therefore, the number of purposes of the transaction are not mutually exclusive in most activism events. The only exceptions are *Investment* and *Heritage*. These two purposes of the transaction are merely passive. If a 13D filer states the other purposes relating to activism as well as an investment-only purpose, the blockholder will not be considered to be acquiring the target firm for investment only, but the other active purpose becomes more important. Therefore, in this case, the count for *Investment* or *Heritage* would be 0.

These six classifications differ considerably in their activism intensity. *Merger*, *Governance*, and *Threats* are further classified into strong intensity or disciplinary actions, because these activities influence management. *Business Strategy*, *Investment*, and *Heritage* imply an intermediate intensity, because these activities are designed to help management or, at least, not to change managerial behavior. Notably, *Merger* represents the strongest activism, because it presumes a change to the entire target firm. *Heritage* blockholders are the weakest form of activism, because these blockholders only claim to purchase their shares as a gift to their family.

[Table 2.1 goes here]

According to statistics, *Threats* are the most popular form of activism, with a total of 11,607 times. Blockholders can threaten managers as the second channel of governance by selling the block as a way of disciplining managers (Edmans, 2009; Edmans, Fang, and Zur, 2013). A large number of *Threats* provides strong evidence to support the theory in Edmans (2009) and the empirical findings in Edmans, Fang, and Zur (2013). *Governance* and *Business Strategy* are two popular purposes, with 7,249 and 8,191 events, respectively. This finding implies that the advisory role and the disciplinary role undertaken by active blockholders are quite even. A large number of active blockholders also have *Merger* purposes, with 3,273 events. A portion of 13D filers are interested in investment only; this purpose accounts for 4,218 events. Finally, *Heritage* is a small but distinct group. These blockholders acquire a large block of stock as a gift for their family, rather than as a form of real activism against the target firm.

Panel B of Table 2.1 presents summary statistics for the key variables used in the paper. The information variables are *IVOL*, *DELAY*, and coefficient-adjusted *DELAY* (*COE_DELAY*) at the firm-month level. *IVOL* is computed by using daily idiosyncratic volatility to time the square root of 22 in each month. *DELAY* and *COE DELAY* measure stock price efficiency. Greater *DELAY* and *COE_DELAY* indicate slower responses by investors in learning new information. We also have two alternative measurements of information quality. A higher value of R^2 (i.e., multiplying the original value of R^2 with -1) in our study indicates lower synchronicity between market information and stocks' specific information (correspondingly as high *IVOL*). The larger value of *DISPERSION* also suggests greater noise in the information quality.

2.3. Empirical analysis

2.3.1. Blockholder activism and the information quality of stock prices

2.3.1.1. Main measurements for information quality

To examine the hypothesis that blockholder activism reduces the information quality of stock prices, we adopt an event study approach (Brown and Warner, 1985), in which we remove all non-target firms and observations of target firms outside an event window. In particular, we perform the following ordinary least square (OLS) regression:

$$Information\_Quality_{i,t} = \sum_{k=-6}^{6} \beta_k d_{i,t}^k + \gamma Control_{i,t} + \alpha_i + \theta_t + \varepsilon_{i,t}, \qquad (6)$$

where $Information\_Quality_{i,t}$ is measured as either the *IVOL* or *DELAY* for target firm i in month *t*. $d_{i,t}^k,\ k = -6, \dots, +6$, is a set of firm-month dummy variables corresponding to firm-month observations from six months before to six months after the activism event month. Those firm level control variables have been discussed in the section 2.4. We further control for firm and month fixed effects ($\alpha_i\ and\ \theta_t$) in all regressions, to absorb any omitted variations across firms and months. Robust standard errors are adjusted for heteroscedasticity. We examine the dynamic impact of blockholder activism on the information quality of stock prices within a certain period before and after the month of an activism event.

The hypothesis is motivated by the findings of Edmans (2014) and Scholes (1972). Active blockholders changing the management of their target firms is considered to be a kind of new information (positive news) to the market. However, we predict that market investors may not fully understand that information. Therefore, although active block acquisition positively affects stock prices (Brav et al., 2015; Bebchuk et al., 2016), block acquisition could create noise about the stock price information quality. Noise could cause investors' valuations about the fundamental price of target firms to diverge. Similarly, there could be greater market uncertainties about target firms' post-activism performance, which increases market investors' costs to learn about blockholder activism. Lastly, the SEC allows blockholders to disclose activism information with up to a 10-days delay. This delay reduces the efficiency with which blockholders' private information is incorporated into stock prices.

[Table 2.2 & Figure 2.3 go here]

In order to show the impact of blockholder activism in the long-term pattern, Fig. 2.3 estimates our model (Eq. (6)) using an event window spanning from 12 months before to 12 months after 13D filings. To avoid multicollinearity and a better visualization for coefficients of each monthly dummy variables during the event window, we choose to omit Month 0 (the activism event month) to present. Using this setting, we interpret a negative (positive) estimated coefficient of an event month as *IVOL* in that particular month to be lower (higher) than that in the activism event month. We find that *IVOL* gradually increases from 12 months before the activism. It dramatically reaches a peak in 1 month before the activism event. After the activism event month, *IVOL* sharply drops in all 12 post-activism event months. The estimated model coefficients of monthly dummy variables are all negative and almost all statistically significant. The mere exception is Month -1. We observe a very similar time-series pattern for *DELAY*. Also, we notice that dramatic surges and declines in *IVOL* and *DELAY* occur during those months in the neighbourhood of the activism event month. For sake of exposition, we use a shorter 13-month event window for subsequent analyses.

Table 2.2 analyzes *IVOL* (Column 1), *DELAY* (Column 2), and *COE_DELAY* (Column 3). We run each regression by strictly selecting firm-month observations in which an active blockholder intervened or will intervene in a target firm, leading to at least one blockholder activism event in the corresponding regression time period. In other words, all non-target firms and observations of target firms out of the corresponding time-series regressions are removed from the models. Our independent variables of interest are monthly event dummies that are equal to one for one specific month before or after the month of activism and zero otherwise. In our regression analyses, we omit Month -6 to Month -2, and, therefore, the estimated coefficients of the remaining monthly dummy variables (Month -1 and Month 0 dummies in particular) capture the effect of blockholder activism relative to those omitted monthly dummies. We find that all information quality measures significantly increase in both Month -1 and 0, and the increases are slightly larger in the activism event month rather the prior month. By contrast, after the month of activism, stock price information quality seems to revert to the level prior to the activism events, as is reflected by the small (in terms of economic magnitude) coefficients of the post-activism event monthly dummies.

The results in Column 1, Table 2.2, suggest that being targeted by active blockholders leads to an increase of 0.011 (7% of the sample mean) in *IVOL* in the activism event month. In all periods other than the month before the activism event, the impacts on *IVOL* are significantly lower than the impact on *IVOL* in the month of activism. Furthermore, the same pattern is found when estimating the impact of blockholder activism on stock price efficiency. However, we find the impact of blockholder activism occurred one month before the activism event because the coefficient of Month -1 is also positively significantly related to the omitted monthly dummies. This finding is consistent with the hypothesis proposed by Edmans et al. (2017), who believe that the impact of blockholders occurs before announcements are made public.

The coefficients on the control variables are also reasonable and consistent with the prior literature. We find that larger total assets, higher cash holdings, and greater earnings tend to reduce *IVOL* and *DELAY*. Our findings indicate that market investors have a better information quality for stock prices in big and well-performing firms. On the other hand, higher dividend payouts, larger leverage ratios, and lower market values lead to larger *IVOL* and *DELAY*, indicating that investors are uncertain about firms' future performance when firms pay too much in dividends, borrow massively, and have a poorer market value.

2.3.1.2. Alternative information quality measurements

We further conduct robustness tests using two commonly used information quality measures. R^2 from the market model (Busch and Obernberger, 2017) measures the information synchronicity between the market and the firm level. Analysts' forecast dispersion on 1-year-ahead EPS captures the noise in financial analysts' opinions (Chatterjee et al., 2012).

[Table 2.3 goes here]

We estimate the same model used in Table 2.2 and Fig. 2.3, with R^2 and analysts' forecast dispersion (*DISPERSION*) as the dependent variables. We multiple R^2 by -1 so that a higher value of (the adjusted) R^2 indicates lower synchronicity. Table 2.3 reports the results. Column 1 finds that blockholder activism reduces information synchronicity in Month -1 and Month +0. Column

2 documents similar results for the impact of blockholder activism on analysts' opinions. In the month of activism and one month after the activism event, the divergence in analysts' opinions is larger. However, compared with *IVOL* and R^2, the impact of blockholder activism on analysts' recommendations seems to be delayed. This difference is not totally unexpected, because financial analysts must spend some time to prepare and issue their recommendations and, perhaps equally important, rely on sources of information that are infrequently available to them (e.g., earnings announcements).

2.3.1.3. Clean event windows for blockholder activism

Another concern is the confounding effect throughout time caused by different, overlapping activism events. In many occasions, a target firm could receive multiple activism events from different blockholders at a very high frequency for a certain period. This causes more than one activism event in any particular month or many activism events being occurred in sequential months. As a result, it would be difficult to define which month is Month -1, Month +0, or Month +1.

To alleviate this concern, we trace any activism events occurring within 2 months before or 2 months after another activism event and remove both contaminated activism events and the corresponding observations within the 13 months period around those activism events from our sample. The reason for choosing 2 months before and after as the cutoff point is to ensure that any adjoining activism events remained would have no other activism events overlapping in the month before and after its own event date. The new sample keeps approximately 72% remained of the firm-month observations from the main sample.

[Table 2.4 goes here]

We re-estimate Eq. (6) using the new sample, and Table 2.4 reports the results. We further group Month +1 to Month +6 to create and use a *Post-Period* dummy for exposition's sake. The results in Table 2.4 confirm our main results in Table 2.2. Blockholder activism increases all three stock price information quality measures in the month before and the month of the activism event. Also, we still find a larger impact in Month 0 than in Month -1. Although activism events seem to affect information quality in the post-period, the value of the coefficient is too small. The impact of activism in the post-period is not considered to be economically significant. The main takeaway for the results in Table 2.4 is that the impact of blockholder activism on information quality is not driven by confounding effects and sample selection.

In conclusion, the evidence in this section supports our main hypothesis that information quality is reduced when blockholders intervene in their target firm. Market investors tend to disagree with the fundamental value (stock prices) of target firms, and a delay keeps information from being incorporated into stock prices in the short term. In general, the information quality of the target firm is impaired by blockholder activism events.

2.3.2. Interpreting the idiosyncratic volatility triggered by activism events: Private information or noise?

We address the important issue of interpreting the main stock price information quality variable, *IVOL*. One school of thought points out that the high *IVOL* could be driven by private information impounded into stock prices (Morck, Yeung, and Yu, 2000; Wurgler, 2000; Durnev, Morck, and Yeung, 2004). Others (Ang et al., 2006, 2009; Chatterjee, John, and Yan, 2012; Busch and Obernberger, 2017) consider *IVOL* as a measure of the noise of stock prices. The literature does not give a distinctive answer for whether high *IVOL* is private information, noise, or both. No clear answer makes it difficult for us to draw conclusions about the effect of blockholder activism on stock price information quality. In this section, we demonstrate that there exists a noise channel through which blockholder activism can deteriorate stock price information quality.

2.3.2.1. Exit of active blockholders and idiosyncratic volatility

If *IVOL* is affected and driven by the private information released when active blockholders sell their ownership stakes and exit target firms, there will be a short-term effect of blockholders' exit on *IVOL*. On the other hand, after blockholders exit target firms, market investors will not receive any information disclosed from these active blockholders, and it becomes very challenging to estimate the value implication of the "exit" of these blockholders. This implies that if *IVOL* is driven by noise or uncertainty, the impact will be longer. We use the exit of active blockholders as an instrument to examine the time-series pattern of *IVOL* after the exit of active blockholders. The information about the exit of active blockholders must be disclosed as a final 13D/A filing from the active blockholders associated with the target firm.

We create monthly event dummy variables to indicate months before and after the exit of active blockholders. Some blockholders may enter a target firm around the time other blockholders sell their shares. It is important for us to eliminate the confounding effect. Therefore, we restrict our sample to include the exit of active blockholders and the corresponding months before and after the exit, which are so as not to overlap with any new blockholder activism events up to 12 months before and 12 months after the original exit.

[Table 2.5 goes here]

Table 2.5 reports the results. Columns 1 examines the sample up to 12 months before and 12 months after the exit of active blockholders. We find that the positive impact on *IVOL* remains even 12 months after the exit. Because we have controlled our sample for not having any other blockholder activism events, the higher *IVOL* is mainly affected by the exit of active blockholders.

The persistent impact of blockholders exiting on the *IVOL* cannot be reconciled with the private information channel being the only (or main) driver and is consistent with the noise interpretation of *IVOL*.

However, poor firm performance could drive both the exit of blockholders and increase in *IVOL*. To address this concern, we create two firm performance subsamples and examine the effect of blockholders' exit on *IVOL* for each subsample. Precisely, we use all firm-month stock returns of the entire 13D filing sample to find the two tertile cutoff points. We then partition the exit sample into three subsamples using these cutoff points and stock returns 12 months after the exit of blcokholders. That is, the top performance subsample includes all 12 months stock returns that are higher than the 2nd tertile and the bottom performance subsample includes all 12 months stock returns that are lower than the 1st tertile.[15]

We have two notable observations. First, we find that in the exit sample there are approximately one third observations having top performance and one third having bottom performance (the second row from the bottom of Table 2.5). This implies that the exit of blockholders may not be primarily driven by stock market performance because we determine the tertile cutoff points using all firm-month stock returns of the entire 13D filing sample. Next, we estimate the effect of blockholders' exit separately for the two performance subsamples. For both top (Column 2) and bottom (Column 3) performance subsamples, we find that *IVOL* persistently increases in the 12 months after the exit of active blockholders. These findings alleviate the concern that (poor) firm performance leads to a spurious correlation between blockholders' exit and *IVOL*.

[15] The middle performance subsample includes all 12 months stock returns that are in between the two cutoff points and is left out of our analysis.

2.3.2.2. Ownership, number of blockholders, and idiosyncratic volatility

In this section, we further interpret the *IVOL* by attempting to address an important empirical question from Scholes (1972, p.184): "does the size of blockholders' ownership matter to stock price information quality?" In other words, whether the value of information is an increasing function of blockholders' size still remains unclear.

We deploy two proxies to measure the size of blockholder ownership: the percentage of ownership and the number of active blockholders simultaneously existing in the same target firm. The percentage of active ownership is aggregated from the percentage of ownership and changes in the percentage reported by each active blockholder in each 13D or 13D/A filing. The number of active blockholder is aggregated for all active blockholders reported to be active in the same target firm and each 13D or 13D/A filing. As the changes in the percentage of ownership and the number of active blockholders could occur during any day of the month, we also apply a time weight factor to adjust the percentage of ownership controlled by active blockholders and the number of active blockholders. The time weight factor is calculated as the number of days that active blockholders hold the amount of the investment in the target firm, divided by the total days in each month.[16] Table 2.6 reports the results. The independent variables of interest are either 13D_Size (percentage of active ownership) and Time_13D_Size (time adjusted percentage of active ownership); or Number_13D (number of active blockholders) and Time_Number_13D (time adjusted number of active blockholders) at the firm and the month level.

[Table 2.6 goes here]

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[16] For example, if one active blockholder holds 10% ownership in the beginning of the month and increases the ownership to 12% on the 15th of this month. Assuming the total days for this month are 30 days, the time-weight-adjusted ownership is (15/30) × 10% + (15/30) × 12% = 11%. We apply the same adjustment to the number of active blockholders.

Column 1 of Table 2.6 finds that active blockholders' size reduces the *IVOL*. The result is robust after adjusting blockholders' size by controlling the number of days they hold the block in each month (Column 2). Although the value of the coefficient of 13D_size looks very small, it only represents the marginal effect from every 1% increase of the total active blockholder ownership on *IVOL*. Assume a target firm with 30% total ownership controlled by a few active blockholders, such effects from active ownership on *IVOL* would be accumulated to -0.018 (= 30 × -0.0006), which is a 11.25% reduction from the average *IVOL* in our sample. We also find qualitatively similar results in Columns 3 and 4, which use the number of active blockholders as the independent variables.

The above results offer an important implication. The information hypothesis proposed by Scholes (1972) suspects that the information quality of stock prices could be an increasing function of the size of the blockholding. However, we find that the *IVOL* decreases with the size of blockholding during the 13-month event window around the blockholder activism event. Put together, noise, not the private information interpretation of *IVOL*, best explains these findings.[17]

Similarly, a larger number of active blockholders simultaneously intervening in the same target firm indicates more interactions among blockholders, the other stakeholders, and market participants. Market investors might learn the information disclosed from active blockholders through more sources at a lower cost. Therefore, a lower cost to obtain blockholders' information helps market investors more precisely revalue target firms' new price and the noise in the information incorporated into stock prices is reduced.

[17] The next section provides further evidence showing that the increase in idiosyncratic volatility driven by blockholder activism is more likely associated with noise.

2.3.3 Blockholder heterogeneity and stock price information quality

2.3.3.1. Types of active blockholders

We further explore the impact of blockholder heterogeneity on information quality by categorizing blockholders into different entity types. Textual analysis programs collect the specific type of blockholder disclosed on 13D forms, and we recategorize this information into four main types.

1. Financial intermediary institutions: banks, insurance companies, empowerment funds, savings associations, and church plans. Traditionally, these kinds of blockholders are not supposed to engage in a large and undiversified block acquisition or put efforts into actively influencing management.

2. Investment institutions: brokers, investment firms, investment banks, and investment advisors. These blockholders are experts in investment.

3. Corporation & Individual: corporations, partnerships, and individuals who are not associated with the target firm. They are outsider blockholders and entities for real business rather than investors.

4. Internal blockholders: parenting blockholders who are affiliated with the target firm. Therefore, these blockholders are insiders before they obtain the block acquisition of the target firm.

Table 2.7 reports the results for the impact of blockholder activism on information quality. The different panels present each different blockholder type: financial intermediaries (Panel A), investment institutions (Panel B), corporations, partnership and individuals (Panel C), and internal blockholders (Panel D). The Prior-Period (Month -6 to Month -2) is omitted in the model. So, the coefficients of Month -1, Month 0, and the Post-Period (Month +1 to Month +6) dummies evaluate the effect of blockholder activism relative to the Prior-Period. The sample is also limited to the 13 months around the activism event. Moreover, multiple blockholders can intervene in the same target firm in the same month. We restrict our sample to observations in each model with one specific type of active blockholders only. For example, in the *Investment* sample, we do not have observations in which the other three types of active blockholders intervene in target firms.

[Table 2.7 goes here]

Intermediary (Panel A) blockholders have a mixed impact on information quality. First, intermediary financial institutions do not affect the noise component, but have the greatest impact on *DELAY*. This finding is consistent with one important characteristic of financial intermediary institutions, which are conservative and greatly disciplined by prudential bank regulations (Rochet, 2005). Financial intermediary institutions should not raise aggressive activism, which leads to smaller uncertainty about the fundamental value of the target firm in the future. In addition, financial intermediary institutions like banks and insurance companies are also very sophisticated market participants. Therefore, market investors need more time to understand the information delivered by activism events from them.

Investment (Panel B) blockholders and *Corporation/Individual* (Panel C) blockholders strongly affect stock price information quality. Both types of blockholders positively affect information quality from Month -1 to Month 0. The largest impact occurs in the month of activism. For example, if *corporations/individual* blockholders intervene in the target firm, the *IVOL* is increased by 0.011 in that month, and it represents 6.8% of the sample average value for the *IVOL*.

In terms of the impact on *DELAY*, *Investment* blockholders show a stronger impact compared with *Corporation/Individual* blockholders. The value of the coefficient for *Investment* blockholders is almost 3 to 4 times higher than the coefficients for *Corporation/Individual* blockholders (Column 5 vs. Column 8 & Column 6 vs. Column 9). *Investment* blockholders are sophisticated investors, such as investment advisors or investment banks, so market investors vacillate in response to activism, which results in the delayed information transitions.

Panel D, Table 2.7, finds that 13D filings of *Internal* blockholders do not affect the information quality of stock prices. This finding further enhances the noise channel through which blockholder activism affects stock price information quality. First, if the information quality, especially the *IVOL*, is affected through a private information channel, the internal blockholders would certainly possess more private information about the target firm, thereby leading to a large impact on the information quality in the month of activism. Second, if market investors have already absorbed the private information possessed by internal blockholders in the prior period, we would observe that *IVOL* increases in the Prior-Period, and then the coefficients of the remaining months/periods should be negatively significant. However, we did not observe these effects in the results. By contrast, our stock price information quality variables remain fairly stable over the 1-year window around the blockholder activism event. One possible explanation is that blockholder activism initiated by internal blockholders generates little noise about stock prices. By contrast, it is difficult for us to argue that such activism releases little private information to the market.

2.3.3.2. Blockholder heterogeneity and active blockholders' sources of funds

In this section, we study the various funding sources that blockholders use to acquire a block and the divergent impacts on the information quality of stock prices. We classify funding sources according to the disclosure requirements from the SEC 13D form. We identify three sources of funds disclosed from 13D filings. *Internal source* indicates funds from the parenting firm of target firms (insiders' funds); *Bank* indicates bank loans; and *Self-funding* indicate blockholders' working capital or personal funds (blockholders' funds). We also restrict our sample to one specific source of blockholder activism in each model to remove the confounding factor. This is because funding sources for each blockholder are also not mutually exclusive in each event (blockholders can have multiple funding sources).

Table 2.8 reports the results. The three panels in Table 2.8 indicate one source of funds each. Panel A highlights internal sources (i.e., funds from the parenting corporations of target firms); Panel B highlights funds from bank loans; and Panel C highlights blockholders' own funds or working capital.

[Table 2.8 goes here]

A significant impact is found only when blockholders use their own sources of funds (Panel C). When funds are used from banks or internal sources, there is no impact on *IVOL* and very limited evidence to show effects on *DELAY* through bank loan source (Column 6 in Panel B). In particular, the lack of a significant relation between *IVOL* and blockholder activism for internally financed block acquisition reinforces the presence of a noise or uncertainty channel and is difficult to reconcile with the private information channel.

Furthermore, bank loans typically include loan covenants that restrict borrowers' use of their borrowed capital and borrowers violating such restrictions may result in losing their control rights. In our context, blockholders relying on bank financing presumably face more restrictions and have fewer control rights than self-financed blockholders. Therefore, firms targeted by blockholders with their own funds tend to experience greater uncertainty about future performance than those by borrowed capital.

Combining the findings from Sections 2.3.3.1 and 2.3.3.2, we find that outside blockholders have much stronger negative impacts on information quality than do internal blockholders. This finding reveals that it is costly for market investors to learn new information released from these active blockholders who have had no previous association with the target firms.

2.3.3.3. Blockholder heterogeneity and purposes of the transaction

Blockholders must disclose the purposes of the transaction in item 4 of their 13D filings. Brav et al. (2008, 2016) classify hedge fund purposes of the transaction into five categories: business strategy, capital management, corporate governance, corporate operations, and other (general purpose). They find that different purposes lead to mutative firm performance. Using a similar classification, Aslan and Kumar (2016) show various impacts of hedge fund activism on the rivals of target firms within the same industry.

The information contained in transaction purposes also allows us to validate the noise channel because different purposes of activism could lead to various uncertainties about future corporate performance. For example, direct intervention against incumbent management would be quite different from another activism related to investment or family gifts. We examine whether blockholder activism with different purposes affects information quality differently and whether this difference can be explained by the perceived uncertainties of target firms' future performance faced by investors.

We use textual analysis programs to classify the purposes of transaction of all active blockholders in the U.S. market. We find that purposes of the transaction can be classified into the following groups: *Corporate Governance*, *Mergers and Acquisitions*, *Business Strategy*, *Investments-only*, *Threats*, and *Heritage*. Blockholders who are classified into the types *Corporate Governance*, *Mergers*, *and Acquisitions*, and *Business Strategy* plan to change a specific aspect of the target firm. *Investment* indicates that blockholders state an *investment-only* purpose. *Heritage* indicates that blockholders plan to acquire a large number of shares as a gift inherited from their parents or are purchasing shares for their children; they have no initiative to change the management of the target firm or provide suggestions to improve the target firm. Finally, *Threats* refer to blockholders who threaten to sell their stocks upon unsatisfactory managerial performance.

Purposes of the transaction in the above six categories are not mutually exclusive. However, to eliminate confounding factors in our empirical analysis, we restrict our sub-samples in each model to keep target firms connected to one particular purpose only. For example, the sample in *Investment* does not have any blockholders engaging in any other purpose. The only exception is *Threats*, because it always comes with other purposes. Importantly, the wide existence of *Threats* mentioned in purposes of the transaction also proves the precise predictions from the theory of Edmans (2009): *Threats* is also a mechanism for blockholders' governance.

[Table 2.9 goes here]

Table 2.9 produces results for the different impacts of blockholder activism on the information quality of stock prices: activism purposes related to corporate governance and managerial behavior (Panel A); mergers and acquisitions (Panel B); operational and business strategies (Panel C); investment-only purpose (Panel D); threat to sell (Panel E); and family gifts (Panel F).

We find that transaction purposes related to governance and managerial behavior affect stock price information quality with the largest economic magnitude. These blockholders expressively propose concerns and specific plans against incumbent managers. The confrontation between incumbent managers and active blockholders, the winner of the control fight, and the extent to which blockholders want to change the management and firm do not offer definitive answers, but all contribute to the market's great uncertainty about the target firm's future performance, which is capitalized by investors into stock prices. In the month of the activism event, the *IVOL* is increased by 0.016 (10% of sample mean) because of the intervention from activism related to corporate governance, and the information speed is delayed by 0.046 (6.5% of the sample mean). The second largest impact is from the purpose related to the "threat to sell." The impact of the purposes of Threat is persistent from Month -1 to Month 0 for all three measurements of information quality, although the value of the coefficients of *Threat* purpose are smaller than for the *Governance* purpose.

The *Merger* purpose is also notable. Although some blockholders propose to acquire the target firm, they do not commit to completing the acquisitions for many different reasons, such as a lack of funds or changes in their strategy. However, *Merger* is an important event that changes the future of the target firm. Therefore, the information of *Merger* could be studied and released to the market earlier than the activism events occurred, resulting in a smaller impact on the *IVOL* around the activism events. In untabulated results, when we omit Month 0, we find that those coefficients for Month -3 to Month +3 are not significant, but the coefficients for the other months (Month -6 to Month -4 and Month +4 to Month +6) are negatively correlated. Consolidating these findings, the impact of blockholder activism with the *Merger* purpose could occur 3 months earlier and could finishe 3 months later than the month of the activism event. The active blockholders with the *Merger* purpose can affect the information quality of stock prices in the much longer term.

Strategy and *Investment* purposes are relatively weak activism events. Therefore, the influence of these two activism events on firms' future performance could be smaller than the *Governance* purpose. We find that they do not affect the efficiency of stock prices in Month 0. The impact of those two activism purposes on the *IVOL* is also much weaker than the *Governance* purpose. For example, the value of coefficients of the Investment-only purpose on idiosyncrtic volatility is only 37.5% of the impact from the *Governance* purpose in the month of the activism event.

Interestingly, we find that the purpose of family gifts (*Heritage*), which is the weakest activism, shows the greatest impact on the *IVOL* in 1 month before the activism event, with an almost 76.8% increase based on the average value of the sample. However, the impact of activism related to family gifts quickly vanishes in the month of activism, and this purpose shows no influence on the efficiency of stock prices. One particular explanation could be that market investors feel the abnormal trading pattern before or during the accumulation of stocks from those active blockholders, just like other active blockholders. Greater uncertainties occur when market investors do not know their purposes; however, once market investors know the purposes are related to family gifts, such uncertainties or noises suddenly vanish, and there is no further impact on the information quality of stock prices.

The analysis in this section reveals that the impact of blockholder activism on the information quality of stock prices is heterogenous in nature. This finding is consistent with that of Dou et al. (2013) and Clifford and Lindsey (2016). The greater impact of blockholder activism on the information quality of stock prices is highly concentrated on these purposes of strong activism intensity, such as corporate governance or "threat to sell." Stronger forms of activism deliver potentially larger changes and a greater uncertainty of outcomes for target firms' future. Target firms' uncertain outcomes increase the difficulties and the costs to market investors in understanding the information they receive. Therefore, the quality of information is reduced.

2.3.4. Causality and other endogeneity issues

One important issue remains: endogeneity concerns. Addressing endogeneity in the blockholder literature is very challenging, because no known credible instruments or shocks are readily available (Edmans and Holderness, 2017).

Blockholder activism does not randomly occur. They can choose target firms by anticipating the future performance of target firms (real activism vs. stock-picking). However, in this research, we primarily focus on the effect of blockholder activism on target firms' stock price information quality and efficiency (i.e., the treatment effect on the target firms) rather than the population average treatment effect (see Brav, Jiang, and Kim, 2016 for a more detailed discussion). To alleviate the concern that blockholders' endogenous choice of target firms, Brav, Jiang, and Kim (2016) show that the causality from hedge fund activism to firms' outcomes would be difficult to establish if we suspect that active blockholders rely on their stock-picking abilities, rather than on putting real effort into changing a firm's management. We perform an additional test following Brav et al. (2008, 2016) and use events in which blockholders switch their stance from passive (13G) to active (13D).[18]

[Table 2.10 goes here]

As suggested by Brav et al. (2016) and Edmans, Fang, and Zur (2013), filing a 13D is very costly. Doing so involves a greater legal cost, a shorter allowed time to complete the form, and more information requirements disclosed to the market.[19] Therefore, blockholders who rely on stock-picking should have no incentive to file a costly 13D. They would like to choose the cheaper 13G filings to enjoy the same benefits (stock-picking on target firms without any real actions

[18] In these particular events, blockholders file a 13D not because they obtain new block acquisition but because they were old 13G filers who switched their stance from passive blockholders to active blockholders.
[19] 13G filers can have 45 business days, but 13D filers only have 10 business days to complete the filings.

against the firm). On the other hand, if we observed passive blockholders purposely changing their current stance from passiveness to activism, we would like to believe that these active blockholders show a strong commitment to changing their target firms. We follow Brav et al. (2008, 2016) and use a textual analysis program to extract events for switches from passive to active for the same blockholders and the same target firms. We restrict the sub-samples, to execute our main regressions based on those activism events that switched from a passive stance. The findings of this test should have ruled out the possibilities of active blockholders' stock-picking, because the switch represents the solid nature of activism in those events.

Table 2.10 presents the impact of blockholder activism on the quality of stock price information based on switch events. The model setting is the same as that used in Table 2.2. Column 1 examines *IVOL*, and Columns 2 and 3 study stock price efficiency. We obtain consistent findings for all information quality variables. In the subsample of activism events switching from the passive stance, the coefficients for Month -1 and Month 0 are significantly positive and suggest sharp increases in *IVOL*, *DELAY* and COE_*DELAY* before and in the month of activism. The results reveal that blockholders' activism efforts are a reliable driver of the quality of stock price information.

2.4. Conclusions

By analyzing a comprehensive dataset created from 13D filings in the United States, we shed light on how blockholder activism affects the information quality of stock prices. Our findings contribute to the information hypothesis discussed in Scholes (1972) and Edmans (2014). We show that the information quality of stock prices sharply deteriorates in the month of blockholder activism and reverses shortly after the activism event month. The result is robust to alternative measurements of information quality and various lengths of event windows. We also discriminate between passive and active blockholders, to address the self-selection issue that arises in this context.

Our analysis shows that information quality falls most when blockholder activism is strongest and when blockholders are external to the firm. On the other hand, we find that the information quality of stock prices increases with the size of active blockholders. These results suggest that more uncertain outcomes of blockholder activism (driven by the stronger intensity of blockholder activism) and information asymmetry between market investors and external blockholders are two mechanisms that explain the way in which active blockholders negatively affect the information quality of stock prices.

This paper focuses on active blockholders, but its findings have implications for other blockholders. For example, passive blockholders, such as mutual funds and index funds, exist in almost all U.S. public firms. Recent theoretical and empirical research (Edmans, 2011; Edmans, Fang, and Zur, 2013; Appel et al., 2016; Song, 2017) demonstrates that passive blockholders could also influence corporate policies through their "threat to sell" and, hence, introduce noise to stock prices. As better blockholder data become available, one may investigate whether and how passive blockholders affect target firms' stock price information quality. Furthermore, integrating both active and passive blockholders and then examining the joint effect of all blockholders could help us better understand the impact of blockholders and blockholder governance on the whole financial market.

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Appendix A

Appendix A.1 The following sections from 13D & 13D/A filings are collected by programs

Item 4: Purpose of Transactions	Active blockholders (13D filers) must disclose the purposes of block acquisitions. For example, changes in corporate governance, replacing existing management, boosting sales and so on
Section 1 (4); sources of funds	The sources of funds to acquire the block
Section 1 (11): Aggregate amount beneficially owned by each reporting person	A 13D filers must disclose for any changes in the ownership greater than 1%
Section 1 (14): Type of reporting person	The types of blockholders such as investment funds, corporations, individuals, and so on

Appendix A.2 Data quality for blockholder activism data

Web crawler programs are written in Python, and textual analysis programs are written in Perl. We obtained technical support from Mr. Ming Xue, the Chief Engineer at the Shanghai Tool Factory Limited Company. First, web crawler programs download all raw filings of 13D and 13D/A from 1994 to 2015, stored on an FTP server of the EDGAR database. We first download a master list that includes the detailed information for each filing, such as date, name, and storage location on the FTP server of the EDGAR database. Next, we download all raw filings in TXT format. The textual analysis program in Perl is designed to read the content of each filing. The ownership percentage, number of active blockholders, types of blockholders, and sources of funds are standard, because the SEC requires blockholders to disclose this information in a specific format. For example, if the blockholder is a bank, that blockholder will submit "BK," which means "bank." Textual analysis programs scan and capture information based on keyword searching. However, filings can contain some misleading information. For example, blockholders also disclose which activities do not interest them. In doing so, they state key phrases such as "we are not interested in following activities . . ." or "we have no plan to engage in . . . ." Our Perl program avoids collecting this misleading information.

To ensure the quality of the program and data, we use program checking and manually perform a random check of our procedures. We design a program to check the data quality. The program indicates which filing failed to be read. Sometimes, the information in the raw filing seems to be a data entry error, such as more than 100% ownership disclosed, although errors very rarely happened. In estimation, the error rate in the program is less than 0.5% of nearly 150,000 13D and 13D/A events downloaded. We then read those filings that were not readable by the machine and revise the program. We also randomly check the raw filings of the first of every 1,000 to ensure the data quality. Overall, we are satisfied with the quality and accuracy of the programs.

Table A1. Variables in the baseline specifications.

Variable	Definition
IVOL	The monthly average idiosyncratic volatility measured as of the standard deviation of the residual ε_i from rolling regression of Fama-French three factors in each month
DELAY	Price efficiency measured as the ratio of the R^2 estimates of the extended market model and the base model
COE_DELAY	Price efficiency measured as the ratio of the lag-weighted sum of the coefficients of the lagged market returns relative to the sum of all coefficients
$\boldsymbol{R^2}$	The R^2 from the standard market model, which measures the synchronicity between the market information and the firm-specific information. This variable is multiplied by -1, which enables us to interpret its regression coefficients the same way as the other two stock price information quality measures
DISPERSION	The standard deviation of analysts' opinions on EPS 1-year ahead, divided by the absolute value of stock price
Percentage of 13D ownership	The percentage of ownership controlled by all active blockholders in the particular firm and month. The calculation is based on the reporting ownership from 13D filers and the amendments for every 1% change of the ownership. The value is aggregated to the month level and adjusted by time-weight (the amount of time out of 31 or 30 days in each month that each active blockholder hold the investment in the target firm
Number of 13D fillers	The aggregate number of 13D filers in particular firm and month. This variable not only includes the total 13D filers in each firm and month but also evaluates the number of individuals or entities that jointly sign the 13D form. This variable is also adjusted for time weight
G to D switch	Binary variable. An existing passive blockholder switches his/her stance from passive to active
Return$_{t-1}$ >0	Monthly stock return if positive and otherwise zero
Return$_{t-1}$ <0	Monthly stock return if negative and otherwise zero
Total assets$_{t-3}$	Total assets (ln)
Cash to assets$_{t-3}$	Cash and short-term investment, divided by total assets
EBITDA to assets$_{t-3}$	Operating income before depreciation, divided by total assets
Dividends to assets$_{t-3}$	Absolute difference between the stock price and $30(ln)
Leverage$_{t-3}$	Leverage measured as (total asset – book value equity) / (total asset – book value equity + market cap)
Book to market$_{t-3}$	Book value equity / market cap
$30 deviation (ln)$_{t-1}$	Absolute difference between the stock price and $30
Trading volumes$_{t-1}$	Monthly total trading volume, scaled by shares outstanding
Relative spread$_{t-1}$ (ln)	Monthly average of daily relative spread
Firm age	Firm age, calculated as of the first year available on Compustat

Fig. 2.1.

Five main funding sources used by active blockholders, 1994 to 2015.

This figure plots a histogram of the funding sources that active blockholders use to obtain their holdings. The histogram approximates 150,000 13D and 13D/A filings from the SEC database. Five main types of sources are available: subject companies, banking loans, affiliates (of a reporting person), working capital (of a reporting person), and personal funds (of a reporting person). Sources of funds are not mutually exclusive, meaning blockholders utilize multiple sources of funds occur in some cases.

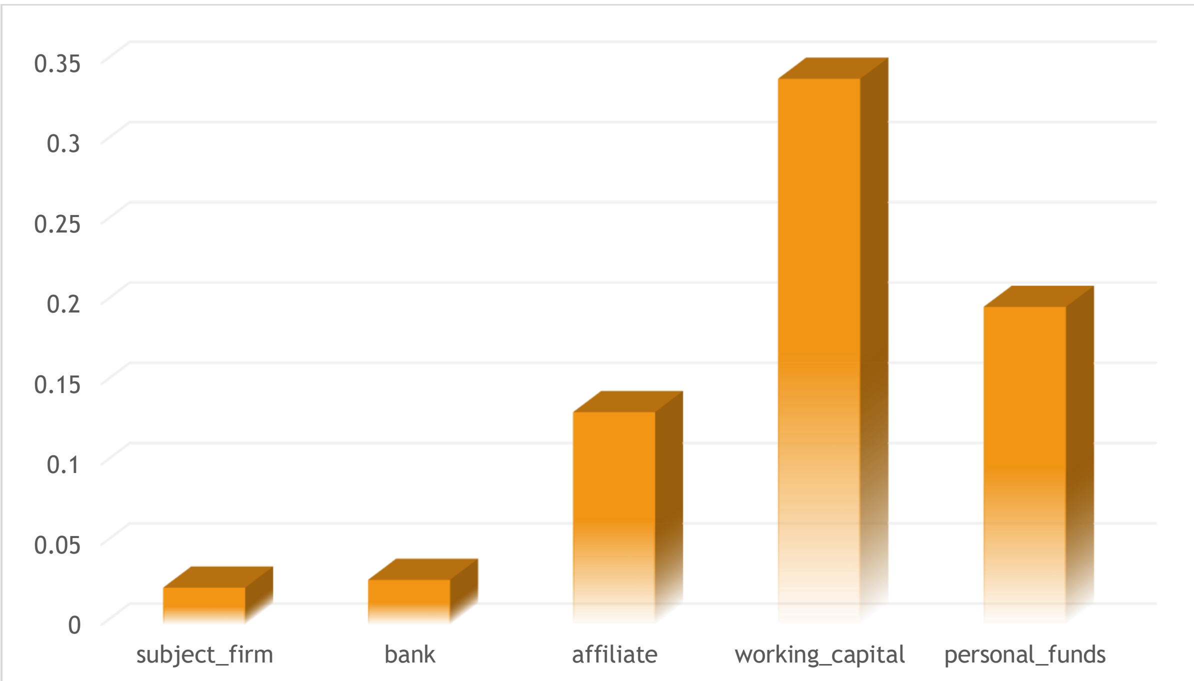


Fig. 2.2.

Types of active blockholders in the U.S. market, 1994–2015.

This histogram, which shows the twelve major types of active blockholders in the U.S. market, covers approximately 150,000 13D and 13D/A filings from the SEC database. Major types of active blockholders are brokers or dealers; banks; insurance companies; investment companies; investment advisors; employee benefit plans or endowment funds; parent holding companies, saving associations; church plans; corporations; partnerships; and individuals. Active blockholder types are not mutually exclusive, meaning different types of entities of blockholders could be involved in one blockholder activism event.

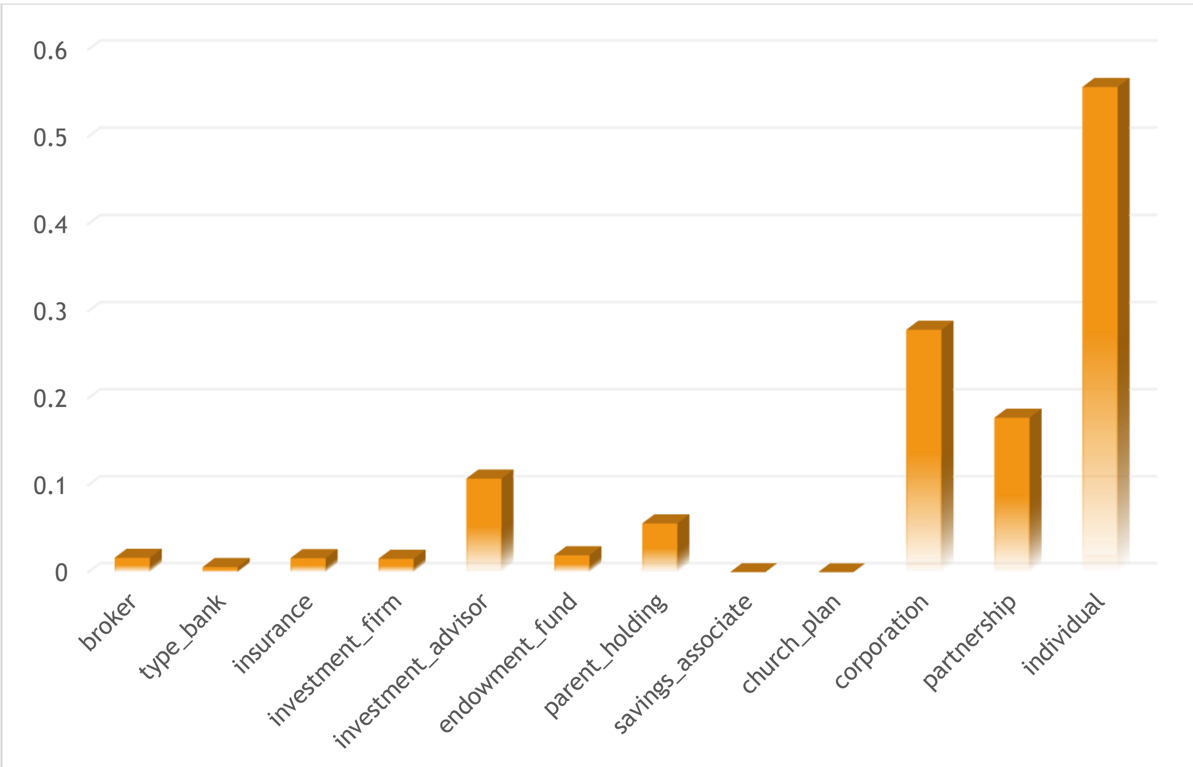


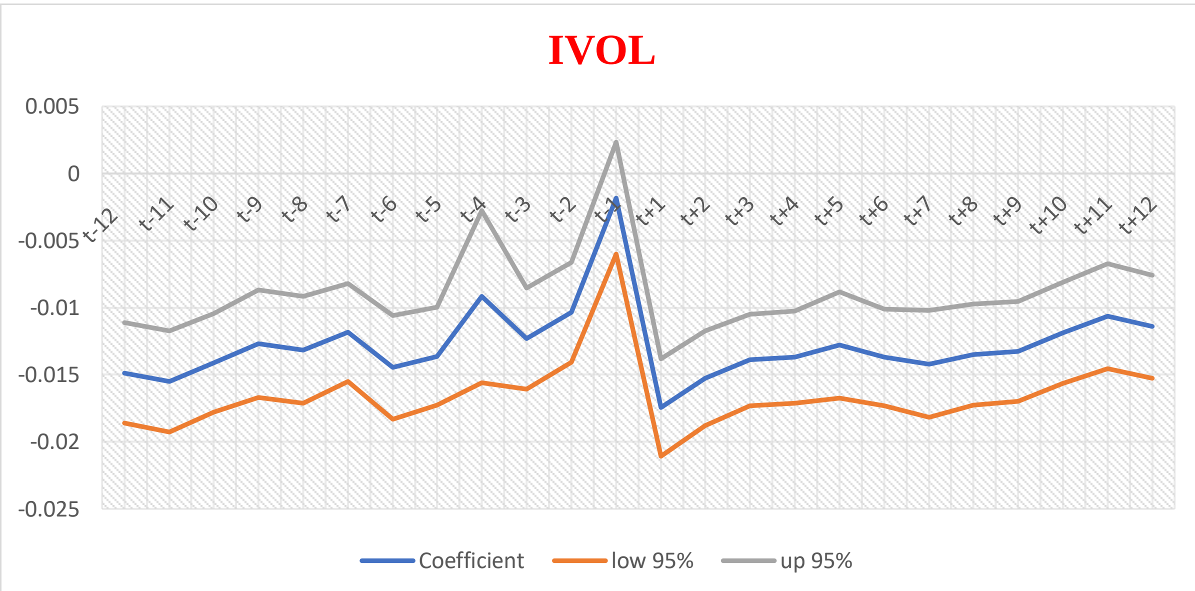
Fig. 2.3.

Target firm information quality (IVOL and DELAY) 12 months before and after activist intervention.

This figure plots the coefficients $\beta_k, k = -12, \dots, +12$ from the following regression at firm *i* and month (t) level:

$$Information\_Quality_{i,t} = \sum_{k=-12}^{12} \beta_k d_{i,t}^k + \gamma Control_{i,t} + \alpha_i + \theta_t + \varepsilon_{i,t},$$

where proxies of the information quality are measured by IVOL and DELAY. $d_{i,t}^k$, $k = -12, \dots, +12$ is a set of firm-month dummy variables corresponding to firm-month observations from 12 months before to 12 months after the activism event month. $Control_{it}$ represents all control variables in our main regressions. The firm and month fixed effects are also included. The blue line plots the coefficients on $d_{i,t}^k$ dummies, and the other two lines represent 95% confidence intervals.



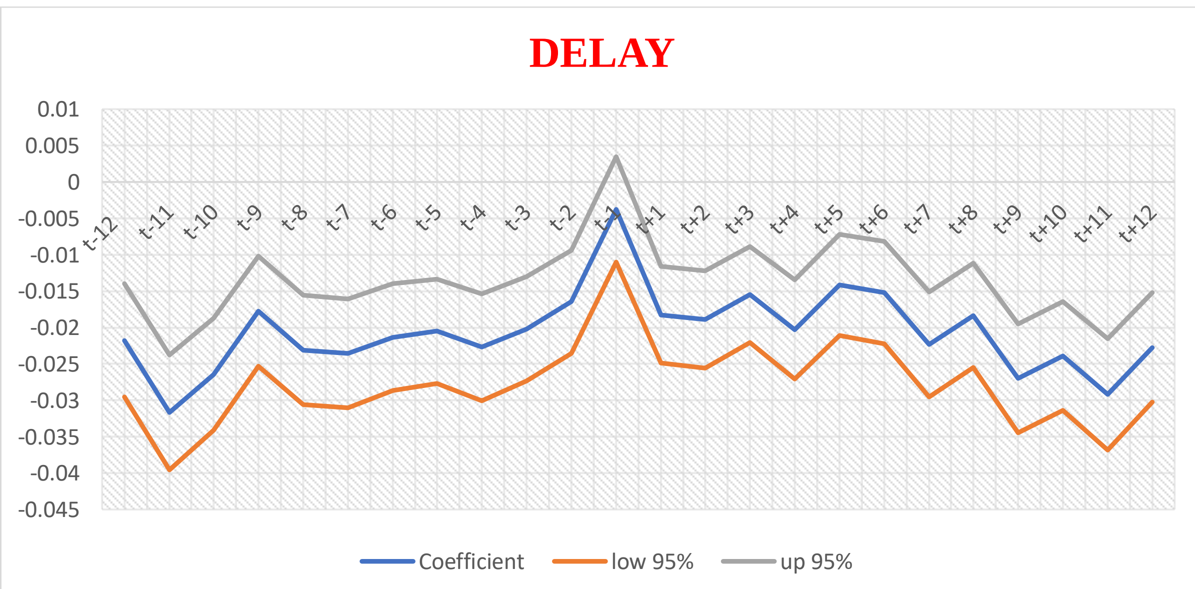


Table 2.1

Summary statistics.

This table presents summary statistics for key variables in our sample. Panel A presents the number of activism events on purposes of blockholder activism in each year. Panel B reports the key variable statistics for the full sample used in our multivariate regression analysis. All variables are winsorized at the 1% and the 99% level. Table A1 defines each variable and its construction.

Panel A. Number of activism events by type

Year	**Governance**	**Mergers**	**Investments**	**Strategy**	**Threats**	**Heritage**
1994	54	18	35	58	93	0
1995	285	256	265	315	377	1
1996	361	238	386	485	723	2
1997	426	217	528	604	1105	4
1998	438	223	373	536	857	0
1999	500	211	294	542	848	2
2000	397	203	235	433	670	2
2001	286	158	186	338	532	3
2002	439	117	256	487	722	1
2003	328	155	180	341	500	4
2004	282	146	131	330	450	4
2005	319	146	142	381	514	5
2006	342	156	155	372	479	0
2007	438	174	144	449	579	1
2008	439	171	151	489	639	4
2009	277	98	108	291	386	1
2010	262	99	111	287	356	1
2011	252	96	94	260	335	2
2012	255	87	102	266	334	2
2013	266	92	105	293	353	0
2014	316	111	124	330	392	1
2015	287	101	113	304	363	1
Total	7,249	3,273	4,218	8,191	11,607	41

Panel B. Key variable statistics

Variable	N	Mean	SD	Min	P10	P25	P50	P75	P90	Max
13D_Size	95,595	11.63	14.78	0	0	0.22	6.8	14.74	30.1	98.2
Number_13D	95,595	2.78	3.68	0	0	1	1	4	7	91
IVOL	84,985	0.16	0.12	0.02	0.06	0.08	0.13	0.21	0.31	0.63
DELAY	95,595	0.70	0.28	0.05	0.26	0.49	0.78	0.94	0.99	1.00
COE DELAY	95,598	2.28	0.60	0.29	1.49	1.86	2.28	2.69	3.05	4.47
R2	95,595	-0.13	0.16	-0.75	-0.37	-0.19	-0.06	-0.01	0.00	0.00
Dispersion	41,226	0.22	0.47	0.00	0.01	0.03	0.07	0.19	0.50	2.78
Return$_{t-1}$ >0	95,595	0.07	0.12	0.00	0.00	0.00	0.00	0.08	0.21	0.61
Return$_{t-1}$ <0	95,595	-0.06	0.09	-0.40	-0.19	-0.09	0.00	0.00	0.00	0.00
Total assets$_{t-3}$	95,595	5.14	1.88	1.12	2.81	3.76	4.97	6.38	7.68	10.95
Cash to assets$_{t-3}$	95,595	0.21	0.24	0.00	0.01	0.03	0.10	0.32	0.61	0.93
EBITDA to assets$_{t-3}$	95,595	0.00	0.06	-0.27	-0.07	-0.01	0.02	0.04	0.06	0.14
Dividends to assets$_{t-3}$	95,595	0.03	0.11	0.00	0.00	0.00	0.00	0.00	0.10	0.80
Leverage$_{t-3}$	95,595	0.38	0.25	0.01	0.06	0.17	0.35	0.58	0.76	0.98
Book to market$_{t-3}$	95,595	0.92	1.68	0.00	0.16	0.31	0.57	0.99	1.67	20.25
$30 deviation$_{t-1}$ (ln)	95,595	2.93	0.63	0.41	2.06	2.76	3.17	3.33	3.39	4.32
Trading volumes$_{t-1}$	95,595	1.42	1.75	0.02	0.16	0.35	0.81	1.74	3.39	9.65
Relative spread$_{t-1}$ (ln)	95,595	0.03	0.03	0.00	0.00	0.00	0.01	0.04	0.07	0.21
Firm age	95,595	15.61	12.43	1	5	7	11	20	34	66

Table 2.2
Blockholder activism and stock price information quality.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm and month levels for a 13-month period around a blockholder activism event. The dependent variables are the monthly average idiosyncratic volatility, monthly price efficiency, and coefficient-adjusted efficiency. IVOL is multiplied by the square root of 22 and is converted into monthly IVOL. The key independent variables are binary variables equal to one when firms are in each specific month before or after the blockholder activism or zero otherwise. We include observations in the model if they at least one binary variable equal to one from the 13 months around the month of activism. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient provide the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. *$p < .1$; **$p < .05$; ***$p < .01$.

	(1)	(2)	(3)
Variables	**IVOL**	**DELAY**	**COE_DELAY**
Month -1	0.008***	0.017***	0.030***
	(7.27)	(5.57)	(4.05)
Month 0	0.011***	0.022***	0.038***
	(10.33)	(7.56)	(5.67)
Month +1	-0.003***	0.003	0.009
	(-3.56)	(1.05)	(1.28)
Month +2	-0.002**	0.002	0.011
	(-2.41)	(0.54)	(1.60)
Month +3	0.000	0.005*	0.006
	(0.39)	(1.76)	(0.84)
Month +4	-0.000	-0.001	0.005
	(-0.29)	(-0.24)	(0.72)
Month +5	0.000	0.006**	0.012
	(0.07)	(2.01)	(1.64)
Month +6	-0.000	0.005*	0.014*
	(-0.35)	(1.72)	(1.92)
$IVOL_{t-1}$	0.123***		
	(16.51)		
$DELAY_{t-1}$		0.020***	
		(5.09)	
COE_DELAY_{t-1}			-0.015***
			(-4.40)
$Return_{t-1} > 0$	0.010***	-0.014*	-0.009
	(2.82)	(-1.85)	(-0.51)
$Return_{t-1} < 0$	-0.151***	-0.032***	-0.077***
	(-31.95)	(-3.07)	(-3.16)
Total $assets_{t-3}$	-0.011***	-0.048***	-0.074***
	(-9.29)	(-16.32)	(-12.38)
Cash to $assets_{t-3}$	-0.014***	0.016	0.039
	(-3.09)	(1.47)	(1.62)
EBITDA to $assets_{t-}$	-0.098***	0.012	0.000
	(-7.59)	(0.46)	(0.01)
Dividends to	0.015***	-0.010	-0.031
	(2.63)	(-0.67)	(-0.93)
$Leverage_{t-3}$	0.062***	0.125***	0.182***
	(11.98)	(11.28)	(7.68)
Book to $market_{t-3}$	0.006***	0.007***	0.013***
	(6.28)	(5.08)	(3.95)

\$30 deviation$_{t-1}$	-0.000	0.012***	0.021***
	(-0.14)	(4.05)	(3.56)
Trading volumes$_{t-1}$	0.000	-0.009***	-0.016***
	(0.55)	(-10.99)	(-8.98)
Relative spread$_{t-1}$	0.859***	0.106**	0.197
	(23.40)	(2.09)	(1.61)
Firm age	-0.031***	-0.117***	-0.169***
	(-10.63)	(-14.93)	(-10.82)
Constant	0.308***	1.874***	4.072***
	(15.09)	(34.74)	(37.44)
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	84,973	95,595	95,582
Adjusted R^2	0.2560	0.0952	0.0589

Table 2.3
Blockholder activism and stock price information quality: Alternative variables.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm and month levels in a 13-month period around a blockholder activism event. The dependent variables are the R^2 from the market model, and the analysts' dispersion on 1-year-ahead EPS. The key independent variables are binary variables equal to one when firms are in each specific month before or after the blockholder activism or zero otherwise. We include observations in the model if they have at least one binary variable equal to one from the 13 months around the month of activism. Table A1 lists definitions of all other control variables. Standard errors of the coefficient are shown in parentheses below the coefficient. Standard errors are adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. $^*p < .1$; $^{**}p < .05$; $^{***}p < .01$.

	(1)	(2)
Variables	**R2**	**DISPERSION**
Month-1	0.010***	0.000
	(5.91)	(0.02)
Month 0	0.015***	0.015**
	(9.95)	(2.38)
Month+1	0.002	0.014**
	(1.55)	(2.37)
Month +2	0.001	0.002
	(0.77)	(0.36)
Month +3	0.004**	0.001
	(2.47)	(0.19)
Month +4	0.000	-0.000
	(0.16)	(-0.04)
Month +5	0.004**	0.008
	(2.23)	(1.26)
Month +6	0.003	0.004
	(1.54)	(0.65)
$R2_{t-1}$	0.082***	
	(16.39)	
$DISPERSION_{t-1}$		0.630***
		(56.13)
Constant	0.418***	0.025
	(12.95)	(0.61)
Control variables	Yes	Yes
Firm fixed effects	Yes	Yes
Month fixed effects	Yes	Yes
Observations	95,410	40,046
Adjusted R^2	0.1626	0.3992

Table 2.4
Blockholder activism and stock price information quality: Clean event-windows.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm and month levels in a 13-month period around a blockholder activism event. The dependent variables are the monthly average idiosyncratic volatility, monthly price efficiency, and coefficient-adjusted efficiency. IVOL is multiplied by the square root of 22 and is converted into monthly IVOL. The key independent variables are binary variables equal to one when firms are in each specific month before or after the blockholder activism or zero otherwise. We include observations in the model if they have at least one binary variable equal to one from the 13 months around the month of activism. We also remove all activism events which are overlapped each other within 2 months after and 2 months before any other activism events. Table A1 lists definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. **p* < .1; ***p* < .05; ****p* < .01.

	(1)	(2)	(3)
Variables	**IVOL**	**DELAY**	**COE_DELAY**
Month -1	0.007***	0.018***	0.034***
	(5.91)	(4.90)	(3.66)
Month 0	0.010***	0.023***	0.042***
	(8.18)	(6.40)	(4.95)
POST-PERIOD	-0.001*	0.004*	0.008
	(-1.84)	(1.91)	(1.41)
$IVOL_{t-1}$	0.125***		
	(14.37)		
$DELAY_{t-1}$		0.018***	
		(3.74)	
COE_DELAY_{t-1}			-0.020***
			(-4.67)
Constant	0.256***	1.935***	4.248***
	(10.96)	(27.2)	(31.52)
Control variables	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	61,929	62,353	62,345
Adjusted R^2	0.2546	0.0984	0.0608

Table 2.5
Impact of exiting blockholders on IVOL.

This table reports OLS regressions for the impact of exiting of blockholders on the IVOL at the firm and month levels in a 25-month period around the exit of active blockholders. The dependent variable is the monthly average idiosyncratic volatility. The key independent variables are binary variables to indicate the month around the exit of active blockholders. We include observations in the model if they have at least one binary variable equal to one from the 25 months around the month of exit of an active blockholder. Column (1) reports the estimation results using the full exit sample. Column (2) reports the estimation results using the subsample which includes all 12 months stock returns of target firms from the top performance tertile after blockholders' quit, and the Column (3) reports the estimation results using the subsample which includes all 12 months stock returns from the bottom performance tertile after blockholders' quit. The tertiles of stock returns are classified based on the full sample in which all firms are targeted by active blockholders at least once. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. *p < .1; **p < .05; ***p < .01.

	(1)	(2)	(3)
Variables	**Exit (All Obs.) IVOL**	**Top Performance IVOL**	**Bottom Performance IVOL**
Quit Month -1	0.008***	0.011***	0.006**
	(5.53)	(4.34)	(2.29)
Quit Month 0	0.009***	0.011***	0.011***
	(8.22)	(5.30)	(4.99)
Quit Month +1	-0.000	0.000	0.001
	(-0.03)	(0.18)	(0.44)
Quit Month +2	0.002**	0.003	0.004**
	(2.26)	(1.59)	(2.21)
Quit Month +3	0.002**	0.001	0.004*
	(2.11)	(0.71)	(1.96)
Quit Month +4	0.002**	0.002	0.004**
	(2.21)	(0.89)	(1.97)
Quit Month +5	0.005***	0.007***	0.006***
	(4.15)	(3.44)	(2.97)
Quit Month +6	0.004***	0.006***	0.002
	(3.28)	(3.03)	(1.21)
Quit Month +7	0.002**	0.001	0.003
	(1.99)	(0.29)	(1.51)
Quit Month +8	0.003***	0.006**	0.003
	(2.60)	(2.50)	(1.60)
Quit Month +9	0.002**	0.001	0.005**
	(1.98)	(0.47)	(2.17)
Quit Month +10	0.001	0.003	0.000
	(1.11)	(1.18)	(0.22)
Quit Month +11	0.004***	0.009***	0.004
	(3.16)	(3.88)	(1.56)
Quit Month +12	0.003**	0.004**	0.005*
	(2.20)	(1.96)	(1.91)
$IVOL_{t-1}$	0.173***	0.178***	0.145***
	(22.35)	(14.90)	(14.00)
Constant	0.004	0.269***	0.155***
	(0.09)	(2.72)	(3.68)
Control variables	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	97,068	33,090	33,139
Adjusted R^2	0.2698	0.2784	0.2891

Table 2.6
Impact of blockholder size on IVOL.

This table reports OLS regressions for the impact of active blockholders' size on the monthly average idiosyncratic volatility at the firm and month levels in a 13-month period around a blockholder activism event. The dependent variables are the monthly average idiosyncratic volatility. The key independent variable is the size of active blockholders measured as the percentage of shares owned by active blockholders or the number of active blockholders. We include observations in the model if they have at least one binary variable equal to one from the 13 months around the month of activism. The two key independent variables are also adjusted for the days before each blockholder joins and the days after each blockholder exits at the monthly level. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. *$p < .1$; **$p < .05$; ***$p < .01$.

	(1)	(2)	(3)	(4)
Variables	**IVOL**	**IVOL**	**IVOL**	**IVOL**
13D-size	-0.0006***			
	(-2.10)			
Time-13D-size		-0.0001***		
		(-3.61)		
Number-13D			-0.0004	
			(-0.34)	
Time-Number-13D				-0.0002**
				(-2.05)
$IVOL_{t-1}$	0.124***	0.124***	0.124***	0.124***
	(16.62)	(16.62)	(16.61)	(16.62)
Constant	0.296***	0.295***	0.297***	0.295***
	(14.59)	(14.52)	(14.58)	(14.47)
Control variables	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes	Yes
Observations	84,973	84,973	84,973	84,973
Adjusted R^2	0.2538	0.2540	0.2537	0.2538

Table 2.7
Types of blockholders and divergences in impacts on stock price information quality.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm and month levels in a 13-month period around a blockholder activism event. The dependent variables are average idiosyncratic volatility, average stock price efficiency, and coefficient-adjusted stock price efficiency at the firm-month level. The key independent variables are binary variables equal to one when firms are in each specific month before or after the blockholder activism or zero otherwise. The different panels present the blockholder types: Panel A, intermediary; Panel B, investment; Panel C, corporation & individual; and Panel D, internal. We include observations in the model if they have at least one binary variable equal to one from the 12 months around the month of activism. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. *p < .1; **p < .05; ***p < .01.

Panel A	(1)	(3)	(3)
Variables	**Intermediary IVOL**	**Intermediary DELAY**	**Intermediary COE-DELAY**
Month -1	0.004	0.017	0.049
	(0.87)	(1.35)	(1.41)
Month 0	0.014	0.073***	0.165**
	(1.44)	(3.27)	(2.36)
POST-PERIOD	-0.001	0.015	0.024
	(-0.16)	(1.54)	(1.16)
$IVOL_{t-1}$	0.019		
	(0.50)		
$DELAY_{t-1}$		-0.052***	
		(-3.16)	
COE_DELAY_{t-1}			-0.063***
			(-4.10)
Constant	0.259***	0.951***	2.757***
	(5.47)	(5.26)	(7.24)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	4,384	4,895	4,895
Adjusted R^2	0.1933	0.0674	0.0405

Panel B	(4)	(5)	(6)
Variables	**Investment blockholders IVOL**	**Investment blockholders DELAY**	**Investment blockholders COE-DELAY**
Month -1	0.007***	0.024***	0.025
	(2.72)	(3.06)	(1.28)
Month 0	0.009*	0.057***	0.100**
	(1.83)	(3.54)	(2.45)
POST-PERIOD	-0.001	0.004	0.018
	(-0.88)	(0.79)	(1.44)
$IVOL_{t-1}$	0.018		
	(0.95)		
$DELAY_{t-1}$		-0.016	
		(-1.54)	
COE_DELAY_{t-1}			-0.053***
			(-5.70)
Constant	0.215***	1.034***	2.009***
	(4.92)	(10.60)	(9.49)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	12,551	13,539	13,537
Adjusted R^2	0.1785	0.0728	0.0521

Panel C	(7)	(8)	(9)
Variables	**Corporation individual IVOL**	**Corporation individual DELAY**	**Corporation individual COE-DELAY**
Month -1	0.008***	0.015***	0.026***
	(7.01)	(4.91)	(3.39)
Month 0	0.011***	0.017***	0.028***
	(9.21)	(5.44)	(3.84)
POST-PERIOD	-0.001	0.002	0.006
	(-1.37)	(0.96)	(1.38)
$IVOL_{t-1}$	0.123***		
	(15.55)		
$DELAY_{t-1}$		0.018***	
		(4.38)	
COE_DELAY_{t-1}			-0.019***
			(-5.07)
Constant	0.110***	1.403***	3.431***
	(11.30)	(47.39)	(49.84)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	77,468	86,134	86,117
Adjusted R^2	0.2437	0.0902	0.0559

Panel D	(10)	(11)	(12)
	Internal blockholder	**Internal blockholder**	**Internal blockholder**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.007	0.003	0.028
	(1.57)	(0.23)	(0.91)
Month 0	0.004	0.063	0.033
	(0.26)	(1.57)	(0.27)
POST-PERIOD	-0.002	-0.004	0.000
	(-0.37)	(-0.44)	(0.01)
$IVOL_{t-1}$	0.019		
	(0.62)		
$DELAY_{t-1}$		-0.046***	
		(-3.06)	
COE_DELAY_{t-1}			-0.073***
			(-5.55)
Constant	0.189***	1.246***	3.800***
	(3.17)	(7.15)	(10.93)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	4,855	5,863	5,862
Adjusted R^2	0.1860	0.0804	0.0538

Table 2.8

Sources of funds and divergences in impacts on stock price information quality.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm and month levels in a 13-month period around a blockholder activism event. The dependent variables are average idiosyncratic volatility, average stock price efficiency, and coefficient-adjusted stock price efficiency at the firm-month level. The key independent variables are binary variables equal to one when firms are in each specific month before or after the blockholder activism event or zero otherwise. The individual panels specify the different funding sources used by blockholders to acquire the shares of target firms. Panel A is for funds used from the parenting companies of target firms; Panel B is for funds acquired from banks; and Panel C is for blockholders' own funds. We include observations in the model if they have at least one binary variable equal to one from the 12 months around the month of activism. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. **p* < .1; ***p* < .05; ****p* < .01.

Panel A	(1)	(2)	(3)
	Internal source	**Internal source**	**Internal source**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.011	-0.019	-0.066
	(1.27)	(-0.87)	(-1.33)
Month 0	-0.005	0.022	0.061
	(-0.67)	(0.85)	(0.99)
POST-PERIOD	-0.010	-0.001	0.026
	(-1.48)	(-0.08)	(0.75)
$IVOL_{t-1}$	-0.003		
	(-0.07)		
$DELAY_{t-1}$		-0.063***	
		(-2.75)	
COE_DELAY_{t-1}			-0.061***
			(-2.78)
Constant	-0.380	-0.461	1.283
	(-0.71)	(-0.49)	(0.68)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	2,351	2,619	2,619
Adjusted R^2	0.1274	0.1160	0.0712

Panel B	(4)	(5)	(6)
	Bank	**Bank**	**Bank**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.009	-0.021	-0.045
	(1.14)	(-1.01)	(-1.01)
Month 0	0.014	-0.019	-0.201**
	(0.91)	(-0.61)	(-2.55)
POST-PERIOD	0.017	0.062*	0.098
	(1.32)	(1.92)	(1.18)
$IVOL_{t-1}$	-0.082		
	(-1.61)		
$DELAY_{t-1}$		-0.190***	
		(-7.55)	
COE_DELAY_{t-1}			-0.170***
			(-7.31)
Constant	0.174	1.583	4.060
	(0.15)	(0.51)	(0.64)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	1,377	1,613	1,613
Adjusted R^2	0.1531	0.0965	0.0788

Panel C	(7)	(8)	(9)
	Self-funding	**Self-funding**	**Self-funding**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1			
	0.010***	0.015***	0.024***
Month 0	(7.07)	(4.20)	(2.70)
	0.012***	0.019***	0.031***
POST-PERIOD	(9.00)	(5.45)	(3.75)
	-0.000	0.002	0.001
$IVOL_{t-1}$	(-0.03)	(0.67)	(0.19)
	0.099***		
$DELAY_{t-1}$	(11.16)		
		0.008*	
COE_DELAY_{t-1}		(1.70)	
			-0.028***
			(-6.63)
Constant	0.171***	0.892***	2.449***
	(6.46)	(7.58)	(11.23)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	57,826	64,215	64,200
Adjusted R^2	0.2351	0.0816	0.0523

Table 2.9

Purposes of transaction and divergences in impacts on stock price information quality.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm level in a 13-month period around a blockholder activism event. The dependent variables are average idiosyncratic volatility, average stock price efficiency, and coefficient-adjusted stock price efficiency at the firm-month level. The individual panels classify the different purposes of activism reported by blockholders in Item 4 from their 13D filings. Panel A is for Governance/Management issues; Panel B is for Merger purposes; Panel C is for strategic plans proposed by blockholders; Panel D is for Investment-only purposes; Panel E is for Threat purposes; and Panel F is for Heritage or family gift purposes. The key independent variables are binary variables equal to one when firms are in each specific month before or after the blockholder activism or zero otherwise. We include observations in the model if they have at least one binary variable equal to one from the 13 months around the month of activism. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. **p* < .1; ***p* < .05; ****p* < .01.

Panel A	(1)	(2)	(3)
Variables	**Governance IVOL**	**Governance DELAY**	**Governance COE-DELAY**
Month -1	0.007***	0.014***	0.020**
	(5.52)	(3.55)	(2.09)
Month 0	0.016**	0.046***	0.089**
	(2.34)	(3.31)	(2.40)
POST-PERIOD	-0.001	0.002	0.004
	(-1.59)	(0.74)	(0.68)
$IVOL_{t-1}$	0.104***		
	(10.32)		
$DELAY_{t-1}$		0.013**	
		(2.42)	
COE_DELAY_{t-1}			-0.027***
			(-5.78)
Constant	0.126***	0.764***	2.415***
	(7.89)	(5.47)	(8.91)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	45,522	51,135	51,129
Adjusted R^2	0.2390	0.0949	0.0631

Panel B	(4)	(5)	(6)
	Merger	**Merger**	**Merger**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.008***	0.011*	0.044***
	(3.55)	(1.84)	(3.07)
Month 0	0.003	0.049**	0.077*
	(0.35)	(2.34)	(1.65)
POST-PERIOD	-0.002	0.002	0.011
	(-1.42)	(0.38)	(1.13)
$IVOL_{t-1}$	0.056***		
	(4.01)		
$DELAY_{t-1}$		-0.023***	
		(-3.02)	
COE_DELAY_{t-1}			-0.054***
			(-7.51)
Constant	0.186***	0.758***	2.606***
	(10.09)	(14.77)	(17.24)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	20,403	22,759	22,759
Adjusted R^2	0.2178	0.0842	0.0564

Panel C	(7)	(8)	(9)
	Strategy	**Strategy**	**Strategy**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.007***	0.015***	0.026***
	(5.26)	(3.90)	(2.87)
Month 0	0.010*	0.016	0.027
	(1.88)	(1.09)	(0.77)
POST-PERIOD	-0.001	0.001	0.007
	(-1.63)	(0.52)	(1.19)
$IVOL_{t-1}$	0.090***		
	(9.60)		
$DELAY_{t-1}$		0.008	
		(1.61)	
COE_DELAY_{t-1}			-0.027***
			(-6.20)
Constant	0.132***	1.413***	3.415***
	(8.75)	(34.36)	(38.85)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed	Yes	Yes	Yes
Observations	50,644	57,473	57,466
Adjusted R^2	0.2347	0.0946	0.0600

Panel D	(10)	(11)	(12)
	Investment	**Investment**	**Investment**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.006***	0.015***	0.035***
	(3.19)	(3.04)	(2.74)
Month 0	0.006***	0.004	0.012
	(3.21)	(0.89)	(1.02)
POST-PERIOD	-0.002	-0.000	-0.001
	(-1.21)	(-0.14)	(-0.12)
$IVOL_{t-1}$	0.093***		
	(7.43)		
$DELAY_{t-1}$		-0.017***	
		(-2.82)	
COE_DELAY_{t-1}			-0.044***
			(-7.75)
Constant	0.343***	1.401***	3.773***
	(7.04)	(15.46)	(18.06)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	29,535	33,240	33,234
Adjusted R^2	0.2098	0.0691	0.0462

Panel E	(13)	(14)	(15)
	Threat	**Threat**	**Threat**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.007***	0.014***	0.029***
	(6.01)	(4.47)	(3.81)
Month 0	0.010***	0.019***	0.032***
	(9.00)	(6.43)	(4.62)
POST-PERIOD	-0.001	0.002	0.007
	(-1.53)	(1.02)	(1.54)
$IVOL_{t-1}$	0.122***		
	(15.96)		
$DELAY_{t-1}$		0.017***	
		(4.17)	
COE_DELAY_{t-1}			-0.018***
			(-5.02)
Constant	0.305***	1.345***	3.298***
	(12.08)	(12.92)	(16.34)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	78,871	88,986	88,972
Adjusted R^2	0.2477	0.0924	0.0588

Panel F	(16)	(17)	(18)
	Heritage	**Heritage**	**Heritage**
Variables	**IVOL**	**DELAY**	**COE-DELAY**
Month -1	0.123**	0.018	0.114
	(2.66)	(0.14)	(0.26)
Month 0	0.051	0.016	0.055
	(1.10)	(0.10)	(0.16)
POST-PERIOD	0.095	0.097	0.434
	(1.41)	(0.42)	(0.77)
$IVOL_{t-1}$	-0.017		
	(-0.23)		
$DELAY_{t-1}$		-0.143	
		(-1.06)	
COE_DELAY_{t-1}			-0.193
			(-1.33)
Constant	3.907**	-0.327	4.378
	(2.50)	(-0.07)	(0.38)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	293	301	301
Adjusted R^2	0.4246	0.1625	0.2230

Table 2.10
Impact of blockholders switching stances on stock price information quality.

This table reports OLS regressions for the impact of blockholder activism on the information quality at the firm and month levels in a 13-month period around the blockholder activism event. The dependent variables are idiosyncratic volatility, average stock price efficiency, and coefficient-adjusted stock price efficiency at the firm-month level. The sample comprises all events in which active blockholders switched to a passive stance (13G). We include observations in the model if they have at least one binary variable equal to one from the 13 months around the month of activism. Table A1 lists the definitions of all other control variables. Parentheses below the coefficient indicate the standard error, which has been adjusted for heteroscedasticity and clustered for robustness. All financial variables are winsorized at the 1% and the 99% level. *$p < .1$; **$p < .05$; ***$p < .01$.

	(1)	(2)	(3)
Variables	**G to D Switch IVOL**	**G to D Switch DELAY**	**G to D Switch COE_DELAY**
Month -1	0.009***	0.014***	0.030***
	(5.39)	(3.02)	(2.71)
Month 0	0.014***	0.028***	0.037***
	(8.13)	(6.27)	(3.70)
POST-PERIOD	-0.002**	0.006**	0.006
	(-2.12)	(2.06)	(0.90)
$IVOL_{t-1}$	0.054***		
	(4.71)		
$DELAY_{t-1}$		0.008	
		(1.31)	
COE_DELAY_{t-1}			-0.028***
			(-5.43)
Constant	0.247***	0.855***	2.879***
	(8.12)	(19.07)	(27.28)
Control variable	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes
Month fixed effects	Yes	Yes	Yes
Observations	36,224	42,780	42,772
Adjusted R^2	0.2306	0.0895	0.0667

Chapter Three - Blockholders' Reputation Consciousness and the Efficiency of Blockholder Structures

3.1 Introduction

Blockholders improve firms' performance because their large ownership remedies the agency problem at the target firm level between shareholders and managers (Shleifer and Vishny, 1986). The prior literature finds two effective forms of blockholder governance: public activism (Brav et al., 2008; Brav, Jiang, and Kim, 2016) and disciplinary trading/threat to exit (Edmans and Manso, 2011; Edmans, Fang, and Zur, 2013).[1] However, Song (2017) demonstrates that the strength of governing blockholders could be affected by blockholders' reputation consciousness. That is, a blockholder who manages other investors' assets cares more about how capital providers perceive his abilities to pick stocks. As a result, the blockholder with high reputation consciousness would be a less aggressive public activist and disciplinary trader. However, Song (2017) theoretically argues that blockholders with high reputation consciousness could affect firms' performance differently when the structures of blockholders are changed. This paper, therefore, empirically examines blockholder governance at the firm level, with multiple blockholder structures, and blockholder structures are classified by blockholders that are endowed with different reputation consciousness.[2]

Our motivation for empirically studying blockholders' reputation consciousness is enlightened by the theoretical models in Song (2017). Our main findings are consistent with the predictions of his models. We find that the existence of RC blockholders (blockholders who are reputation consciousness) weakens blockholder governance in a homogenous blockholder

[1] According to SEC Sections 13(d) and 13(g), active blockholders must file 13D filings, and passive blockholders must file 13G filings electronically. Active blockholders are defined as blockholders that have a clear plan to influence the management, and passive blockholders are defined as those without a plan to change the incumbent management, but the existence of them could threaten managers to perform well.

[2] Based on the survey conducted by Edmans and Holderness (2017), on average, U.S. public firms have four blockholders. We deploy a textual analysis program to extract the content of all blockholder filings (SEC 13D and 13G), and our findings are consistent with their survey. In our data, we also find more than 50% blockholders are corporations, investment institutions, and banks.

structure, which involves RC blockholders only, but improves blockholder governance in a heterogenous blockholder structure, which consists of RU (blockholders who are reputation unconsciousness) and RC blockholders together. RU blockholders know that RC blockholders are less likely to conduct effective blockholder governance. Thus, Song (2017) states that RU blockholders will realize that all their governance efforts critically affect firms' performance. Hence, these blockholders are motivated to engage in governance.

To extensively extend the empirical test to all blockholders, we access the complete profile of blockholders in the U.S. market, We use Web-crawler programs to download all blockholder filings (13D and 13G) from the Edgar database for the 1994 and 2015 period. We download approximately 150,000 filings for the 13D and 13D amendments and 420,000 filings for the 13G and 13G amendments. We deploy textual analysis programs to read the content of each filing and extract the specific information about ownership, changes in ownership, blockholder type, sources of funds (13D only), and purposes of transactions (13D only) from each filing.[3]

Using the Song (2017) model and the data extracted from the blockholder filings, we define RU blockholders (Reputation-Unconsciousness blockholders and tend to be active) as individuals or partnerships or are using their own funds to acquire the block or are filing a 13D (active filings) and stating the specific plan(s) to change the incumbent management (Clifford and Lindsey, 2016). On the other hand, RC blockholders (Reputation-Consciousness and tend to be passive) are companies, banks, or insurance firms or are the other entities whose managers are separate from the ultimate owners or are filing a 13D (active filings) and not stating the specific plan(s) to

[3] SEC Section 13(g) does not require passive blockholders to disclose the source of funds and purposes of transaction (intuitively, the purpose of passive blockholders is investment). The change of ownership is only required to be disclosed when it is more than 5%.

influence the target firm.[4][5] Furthermore, we define a heterogenous blockholder structure consisting of both RC blockholders and RU blockholders and homogenous blockholder structures of one single type of RU or RC blockholders (all RU structure or all RC structure).

We find that the heterogenous blockholder structure outperforms the other blockholder structures in terms of improving firms' value. Although RC blockholders make fewer efforts to discipline managers, their presence in the target firm strengthens the effectiveness of RU blockholder governance because RU blockholders must do the job by themselves to protect their investment. However, in a multiple but homogenous structure where all blockholders are RC or RU, the effectiveness of governance could be reduced. When all blockholders in a company are RC the group of blockholders will in aggregate put less effort into monitoring than would be the case if at least some of the blockholders were RU. In an all RU blockholder structure, blockholders are keen to monitor on their own. However, they can also rely on others to do more of the work. In summary, an all RC structure delivers poor blockholder governance, and an all RU structure stimulates a free-rider issue (Winton, 1993; Noe, 2002; Edmans and Manso, 2011; Grossman and Hart, 1980) among a group of, otherwise, well-motivated blockholders.

We further discover that the structures of blockholders are dynamically influenced by the structure in the last year and by stock liquidity. First, we find that the lower firm performance (Tobin's Q and long-term ROA) is strongly associated with an all RC blockholder structure in the previous year, which implies that RC blockholders hardly improve firms' value on their own. But we also find that RU blockholders are more likely to target firms with an all RC blockholder

[4] Many blockholders claim that they are active, but they only disclose the investment purposes in their 13D filings. The activism intensity for those active blockholders could be quite low (Edmans, Fang, and Zur, 2013).

[5] Section 2 discusses the classification based on the information extracted from the filings between RC and RU in detail.

structure and doing so effectively transforms an all RC structure to a heterogenous structure. This finding is consistent with the findings of Brav et al. (2008) and Brav, Jiang, and Kim (2015), who demonstrate that active blockholders tend to choose firms with lower performance, which could arise from an ineffective blockholder structure (e.g., all RC structure). Active (i.e., RU) blockholders may explore such opportunities and, upon their entrance, improve firm performance.

Second, stock liquidity becomes a key determinant in influencing blockholder structure. We find that high stock liquidity stimulates RU blockholders to join an ineffective blockholder structure (all RC structure) to improve firm value. Also, low (high) stock liquidity can lock (set free) RU blockholders in the firm to raise (escape) activism in an effective blockholder structure (heterogenous structure). This is because buying or selling a large block could induce a greater price impact with lower stock liquidity. Therefore, low stock liquidity is very costly for RU blockholders to either join or quit.

To strengthen our understanding of the free-rider issue as it is related to blockholder structures, we further classify blockholder structures into three types: one RU blockholder only (no free-rider), one RU blockholder with multiple RC blockholders (RCs free-ride on RU / RC free-rider issue), and multiple RU blockholders (RUs free-ride each other / RU free-rider issue).[6] We find that the blockholder structure with the RC free-rider issue outperforms the blockholder structures with the RU free-ride issue or no free-ride issue. This finding discloses that RU blockholders are strongly motivated and forced by the remaining RC blockholders (RC free-riders)

[6] The RC free-ride issue reflects that RC blockholders would undertake less disciplinary trading or activism because of the constraints of their reputation consciousness; therefore, they tend to free-ride on RU blockholders to act. On the other hand, the RU free-ride issue occurs when many RU blockholders join the same firm, and they know that blockholders tend to raise activism; therefore, every blockholder waits for others to act.

to conduct strong governance. However, with an increasing number of RU blockholders, blockholders tend to rely on others to do the work and to share the outcome of that work.

We deal with two endogeneity issues: omitted variables and reverse causality. First, we control for the firm, time, and industry-time interaction fixed effects of alleviating the omitted variables concern. Second, we use the lagged blockholder structure in the model, but blockholders may predict firm performance first and decide whether to invest. However, this concern hardly explains our findings. On average, the stock-picking abilities for RC blockholders should not be changed in different blockholder structures (e.g., the different number of RU and RC blockholders in the firm). However, we find that the different blockholder structures with which RC blockholders are involved lead to various levels of firm performance. This finding should not be explained by RC blockholders' stock-picking abilities improving, because the firm with which they want to invest has many involved RU blockholders. Therefore, the reverse causality concern is much reduced based on our findings.

This paper makes four main contributions to the literature. First, we are among the very few studies to examine the effectiveness of blockholder structures and total blockholder governance. Most of the prior literature focuses on active blockholders and passive blockholders separately (Brav et al., 2008; Brav, Jiang, and Kim, 2015; Bebchuk, Brav, and Jiang, 2016; Admati and Pfleiderer, 2009; Edmans, 2009; Edmans, Fang, and Zur, 2013). This study links the two types of governance and finds the various structures lead to different levels of firm performance. Our paper, therefore, highlights the important role of blockholder structure, in addition to each individual blockholder.

Second, this paper considers blockholders' reputation consciousness and the two types of free-rider issues in classifying blockholder structures. These issues are important but rarely have been explored in the previous literature. Edmans, Fang, and Zur (2013) find that many hedge funds filed active filings but stated the purposes as investment only. This finding implies that some active blockholders are not really active. We investigate this problem by applying the theory in Song (2017) of classifying blockholders based on their reputation consciousness. The benefit for our classification is to catch blockholders' proactive tendency of being active or passive, rather than what they claim to be in their filings. We contribute to the literature by pointing out that blockholders' reputation consciousness is essential for motivating individual blockholder governance, and it can influence firm performance differently in various blockholder structures.

Third, our paper contributes to the new but growing literature on passive blockholders. Previous studies have widely found the positive impact of passive institutional investors on corporate governance and firm performance, such as Russel Index Funds (Appel Gormley, and Keim, 2016a; Chang, Hong, and Liskovich, 2015; Fich, Harford, and Tran, 2015; Bonne and White, 2015; Crane, Michenaud, and Weston, 2014; Lu, 2013; Mullins, 2014; Schmidt, 2012). Our paper demonstrates one specific channel by which passive blockholders could benefit target firms: through motivating and/or forcing other active blockholders to act.

Lastly, we also extend the understanding of the role of stock liquidity to blockholder governance. The prior literature largely diverges on the effect liquidity has on blockholder governance. Some studies state that liquidity positively affects governance (Edmans, Fang, and Zur, 2013; Edmans, 2009; Kyle and Vila, 1991; Kahn and Winton, 1998; Maug, 1998; Faure-Grimaud and Gromb, 2004), and some argue that liquidity negatively affects governance (Coffee, 1991; Bhide, 1993). This paper mitigates this argument by finding a dynamic role for stock liquidity in blockholder governance. That is, lower stock liquidity can be good in a heterogenous structure to lock RU (active) blockholders in the firm to intervene, and higher stock liquidity also can attract RU blockholders to join the firm with an ineffective blockholder structure (all RC/passive blockholders) to intervene. The impact of stock liquidity on blockholder governance interacts with blockholder structure.

The rest of the paper is organized as follows: Section 3.2 discusses the data, sample, and variables. Section 3.3 analyzes the empirical results, and Section 3.4 concludes.

3.2 Data, Sample, and Variables

3.2.1 Data and Sample

We use Web-crawler programs to collect all U.S. blockholders filings from Edgar database between 1994 and 2015. The sample begins from 1994, which is the first year for all public firms to submit SEC key filings electronically. The blockholder filings in the U.S. market are 13D filings and amendments (active blockholder filings) and 13G filings and amendments (passive blockholder filings). After removing duplications, we collect approximately 150,000 13D filings and 470,000 13G filings. These filings could represent the universe of blockholders at the U.S. market during the sample period.

We also use a textual analysis program to extract specific information from the content of each filing. The information includes the percentage of ownership for each blockholder, every 1% (5%) change in ownership for 13D (13G) filings, purposes of blockholder activism (13D/active blockholders only), types of blockholders (both active and passive blockholders), and sources of funds used to acquire the target firm (13D/active blockholders only).

Most information extracted from the blockholder filings is filed in a standard format. However, active blockholders disclose the purposes of transactions within the statements. Relying on key word searching and textual analysis algorithms, programs automatically read the content of the purposes of transactions and recategorize them into different groups. In our study, we set up six main purposes of blockholder activism: merger, governance, threat, strategy, investment, and heritage.

Specifically, the merge purpose reveals the interests of blockholders to completely take over the target firm within a certain time period. The governance purpose states that blockholders plan to take actions against the management team. The business strategy purpose points out that blockholders want to improve firm operational performance, such as by introducing a sales target. The threat purpose is gathered for blockholders that explicitly inform managers that they will sell the stocks upon unsatisfactory managerial performance. The investment purpose is related to investment only, and blockholders have no intention of changing the management at this stage. Lastly, the heritage purpose reveals that blockholders acquire the block as a heritage or gift to their children. Although the last two purposes are filed by active blockholders, they are not real forms of activism, because they show no plan to change the current management style or operational strategies of target firms.

[Table 3.1 goes here]

Table 3.1 reports the number of activism events for the six purposes in each year of our sample. The top-three purposes are threats, strategy, and governance. This finding indicates that many active blockholders use the "Threat to Sell" as a governance mechanism to discipline managers (Edmans, Fang, and Zur, 2013). The large number of strategy and governance purposes are consistent with the "Voice" channel; active blockholders tend to change the current management style or provide suggestions about the firms' operations (Brav, Jiang, and Kim, 2015). We also note that 4,218 blockholder activism events state their purpose as investment only. These blockholders wanted to be active, but they only delivered a very weak activism intensity.

Accounting data are collected from Compustat, and financial market data are collected from CRSP. We merge data from 13D and 13G filings with the Compustat and CRSP dataset at the firm and year levels. If any firms are covered by Compustat and CRSP, but blockholder filing information for those firms is missing from EDGAR, we assume that these firms are not targeted by any blockholder during our sample period. As a result, we set up the blockholder data as 0 for them. We delete firm-year observations in financial services and resources industries. We also exclude any observations with a negative value of book equity. The final dataset includes approximately 75,000 firm-year observations. All variables are winsorized at the 1% level.

3.2.2 Blockholder Variables

We use the following steps to measure the blockholder variables. First, we classify each blockholder as RC (tends to be passive) or RU (tends to be active). Our classification is different from the traditional understanding of active and passive blockholders[7], because blockholders with high reputation consciousness tend not to raise strong activism or disciplinary trading against managers even if they discovered that the target firms do not perform well (Song, 2017). Therefore, they are less likely to conduct efficient governance mechanisms for activism (Voice) or disciplinary trading (Threat to Sell). This also can partly explain why we observe a large number of active blockholders, but they report investment only purposes in the 13D filings.

To facilitate step 1, we begin with the organization of blockholders from proposed activists (13D) and proposed passiveness (13G) into RU blockholders and RC blockholders. The selection of blockholders into the RC group is based on the following conditions: (1) for both 13D and 13G filings, the types of blockholders are investment advisors, investment banks, commercial banks,

[7] The traditional classification of active and passive blockholders are 13D and 13G filers. However, our classification of active and passive blockholders is based on reputation unconsciousness blockholders and reputation consciousness blockholders, correspondingly, they are active and passive blockholders in our paper.

insurance companies, deposit-taking institutions, endowment funds, church plans, brokers, insider blockholders, and corporations (both private or public). For 13D filings, the blockholders with disciplinary roles are excluded from the reputation-conscious group as they have raised very strong interventions against incumbent managers. (2) For 13D filings, if the sources of funds come from target firms or bank loans, blockholders will be classified as RC blockholders. All other blockholders not classified into the RC group are considered to be RU blockholders. Specifically, they are individual or partnership types or the other types that filed a 13D and raised a purpose related to merge, governance, strategy, or threat or use their own funds to acquire the target firm.

Next, we calculate the number of RC and RU blockholders for each target firm and each year. The current number of RC blockholders is equal to the number of RC blockholders at the end of last year, plus the number of new RC blockholders entering in the current year, minus the number of quitting RC blockholders in the current year. We perform the same calculation for RU blockholders.

We also use the RC Blockholder Ratio to measure reputation consciousness for different blockholder structures in the firm. The ratio is calculated as the number of RC blockholders, divided by the total number of blockholders remaining in each firm by year. Therefore, the ratio ranges from 0 to 1, which correspondingly indicates the proportion of RC blockholders of all blockholders in the structure. We further define four structures of blockholders, as the non blockholder structure (block ratio=0, there is no blockholder in the firm), the full RC blockholder structure (block ratio=1), the full RU blockholder structure (block ratio=0, there is no RC blockholder, but there are RU blockholders in the firm), and the mixture of RU and RC blockholders structure (0<block ratio<1). In our study, the mixture of RU and RC blockholders structure is the interesting structure because there is an interaction between blockholders who tend to be passive and blockholders who tend to be active.

3.2.3 Firm Performance Variables

We follow Peters and Taylor (2017) to define firm performance as Total Q. Total Q is different from the traditional Tobin's Q, because Total Q includes the value of the intangible asset in the denominator. The intangible assets are important in the modern business world as these assets have been raised to exceed more than 34% of firms' total assets (Corrado and Hulten, 2010). Also, with the great development of service and technology-based industries, the value of intangible assets should not be ignored (Peters and Taylors, 2017). Peters and Taylor (2017) state that Total Q is more accurate than Tobin's Q at catching a firm's value. Therefore, we use Total Q rather than the traditional Tobin's Q in this paper. The second variable of firm performance is return on assets (ROA). As noted in Bebchuk, Brav, and Jiang (2016), active shareholders, such as hedge funds, can stimulate long-term improvement rather than the short-term positive impact on ROA. Bebchuk, Brav, and Jiang (2016) also state that the value of blockholders activism is not necessary reflected in earnings improvement for the short-term. Therefore, we use long-term ROA, which is the mean of ROA from year 3 to year 5 ahead, as the second performance variable.

3.2.4 Stock Liquidity Variables

Stock trading data are obtained from CRSP daily file. We follow Edmans, Fang, and Zur (2013) and use *Amihud Illiquidity* and *Zero Returns* as two primary liquidity variables. Fong, Holden, and Trzcinka (2011) investigate a bunch of stock liquidity variables and conclude that these two variables outperform other liquidity variables and are positively correlated with Cost-per-Volume benchmarks. Cost-per-volumn benchmarks indicates the marginal cost per unit of volume that blockholders need to pay for acquiring or handing over the shares in the local currency.[8] Therefore, these two liquidity variables are most suitable to our study.

AMIHUD$_{i,t}$ is calculated as the daily ratio of the absolute value of the daily stock return to volume in dollar value (Amihud, 2002). The ratio is averaged throughout the firm and the fiscal year *t*:

$$AMIHUD_{i,t} = \frac{1}{D_{i,t}} \times \sum_{d=1}^{D} \frac{|RET_{i,d}|}{|VOLUME_{i,d}|},$$

where $RET_{i,d}$ stands for the stock returns, $VOLUME_{i,d}$ stands for the dollar trading volume, and $D_{i,t}$ is the number of trading days in fiscal year *t*.

Zero Returns is derived from Lesmond, Ogden, and Trzcinka (1999) and Goyenko, Holden, and Trzcinka (2009) to catch the components of return volatility and the proportion of zero returns. The calculation for the zero-return of FHT is shown below:

$$FHT_{i,t} = 2 \times Sigma \times \Phi^{-1}\left(\frac{1 + Zeros}{2}\right),$$

where Sigma is the standard deviation of daily returns for firm *I* in fiscal year *t*, $\Phi^{-1}$is the inversed function of cumulative distribution, and Zeros are the proportion of zero returns, calculated as the number of zero-return days, divided by the number of total trading days in fiscal year *t*. Because the distributions of $AMIHUD_{i,t}$, and $FHT_{i,t}$ are highly positively skewed, we follow Edmans, Fang, and Zur (2013) and take the natural logarithm of those two variables and multiply those two variables by -1 to enable the larger value of the liquidity variable corresponding to higher stock

[8] Fong et al., (2017) document all liquidity variables can be classified into two categories, the first is Cost, and the second is Cost per Price/Volume. One example for the second category is Amihud Illiquidity, as the liquidity variable that we use in this paper. The measure of Amihud Illiquidity is stock return divided by trading volume. Therefore, it belongs to the category of Cost per Volume.

liquidity. The liquidity measures are defined as $LIQAMi,t = -\ln(1+AMIHUD_{i,t})$ and $LIQFHT_{i,t} = -\ln(1+FHT_{i,t})$.

3.2.5 Control Variables

Other control variables are constructed following Fang, Thomas, and Tice (2009), Edmans, Fang, and Zur (2013), and Brav, Jiang, and Kim (2015). These control variables are closely related to firm performance and blockholders' ownership. These variables are market value (logarithm), sales growth rate, leverage, dividend yield, ROA, the largest ownership for RU and RC blockholders in each firm by year, accounting opacity, idiosyncratic volatility, and firm age (logarithm). Table A.1 lists the detailed explanation of control variable definitions and the steps taken in the calculations.

3.3 Empirical Analysis

Table 3.2 reports the summary statistics for the study's key variables. The Block ratio measures the number of RC blockholders, divided by the total number of blockholders in the target firm. The median value of the block ratio is 0, indicating that more than 50% firm-year observations in our sample do not have an RC blockholder.

Further, we consider four main structures of blockholders. The key independent variables are Block Ratio, Zero Blockholder Structure, All RU Structure, All RC Structure, and Heterogenous Structure. [9] The interesting structure is multiple but heterogenous structures (Heterogenous Structure), which implies a mix of RU and RC blockholders in the target firm in specific year. We classify 15.3% of firm-year observations as heterogenous structures. Furthermore, 38.2% of firm and year observations are not targeted by any blockholders, or all blockholders have temporarily left at the end of the year. All RU Structure indicates that all

[9] Zero Blockholder Structure is defined as there is no blockholder in the target firm.

blockholders are Reputation Unconscious, and we classify 25.3% of structures into this group. Lastly, All RC Structure states that all blockholders are Reputation Conscious, and 15.3% of in our sample makes up this group. The other interesting variables are stock liquidity variables: *LIQFHT* and *LIQAM*. The greater value of these two variables corresponds to higher liquidity, and the maximum value is 0.

[Table 3.2 goes here]

3.3.1 Firm Performance and Net Turnovers of Blockholders in the Heterogenous Blockholder Structure

In this section, we aim to address the first-order question in this study: does the heterogenous blockholder structure outperform all other blockholder structures? The rationale behind this question is motivated by Song (2017), in that the presence of RC blockholders can force remaining RU blockholders to put more effort into governance. Therefore, a multiple and heterogenous structure with a mixture of RU and RC blockholders could be a very effective blockholder structure. We examine the individual impact of the turnover of RU and RC blockholders toward firm performance in the heterogenous blockholder structure. Following the prior blockholder literature, we deploy Total Q and Long-Term ROA as two measures of firm performance.[10]

Equation (1) represents the model. To estimate Equation (1), we include only the firm and year observations from the heterogenous structure. The interesting coefficient is β_1 (i.e., the annual changes of blockholders). the annual changes of blockholders is measured as the number of entering RU (RC) blockholders minus the number of departing RU (RC) blockholders in each firm by year.[11] β_1 is interpreted as the impact of the annual changes of RU/RC blockholders on firm

[10] We still obtain qualitatively similar results with Tobin's Q as the alternative variable for firms' performance.
[11] If there is no annual change of blockholders in any firm and quarter observation, we will set a missing value to this observation.

performance in the heterogenous blockholder structure only. If there is no entry or quitting for each kind of blockholders, the value will be set as missing. We also control for firm characteristics and firm and year fixed effects in the model:

$$Firms'\ performance_{i,t} = \beta_0 + \beta_1 annual\ changes\ \ of\ blockholders_{i,t-1} + Control\ variables_{i,t-1} + Firm\ fixed\ effects + Year\ fixed\ effects. \quad (1)$$

[Table 3.3 goes here]

Table 3.3 presents the results from regression (1). The dependent variable in columns (1) and (2) is Total Q, and the long-term average ROA in columns (3) and (4). The interested independent variables are Net RC_{t-1}, reflecting the annual changes of RC blockholders in the last year, and Net RU_{t-1}, reflecting the annual changes of RU blockholders in the last year. In columns (1) and (3), we find that the coefficients of net turnover of RU blockholders are not significant. The insignificant results indicate that the turnover of RU blockholders has no meaningful influence on firms' performance in the heterogenous structure. However, the coefficients of net turnover of RC blockholders (in columns (2) and (4)) are positively significant with better firm performance in the next year. On average, one additional RC blockholder presented in the heterogeneous structure increases the value of Total Q by 0.023, or an almost 2% increase in the value of Total Q and increases the value of long-term average ROA by 0.005, or an 11% increase in the value of the long-term ROA. We find most control variables are not significant in the table. However, higher stock liquidity and greater age lead to lower Tobin's Q. Those firms tend to be value stocks which lead to lower Tobin's Q (Pilotte, 1992).

In summary, the greater the change in the number of RC blockholders in the last year significantly improved firm performance, and such improvement can be held for the long-term (the average value of ROA from 3 to 5 years). However, the turnover of RU does not contribute to firm performance. The above results suggest an important role for (passive) RC blockholders in driving firm performance.

This finding is interesting and consistent with our prior discussion. RC blockholders have a strong reputation and career concerns. Therefore, RC blockholders would not implement very strong governance (Voice) or disciplinary trading (Threat to Quit) to influence the management team. However, as insiders, other blockholders (RU blockholders) clearly recognize the tendency of weak governance from RC blockholders. Therefore, the remaining RU blockholders are forced to raise more efforts in monitoring, governance, or threat to sell against the unsatisfactory management team to protect their investment. As a result, RC blockholders indirectly contribute to blockholder governance in the heterogenous blockholder structure when they coexist with the RU blockholders.

We clarify an equally important point: the annual changes of RU blockholders in the last year does not influence the firm performance significantly. Two economics rationales can explain this finding. First, the contribution from RU blockholders is based on the intensity of activism. On the other hand, not every RU blockholders who engage into activism can improve firm value. Brav et al. (2008), Brav, Jiang, and Kim (2015), and Edmans, Fang, and Zur (2013) document that the most influential active blockholders are hedge funds and even a small number of one type of blockholders—hedge funds—can strongly improve target firms' performance. Second, theorists also model that aggressive, powerful, and strong blockholders may extract private benefits from the firms and the other small shareholders, which is considered a cost of blockholders to target firms' performance (Zwiebel, 1995; Bennedsen and Wolfenzon, 2000; Dhillon and Rossetto, 2015). Therefore, the large number of aggressive blockholders (such as RU blockholders) cannot always be a positive factor contributing to firm performance.

3.3.2 Comparisons among Blockholder Structures and Firm Performance

The findings in Section 3.3.1 state that the greater number of RC blockholders is beneficial to improve firm performance in a heterogeneous blockholder structure, but it is not enough to claim that the heterogenous blockholder structure is better than the other structures. In this section, we conduct a paired comparison to analyze the distinctive impact of two paired blockholder structures on firm performance.

Equation (2) represents the base model analysis to conduct the paired comparison of blockholder structures. In this subsection, regression (2) includes observations for two paired blockholder structures only when it is implemented in each time. One structure is selected as main structure, another one is alternative structure. The variable of interest (Structure of blockholders) in regression (2) represents those four binary variables of different blockholder structures which are defined in this study. Based on different comparisons, the variable, Structure of Blockholders, can represent different blockholder structures.

In this setting, as all blockholders structures are mutually exclusive, the coefficient of $\boldsymbol{\beta_1}$ (Structure of blockholders) can be interpreted as the incremental impact from the interesting structure (the main blockholder structure dummy=1) against another structure selected in each model (the main blockholder structure dummy=0) on firm performance. The purpose of this analysis is to identify whether one blockholder structure is persistently outperforming other structures.

$$Firms\ performance_{i,t} = \beta_0 + \beta_1 Structure\ of\ blockholders_{i,t-1} + Control\ variables_{i,t-1} + Firm\ fixed\ effects + Year\ fixed\ effects. \quad (2)$$

[Table 3.4 goes here]

Table 3.4 displays the results for regression (2). The dependent variable in panel A is Total Q, and the dependent variable in panel B is the long-term average ROA. In each model, we include two structures only. The Heterogeneous Structure is the main structure in the first three columns. For alternative structures, we assign Zero Blockholder Structure (no blockholders) in column (1), All RU Structure in column (2), and All RC Structure in column (3). In columns (4) and (5), the main structure becomes All RU Structure, which have all blockholders being RU in particular firms and years. We further assign Zero Blockholder Structure in column (4), and All RC Structure in column (5) as the second blockholder structure to be compared with All RU Structure. Total Q is the main dependent variable to measure firms' performance. We further use Industry × Year fixed effects to alleviate the omitted variables concerns (variations across industry and time).

All the blockholder structure variables are binary variables, which are equal to 1 to indicate a specific blockholder structure in the last year and 0 otherwise. For the results, the coefficients of the Heterogenous Structure in columns (1) and (3) are positively significant at the 1% level in Panel A. In terms of the economic magnitude, the Heterogenous Structure leads to a 0.224 higher

Total Q, or a 17% improvement in Total Q, compared with Zero Blockholder Structure, and a 0.192 higher Total Q, or a 15% improved Total Q, compared with the All RC Structure. We also obtain the qualitatively similar findings in Panel B, where the dependent variable is ROA. Therefore, the heterogeneous blockholder structure outperforms the Zero Blockholder Structure and the Full RC Structure by leading better firm performance. However, that the coefficient for the Heterogenous Structure and the All RU Structure (Column 2) is not significant and the value of the coefficient is very small for both panels A and B suggests that the Heterogenous Structure and the All RU Structure enhance firm performance nearly to the same degree.

However, the comparison between the Heterogenous Structure and the All RU Structure is very critical, because both structures involve RU blockholders that tend to raise aggressive disciplinary actions, strong monitoring intensity, and/or threat to quit. If the impact on firm performance from these two structures could not be differentiated from our analysis, we would not be able to argue that the presence of RC blockholders can motivate the remaining RU blockholders in the same firm. In this case, the alternative explanation could be that only RU blockholders are effective at corporate governance and firm performance. Therefore, the Heterogenous Structure and the All RU Structure are better than Zero Blockholder structure and the All RC Structure. We will address this important question in the next two sections through conducting more detailed analysis of the Heterogenous Structure and the All RU Structure.

Going back to Table 3.4, in panel A, columns (4) and (5), we compare the All RU Structure with the No Blockholder Structure and All RC Structure accordingly. We find that the All RU Structure outperforms the other two structures in terms of improving Total Q. It is a consistent finding toward the common understanding in the blockholder literature that active blockholders improve firm performance (Brav et al., 2008; Brav, Jiang, and Kim, 2015). In Panel B, the coefficient of the All RU Structure is not significant in column (4) or (5). Therefore, we find that the positive impact of the All RU Structure focuses on Total Q only, rather than the cash-flow return. This finding is consistent with the explanation of Bebchuk, Brav, and Jiang (2016) that ROA is not very suitable for blockholder activism studies.

In conclusion, the findings in Section 3.3.2 disclose that the impact of blockholders' structures on firm performance is affected by the various structures, and the Heterogenous Structure and the All RU Structures are better than Zero Blockholder Structure and the All RC Structure in terms of improving firm value. However, we were unable to identify whether the impact of the heterogeneous structure and the impact of Full RU structure are different improving firm performance in this section. We will dig deeper into this question in Sections 3.3.3 and 3.3.4.

3.3.3 Heterogenous Blockholder Structure and Full RU Structure

In Section 3.3.3, we conduct a more detailed analysis of the comparison between the heterogenous blockholder structure and the Full RU structure. In the previous analysis, we did not obtain a significant difference between the impact of the two structures on firm performance. A refined hypothesis will identify whether the increasing pressure of RC blockholders enhances the dedication of the remaining RU blockholders to monitor and intervene.[12] Therefore, a heterogenous structure with a greater number of RC blockholders could be better to enhance firm value. To verify this hypothesis, we repeat regression (2) by subsampling the observations from the Heterogenous Structure and the All RU Structure into four groups. In each subsample, we include the All RU Structure and the Heterogenous Structure with RC blockholder ratios of 0.01%–24.99%, 25%–49.99%, 50%–74.99%, and 75%–99.99%, respectively.

[12] We also admit that there is one alternative explanation from Apple (2016b) that passive funds support active funds. At this stage, we cannot rule out which channel (governance pressure or support from passive blockholders), or perhaps both channels drive the positive effects from RC (passive blockholders) to improve firm performance.

[Table 3.5 goes here]

Table 3.5 reports the results. In each model in Table 3.5, the subsamples only contain observations with the Full RU Structure and the Heterogeneous Structure with the stated percentage of Block Ratio (the number of RC blockholders/the number of all blockholders). The independent variable of interest is still the dummy variable of the heterogenous blockholder structure, which is equal to one for the Heterogeneous Structure and 0 for Full RU Structure. Therefore, the coefficient of the Heterogenous Structure is interpreted as the direct comparison between the heterogenous blockholder structure with specified percentages of the RC Block Ratio[13] and the Full RU Structure.

We use Total Q as the measurement for firms' performance in the panel A and use Long-Term ROA in panel B. To alleviate the concerns of omitted variables, we also apply higher dimensional fixed effects in all models (i.e., Firm, Year, and Industry × Year fixed effects). In panel A, we find that the coefficient for the Heterogenous Structure in columns (1), (2), and (3) is not significant, but it is positively significant in column (4). On average, the Heterogenous Structure with more than 75% RC blockholders leads to a higher Total Q compared with the Full RU Structure in the next year. In panel B, we also obtain findings similar to those for the subsamples of the lower RC blockholder ratio, which does not show any significant difference between Heterogenous Structure and Full RU Structure for improved long-term ROA. However, the Heterogenous Structure outperforms the Full RU Structure, leading to a higher long-term ROA when the RC blockholder ratio is more than 50%. The economic magnitude even gets stronger with the larger percentage of RC blockholders on board. For example, the long-term average ROA

[13] the RC *Block Ratio* is calculated as the number of RC blockholders, divided by the total number of blockholders.

is improved almost 3 times when the RC Block Ratio is increased from the subsample of 50%–74.99% to 75%–99.99%.

The above results suggest that the greater number of RC blockholders relating to the number of remaining RU blockholders drives the good performance of Heterogenous Structure, thereby outperforming the Full RU Structure.[14] In other words, the greater number of RC blockholders causes a kind of free-rider pressure on RU blockholders. This pressure motivates RU blockholders to put more efforts on improving firm performance. Such findings are very intuitive and support our hypothesis. This is because the Heterogenous Structure with dominant RC blockholders tend to have fewer RU blockholders than does the Full RU Structure, which consists of RU blockholders only. However, the Heterogenous Structure with fewer RU blockholders (tend to be active) and more RC blockholders (tend to be passive) outpaces the Full RU structure, which includes RU blockholders only. Therefore, combining Sections 3.3.2 and 3.3.3, we can conclude that the positive impact of the Heterogenous Structure is driven by RC blockholders, rather than by RU blockholders. Also, the Heterogenous Structure of blockholders with a greater number RC blockholders tends to be the most effective blockholder structure in our sample.

3.3.4 Multiple Free-Rider Issues

In the previous analysis, we document that a large number of RC blockholders indirectly improves firm performance by motivating the remaining RU blockholders to increase their efforts in monitoring and intervention. In this section, we aim to further validate this finding by examining the potential free-rider issues associated with the Heterogenous Structure and the Full RU Structure. We propose two different kinds of free-rider issues that are involved in blockholder structures. The first one is RC blockholder free-riding RU blockholders, and the second one is RU blockholders

[14] We have also used the fraction of number of shares held by RC blockholders dividing by total number of shares held by all blockholders to classify the subsamples in this test and we obtain the qualitatively similar results.

free-riding the other RU blockholders. We hypothesize that these two free-rider issues play important roles in influencing the effectiveness of blockholder governance in a multiple Heterogenous Structure or the Full RU Structure.

Our two proposed free-rider issues in blockholder structures are slightly different from the free-rider issue mainly studied in the previous literature. Most of the prior literature focuses on RC (passive blockholders) free-riders only (Edmans, 2014; Edmans and Holderness, 2017). These free-riders have much lower willingness to engage in costly governance, and they tend to rely on the other active blockholders to intervene in unsatisfactory managerial performance. In addition to that, we propose the second free-rider issue, which occurs as the result of active blockholders (RU blockholders). The RU free-rider issue is produced when multiple RU blockholders are associated with the same firm, and they know other fellow blockholders are keen to monitor and intervene. Therefore, each blockholder could reduce the individual incentives for costly monitoring and intervention but wait for the others to monitor. As a result, the total governance power of the Full RU Structure can be reduced. To summarize, we hypothesize that the greater number of RU blockholders can cause the second type of free-rider issues, and, therefore, the Full RU Structure leads to lower firm performance when more RU blockholders are available to be freely rode in the same firm.

[Table 3.6 goes here]

To examine the impact of the hypothesis for the two free-rider issues, we create dummy variables to measure blockholder structures with different free-rider issues. First, we consider a single blockholder structure, which consists of one RU blockholder (i.e., a No Free-Rider Structure). In this structure, one RU blockholder tends to monitor, and no other blockholders are free-riding him. Therefore, he should have the strongest motivation to improve firm performance.

Second, we designate a heterogenous blockholder structure with one RU blockholder and single or multiple RC blockholders as an RC Free-Rider structure. In this structure, all RC blockholders can free-ride the efforts of the only RU blockholder to monitor the managers. Based on the prediction of Song's theoretical model, the only RU blockholder has to devote stronger efforts to enhance the governance. We further classify one RU blockholder and seven or more RC blockholders as a High RC Free-Ride Structure and one RU blockholder and three or fewer RC blockholders as a Low RC-Free-Ride structure. [15] So we can catch the impact from different degrees of RC free-riders in blockholder structures. Lastly, we define the structure with multiple RU blockholders as an RU Free-Rider structure. In this structure, all blockholders tend to be active in the beginning. However, they also can free-ride the other RU blockholders' efforts in governance and share the positive outcomes, so those RU (active) blockholders would reduce each individual blockholder's efforts to monitor, which reduces the total blockholder governance in the target firm.

The analyses in this section aim to compare these three different structures related to the two free-rider issues in blockholder structures, which are no free-riders, only RC free-riders, and only RU free-riders. To facilitate our examination, we once again conduct a paired comparison between two different structures. Table 3.6 presents the results. In each column in Table 3.6, we only include the observation for the main structure and the alternative structure to run the regression. Therefore, the coefficient of the main structure is interpreted as the marginal impact of the interesting structure against the alternative structure on firms' performance.

[15] We also attempt to use the other benchmark for classifying high and low groups in this structure. We obtain qualitatively similar results.

In Table 3.6, the interesting structure in Columns (1) and (2) for Panels A and B is the High RC Free-Rider Structure, which contains one RU blockholder and more than seven RC blockholders. The High RC Free-Rider Structure implies that a large number of RC blockholders intend to free-ride the governance efforts of the only RU blockholder. There are two alternative structures to be compared. The first one is the No Free-Rider Structure, which includes one RU blockholder only. Secondly, the RU Free-Rider structure contains multiple RU blockholders. In Table 3.6, the main variable is *High RC Free*. It is a dummy variable, which equals to 1 when observations are classified as High-RC-Free-Rider structure or equal to 0 for observations being classified in the corresponding alternative structure labeled in each column. All the other observations not being classified into those structures are removed.

Columns (1) and (2) of panel A show that greater RC free-rider issues lead to better Total Q, compared with the structures without free-rider issues and with RU free-rider issues only. This finding is consistent with what we documented in prior tests: the higher pressure placed on the remaining RU blockholders by the RC free-riders enables the former to perform better. The economic magnitude is also very strong. The result in columns (1) and (2) in Panel A suggest that comparing the blockholder structure without the free-rider issue and the structure with the RU Free-Ride issue, the High RC-Free-Ride structure increases Total Q by 1.147 and 1.114, respectively, which is approximately 100% of the mean. Column (2) in Panel B advises that the High RC-Free-Ride structure outperforms the RU Free-Ride issues by 0.116 for long-term ROA, which is almost 181% of the mean.

On the other hand, Columns (3) and (4) compare the Low RC-Free-Rider structure as the interesting structure, which contains fewer than three RC blockholders and one RU blockholder, and the RU Free-Rider structure and the No Free-Rider structure. The Low RC Free-Rider structure indicates that a small number of RC blockholders are being able to free ride on the only RU blockholder in this structure. The interesting variable is *Low RC Free*, which is equal to 1 for observations being classified as Low-RC-Free-Rider structure or is equal to 0 for observations being classified in the alternative structure labeled in each column. For Columns (3) and (4) in Panels A and B, we find either not significant or negatively significant coefficients for *Low RC Free*, the remaining variable. This finding reveals that the heterogeneous structure with smaller RC blockholders does not have any outstanding performance.

In conclusion, we obtain the dynamic evidence of the impact of blockholder structure on firms' performance based on two different free rider issues and answer the question of why the Heterogenous Structure with the larger number of RC blockholders leads to better firms' performance (the result in Section 3.3.3). A large number of RC free riders can motivate the remaining RU blockholders to put greater effort into governance. However, in the Full RU Structure, the effectiveness of blockholder governance can be reduced because of the second type of Free-Rider issue, which is RU blockholders free-riding each other. Therefore, the RC free riders play a positive role in the heterogenous structure, but more RU free-riders decrease the effectiveness of the Full RU structure to improve firm performance. Thus, the heterogenous structure with a larger number of RC blockholders is the most effective blockholder structure.

3.3.5 Reputation Concerns of Remained Blockholders and the New Entries of Blockholders

After identifying the most effective blockholder structure, the next important question is whether the structure of blockholders changes randomly or blockholders could rationally influence the blockholder structure. To answer this question, we investigate whether reputation concerns about the current blockholders at the beginning of each year attract or repel RU and RC blockholders distinctively.

We measure the level of reputation consciousness for the current blockholder structure as the RC *Block Ratio*, which is calculated as the number of RC blockholders, divided by the total number of blockholders. The largest value of RC blockholder ratio, which is 1, indicates the Full RC Structure, and the smallest is 0, indicating structure has no RC blockholder. Nominally, in the eyes of the outsiders, the large number of RC blockholders (tend to be passive) suggest that RU blockholders (tend to be active) would be confronted with less obstructions to implement their activism plans. Thus, we hypothesize that the current blockholder structure with a high RC *Block Ratio* tends to prompt RU blockholders to intervene.

On the other hand, it can be a risky strategy for passive blockholders, such as RC blockholders, to join in a firm that already has had a large number of RC blockholders. These firms have either the Full RC Structure or the Heterogenous Structure, which contains only a few RU blockholders. First, the Full RC Structure has a weak governance status. Second, in the Heterogenous Structure, a few RU blockholders can leave the firm to easily transform their heterogenous structure into the Full RC Structure. Therefore, we hypothesize that RC blockholders will avoid joining a target with the firm with a high RC *Block Ratio*. We regress the entry and exit of RC and RC blockholders on the current RC *Block Ratio* at the beginning of each year. We also remove the firm and year observations that do not have any changes in RU or RC turnover.

[Table 3.7 goes here]

Table 3.7 displays the results. In Panels A and B, the dependent variables for columns (1) and (2) are dummy variables named RU Enter and RU Exit, which are equal to 1 for at least one

RU blockholder entering or quitting the target firm and 0 otherwise. The dependent variables for columns (3) and (4) are binary variables for RC blockholders. They are consistent with the definitions used in columns (1) and (2). We include INDUSTRY × YEAR DUMMY in Panel B for controlling the variation by industry and by year.

The results in Table 3.7 are consistent with our hypothesis discussed above. In columns (1) and (2), we find that a larger RC *Block Ratio* leads to a greater number of newly joining RU blockholders and fewer quitting RU blockholders. The coefficient of Block Ratio in columns (1) and (2) shows that on average, the every 10% increase in the RC Block Ratio leads to 1.31 new RU blockholders joining, and every 10% reduction in the RC Block Ratio is associated with 1.37 RU blockholders quitting.

On the other hand, as predicted by the hypothesis above, columns (3) and (4) suggest that a high RC Block Ratio strongly expels RC blockholders. On average, every 10% increase in the RC Block Ratio reduces the number of new RC blockholders by 1.85 blockholders and increases the number of quitting RC blockholders by 4.97 blockholders. The propensity of current RC blockholders to quit is almost 3 times as the reduction of new RC blockholders. Therefore, the greater Block Ratio attracts RU blockholders and expels RC blockholders, and the lower Block Ratios attracts RC blockholders and expels RU blockholders. Consequently, the high RC Block Ratio would be reduced and the low RC Block Ratio would be increased based on the current blockholder structure of each target firm upon controlling for the other covariates.

The above results seemingly show that the blockholder structure, represented as the RC Block Ratio, is not a random event, but it is driven by the different preferences of RU and RC blockholders. The too high or too low RC Block Ratio could be adjusted by itself to approach an average level. In other words, a Full RU structure and a Full RC structure are highly likely to become a heterogenous structure within a year. To further verify this, we experiment with the partially adjusted model to examine whether there is a mean-reversion pattern in blockholder structures. Regression (3) presents the partially adjusted model.

$$Blockholder\ Ratio_{i,t} - Blockholder\ Ratio_{i,t-1} = \lambda\,(\widehat{Blockholder\ Ratio}_{i,t} - Blockholder\ Ratio_{i,t-1}) \qquad (2)$$

The $\widehat{Blockholder\ Ratio}_{i,t}$ is estimated from the baseline model with all the other control variables used in our study. The interesting coefficient is the λ. The positive value corresponds to mean reversion, and the negative value indicates that the blockholder ratio moves far from the mean. Table 3.8 presents the results.

[Table 3.8 goes here]

Column (1), Table 3.8, indicates the difference in one year, and columns (2) and (3) reveal the long-term difference of 2 and 5 years accordingly. In all three models, we find that the coefficient of λ is positive and statistically significant at the 1% level. Therefore, the adjustment of the blockholder structure is not a random pattern. Instead, it is mean reversion. Ultimately, we will see that the blockholder structure is more likely to adjust itself approaching toward the heterogenous structure, which is considered to be the most effective structure to improve firms' performance.

3.3.6 Impact of Stock Liquidity on the Relation between Reputation Concerns and Net Turnovers of Blockholders

Another important determination of blockholder structure could be stock liquidity. The prior literature has documented that stock liquidity reduces the probabilities for blockholders to use the "Voice" channel (activism) but increases the probabilities to use the "Threat" channel (passiveness). This is because the cost of Threat is reduced with a lower price impact upon trading in a highly liquid stock market (Edmans, Fang, and Zur, 2013). Therefore, stock liquidity also can change the blockholder structure. In our paper, however, we are particularly interested in the interacted impact from reputation concerns of blockholders and stock liquidity. That said, depending on the same level of reputation concerns of blockholders, how does stock liquidity influence the annual changes of RU and RC blockholders? The key independent variables are Block Ratio × Lagged liquidity variables, and we use two measurements of liquidity variables, *LIQAM* and *LIQFHT*, to enhance robustness.

As is discussed in Song (2017), RU blockholders in the heterogenous structure are forced to raise more efforts via public intervention, because they know that RC blockholders are not be interested in monitoring or disciplining managers, making the governance of those RC blockholders less credible. In addition, low stock liquidity could further lock RU blockholders into the target firm because the cost (price impact) for RU blockholders to quit such firms increases. Therefore, staying and intervening in the target firm, which has many RC blockholders and a low stock liquidity, becomes a better choice than leaving. However, higher stock liquidity provides opportunities for RU blockholders to leave such firms without raising costly activism and being freely rode by the other RC blockholders.

On the other hand, high stock liquidity reduces the cost for RC blockholders to remain as free-riders as they can form and dissolve the block investment with less cost. Further, higher stock liquidity leads to better firm performance (Fang, Noe, and Tice, 2009) and improved blockholder governance (Edmans, Fang, and Zur, 2013), which suggests such firms with high stock liquidity are a good investment for RC blockholders that are not willing to raise public activism. Therefore, we expect to see a greater number of RC blockholders joining firms with higher stock liquidity, control for the same level of reputation concern of blockholders.

[Table 3.9 goes here]

The results in Table 3.9 are consistent with the above logical discussion. The dependent variable Net RU indicates the number of new RU blockholders joining minus the number of current RU blockholders quitting in each firm by year. The same calculation is applied to Net RC for RC blockholders. In columns (1) and (2), we find that while reputation concerns still reduce the annual changes of RU blockholders, the higher stock liquidity, conditioned on the reputation concerns in the last year, reduces the number of RU blockholders. In other words, with the same level of reputation concerns, the higher stock liquidity stimulates current RU blockholders to leave the target firm and reduces the number of new RU blockholders joining the firm. Columns (3) and (4) reveals the opposite situation for RC blockholders. Although the high reputation concerns of blockholders at the beginning of the year reduces the number of RC blockholders, higher stock liquidity with the same level of reputation concerns in the last year increases the annual changes of RC blockholders. All results in Table 3.9 are statistically significant at the 1% level. Therefore, we may conclude that the effects of stock liquidity on RU and RC blockholders are twofold.

Linking these findings with those about blockholder structures, we can show that, the impact of stock liquidity on blockholder governance interacts with blockholder structures. For example, higher stock liquidity can reverse an effective blockholder structure to a less effective structure. That is, the heterogenous structure can lose RU blockholders and attract RC blockholders with high stock liquidity, and the heterogenous structure ultimately becomes a Full RC Structure, which offers weak blockholder governance.

3.3.7 Endogeneity Concerns

Before concluding, we still need to discuss potential endogeneity concerns. The endogeneity issue is challenging in the blockholder literature as there is no credible instrument. Hence, we focus on logical analysis instead of econometric methods (Edmans and Holderness, 2017).

We admit two types of endogeneity concerns potentially could occur in this study. The first one is the omitted variable bias. Omitted variables could influence both blockholder investment decisions and firm performance, but they are not included in our empirical models, because we are not aware of their existence. To alleviate omitted variable concerns, we deploy higher dimensional fixed effects. These not only control for firm and year fixed effects but also capture the variation between industries and across years. Doing so alleviates the omitted variable to the best that we can do.

The second endogeneity issue is reverse causality, or stock-picking abilities of blockholders (Brav et al., 2008; Brav, Jiang, and Kim, 2015). In other words, the alternative explanation of our findings could be that RC blockholders have better stock-picking abilities to choose the target firm, so we observe better firm performance correlated with more RC blockholders in the heterogenous structure. However, this alternative explanation is unwarranted in our study.

First, to the best of our knowledge, no prior literature claims that passive blockholders, compared with active blockholders, have better stock-picking abilities. On the other hand**,** Brav et al. (2008) and Brav, Jiang, and Kim (2015) point out that some active blockholders, such as hedge funds, may purposely target lower-performing firms and intervene, to realize abnormal returns in the future. Hence, more evidence supports that active blockholders are more likely associated with better firm performance in the future.

Second, even if passive blockholders (RC blockholders) were to have better stock-picking abilities, our findings would still not be explained by a stock-picking story. This is because the Full RC Structure, which contains RC blockholders only, offers very weak governance and poor firm performance 1 year ahead. On the other hand, the Full RU Structure, which contains no RC blockholders, leads to good firm performance indifferently from the Heterogenous Structure, on average. Therefore, the most consistent story to help explain the findings is that, in a Heterogenous Structure, RU blockholders are forced to raise more activism efforts, to compensate the existence of RC blockholders that tend not to engage in costly blockholder governance. In this way, the heterogenous structure is the most effective.

3.4 Conclusions

This paper has studied the impact of blockholder structure on firms' performance. By using the blockholders' reputation consciousness to classify the RU (tend to be active) and RC (tend to be passive) blockholders, we define the blockholder structures into the Full RU Structure, the Full RC Structure, No Block Structure, and the Heterogenous Structure. The empirical analysis reveals that the Heterogenous Structure with the mixture of RU and RC blockholders is more effective to improve firm performance in that it leads to better firm performance in the next year. This positive impact gets stronger with more RC blockholders in the heterogenous structure. The finding is consistent with the theoretical work conducted by Song (2017), in that RU blockholders are forced to raise stronger activism, to compensate for the weak governance from RC blockholders in the multiple and heterogenous structure. We also find that the dynamic adjustments in blockholder structures. That is, the blockholder structure seems to exhibit a mean-reverting pattern. However, higher stock liquidity can change an more effective blockholder structure into a less effective blockholder structure, because higher stock liquidity provides opportunities for RU blockholders to leave instead of intervention.

This paper has asked important questions about the growing passive blockholder literature. Future research studies should further explore the interacted effects of active and passive blockholders on the other aspects of corporate finance and the financial market. For instance, through which channels and to what extent can passive blockholders benefit target firms. The blockholder literature is old, but we are in a new era to reshape it.

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Appendix

Table A.1. Variables Used in the Regressions

Net RC	Number of joining RC blockholders subtracted by the number of quitting RC blockholders in each firm by year
Net RU	Number of joining RU blockholders subtracted by the number of quitting RU blockholders in each firm by year
LIQAM	-1 × (the natural logarithm of one plus the firm's Amihud illiquidity measurement) (Amihud, 2002)
LIQFHT	-1 × (the natural logarithm of one plus the firm's FHT measure). The FHT measure is calculated as zero return days (Fong, Holden, and Trzcinka, 2011)
LMV	The natural logarithm of the market value of equity (CSHO × PRCC_F)
RU Max	The ownership (percentage) of common stocks held by the largest RU blockholder in each firm by year
RC Max	The ownership of (percentage) common stocks held by the largest RC blockholder in each firm by year
SGR	Sales growth ratio calculated as (sales minus lagged sales), divided by lagged sales
LEV	Leverage ratio calculated as the book value of debt (AT – CEQ), divided by the book value of total assets (AT)
Div Yield	Dividend yield calculated as [(the common dividend (DVC) plus the preferred dividend (DVP)), divided by (the market value of equity plus book value of preferred stocks)], where the book value of the preferred stock is defined as the first nonmissing value of its redemption value (PSTKRV), its liquidating value (PSTKL), or its carrying value (PSTK)
RDTA	R&D intensity calculated as research and development expenditure (XRD) divided by lagged book value of total assets (AT) and set to zero if missing.
AGE	Logarithm of firm age based on the first year of presence in Compustat database
IVOL	The yearly average idiosyncratic volatility calculated as the standard deviation of the residual value from the rolling regressions of the three-factor Fama-French model in each past month (Ang et al., 2006)
DA	Discretionary accruals, calculated from the modified Jones model (Deschow, Sloan, and Sweeney, 1995)

Table A.2. Sections in 13D & 13D/A & 13G & 13G/A filings are collected by programs:

Section 4: Purpose of Transactions (13D only)	Active blockholders (13D filers) must disclose the purposes of block acquisitions; for example, changes in corporate governance, replacing existing management, boosting sales, and so on.
Section 1 (4): Sources of Funds (13D only)	Blockholders must disclose the sources of funds used to acquire the block.
Section 1 (11): Aggregate Amount Beneficially Owned by Each Reporting Person	A 13D filers must disclose any changes in the ownership greater than 1%.
Section 1 (14): Type of Reporting Person	Blockholders must disclose the types of blockholders, such as investment funds, corporations, or individuals.

Appendix A. Data Quality Verifications for Blockholder Activism Data

Web-crawler programs are written in Python, and textual analysis programs are written in Perl. First, Web-crawler programs download all raw filings of 13D and 13D/A filings stored on an Edgar FTP server for the period 1994 to 2015. First, we need to download a Master list that includes the basic information of each filing, such as date and name and where the information is stored on the Edgar FTP server. The raw filings are downloaded in TXT format. Next, a textual analysis program written in Perl is designed to read the content of each filing. The program reads the ownership percentage, the number of active blockholders, the types of blockholders, and the sources of funds. Thus, all information is downloaded to a spreadsheet. Some information, such as the type of the blockholder or the source of the funds, is very standard to be disclosed. For example, if blockholders are a bank, then they fill in "BK" in Section 14, which states that the blockholder type is a bank. The other information, such as purposes of transactions, is more complex. The logic for the textual analysis program is based on key word searching and specified algorithms. For instance, when blockholders disclose proposes of the acquisitions, they also state which activities they are not interested in. By doing so, they often mention key sentences such as that "we are not interested in the following activities . . ." or "we have no plan to engage in . . . ." Our Perl program identifies these key sentences to capture the real activities of blockholders and thereby remove noisy information.

To ensure the quality of the program and the data, we use program checking and manual random checking procedures. We design a program to check data quality. It can indicate which filing failed to be read by the program. Sometimes, information in a filing seems to be an error, such as more than 100% ownership disclosed, although these types of errors are very rare. These errors could be the result of manual mistakes made when the filing was uploaded to SEC. In estimation, the error rate in our programs is between 0.5% and 1% of nearly 140,000 13D & 13D/A and 430,000 13G & 13G/A events downloaded. We then go back to read those filings that are not readable by the machine and modify the program. We also randomly check the information in raw filings in the first 1 of every 1,000 to ensure data quality. Overall, we are very satisfied with the quality and accuracy of the programs, and the 1% error rate should not significantly affect our results.

Table 3. 1

Purposes of Blockholder Activism

This table presents the number of activism events for purposes of blockholder activism in each year. The mergers purpose discloses the interests of blockholders in completely absorbing the target firm. The governance purpose states that blockholders plan to take actions against the management team. The business strategy purpose points out that blockholders want to improve the firm's operational performance, such as introducing a sales target. The threat purpose is reserved for "Threat to Sell." The investment purpose is related to investment only. Finally, the heritage purpose reveals that blockholders acquire the block as a heritage or gift to their children.

Year	Governance	Mergers	Investments	Strategy	Threats	Heritage
1994	54	18	35	58	93	0
1995	285	256	265	315	377	1
1996	361	238	386	485	723	2
1997	426	217	528	604	1,105	4
1998	438	223	373	536	857	0
1999	500	211	294	542	848	2
2000	397	203	235	433	670	2
2001	286	158	186	338	532	3
2002	439	117	256	487	722	1
2003	328	155	180	341	500	4
2004	282	146	131	330	450	4
2005	319	146	142	381	514	5
2006	342	156	155	372	479	0
2007	438	174	144	449	579	1
2008	439	171	151	489	639	4
2009	277	98	108	291	386	1
2010	262	99	111	287	356	1
2011	252	96	94	260	335	2
2012	255	87	102	266	334	2
2013	266	92	105	293	353	0
2014	316	111	124	330	392	1
2015	287	101	113	304	363	1
Total	7,249	3,273	4,218	8,191	11,607	41

Table 3. 2

Summary Statistics

This table reports summary statistics for the key variables used in the estimation. All variables, excluding blockholder variables, are winsorized at the 1% level. The sample period for all variables is from 1994 to 2015. Table A.1 defines all variables.

	[1] Obs	[2] Mean	[3] SD	[4] Min	[5] P10	[6] P25	[7] P50	[8] P75	[9] P90	[10] Max
Blockholder-level variables										
Zero Blockholder	76,857	0.336	0.472	0	0	0	0	1	1	1
RU Structure	76,857	0.248	0.432	0	0	0	0	0	1	1
RC Structure	76,857	0.176	0.381	0	0	0	0	0	1	1
Hetero Structure	76,857	0.240	0.427	0	0	0	0	0	1	1
Block Ratio	76,857	0.288	0.394	0	0	0	0	0.571	1	1
RU Max	76,857	0.115	0.151	0	0	0	0.078	0.135	0.280	1
RC Max	76,857	0.07	0.098	0	0	0	0.059	0.096	0.142	1
RU Max^2	76,857	0.036	0.102	0	0	0	0.006	0.018	0.078	1
RC Max^2	76,857	0.015	0.058	0	0	0	0.004	0.009	0.020	1
Firm-level variables										
Q_TOT	75,495	1.305	2.076	-0.753	-0.007	0.295	0.706	1.423	3.006	13.40
Lead ROA	67,721	0.064	0.302	-9.843	-0.151	0.032	0.111	0.178	0.258	0.684
AGE	76,823	18.73	14.34	3	5	8	14	25	43	57
MV	76,857	5.726	2.126	0.297	2.978	4.152	5.637	7.164	8.618	10.78
SGR	75,635	0.261	0.906	-1	-0.163	-0.016	0.094	0.263	0.614	8.388
ROA	76,857	0.046	0.499	-9.843	-0.185	0.034	0.117	0.190	0.282	0.684
LEV	76,857	0.503	0.338	0.0140	0.163	0.289	0.484	0.663	0.816	16.75
Div Yield	76,612	0.011	0.026	0	0	0	0	0.013	0.035	0.208
RDTA	76,857	0.075	0.167	0	0	0	0.004	0.079	0.209	1.283
DA	69,416	0.091	0.427	0	0.00785	0.021	0.048	0.098	0.185	0.713
IVOL	76,857	0.033	0.021	0.0034	0.0128	0.018	0.028	0.043	0.061	0.171
LIQAM	76,856	-0.452	0.854	-7.602	-1.658	-0.446	-0.04	-0.003	-0.001	0
LIQFHT	73,650	-0.01	0.013	-0.123	-0.0264	-0.013	-0.004	-0.001	-0.001	0
AGE(ln)	76,823	2.652	0.752	1.099	1.609	2.079	2.639	3.219	3.761	4.043

Table 3. 3

Blockholder Turnover and Firm Performance

This table reports coefficients estimated from an ordinary least squares (OLS) model using firm- and year-level data for regressing firms' performance on the reputation concerns of new blockholders entry in the last year. The dependent variables in Columns (1) and (2) are Total Q. The dependent variables in Columns (3) and (4) are long-term average ROA from 3 to 5 years ahead of blockholders' entry. The key independent variables are Lagged Net RU, which refers to the net number of entering RU blockholders minus the number of quitting RU blockholders in the particular firm for the last year, and Lagged Net RC, which refers to the net number of entering RC blockholders minus the number of quitting RC blockholders in the particular firm for the last year. Standard errors are shown in parentheses and are heteroskedasticity robust. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

	[1]	[2]	[3]	[4]
	Q	***Q***	***Long ROA***	***Long ROA***
Net RU_{t-1}	0.001		-0.004	
	(0.05)		(-1.30)	
Net RC_{t-1}		0.023**		0.005*
		(2.25)		(1.75)
$LIQAM_{t-1}$	-0.118***	-0.145***	0.015	-0.006
	(-3.04)	(-3.88)	(0.59)	(-0.30)
$MV(ln)_{t-1}$	0.265***	0.264***	-0.017	-0.013
	(5.26)	(6.06)	(-1.06)	(-1.02)
RU Max_{t-1}	-0.463	-0.106	0.027	0.064
	(-0.83)	(-0.24)	(0.14)	(0.55)
RU Max^2_{t-1}	0.700	0.024	0.046	-0.029
	(0.75)	(0.04)	(0.23)	(-0.19)
RC Max_{t-1}	-0.891*	-0.196	0.146	-0.132
	(-1.69)	(-0.40)	(0.73)	(-0.91)
RC Max^2_{t-1}	0.597	-0.106	-0.062	0.291
	(0.86)	(-0.17)	(-0.24)	(1.39)
SGR_{t-1}	0.036	0.036	0.015	-0.017
	(1.17)	(0.93)	(1.09)	(-1.36)
LEV_{t-1}	-0.199**	-0.078	-0.071	0.106
	(-2.10)	(-0.61)	(-0.70)	(1.60)
Div $Yield_{t-1}$	0.240	-0.661	-0.136	-0.340
	(0.36)	(-0.92)	(-0.36)	(-1.26)
$RDTA_{t-1}$	0.663*	0.025	0.214	0.131
	(1.83)	(0.08)	(1.13)	(0.62)
$AGE(ln)_{t-1}$	-1.219***	-1.042***	0.193***	0.116**
	(-6.02)	(-5.61)	(2.63)	(2.15)
$IVOL_{t-1}$	2.095	2.316	0.370	-1.054
	(1.01)	(1.18)	(0.35)	(-1.40)
DA_{t-1}	0.679***	0.449**	-0.033	-0.008
	(2.69)	(2.11)	(-0.30)	(-0.11)
Constant	2.866***	2.142***	-0.040	0.159
	(4.56)	(4.26)	(-0.19)	(1.06)
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Observations	9,346	9,600	4,609	4,818
Adjusted R^2	0.1170	0.1036	0.0207	0.0408

Table 3. 4

Blockholder Structure and Firm Performance

This table reports coefficients estimated from an OLS model for firm performance. The dependent variable in Panels A and B is the total Q and that in Panel C is the average ROA within 3 to 5 years. The interested independent variables are structures of blockholders. Heterogenous is equal to 1 when the structure of blockholders is the mixture of RU and RC blockholders and 0 otherwise. RU is equal to 1 when the structure of blockholders includes RU blockholder(s) only and 0 otherwise. RC is equal to 1 when the structure of blockholders includes RC blockholder(s) only and 0 otherwise. None is equal to 1 when the structure of blockholders is none and 0 otherwise. In each panel, column (1) includes observations for Heterogenous Structure and Zero Blockholder Structure. Column (2) includes observations for Heterogenous Structure and RU Structure. Column (3) includes observations for Heterogenous Structure and RC Structure. Column (4) includes observations for RU Structure and Zero Blockholder Structure. Column (5) includes observations for RU and RC Structures. Standard errors are shown in parentheses and are heteroskedasticity robust. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$.

	[1] **Heterogenous &. Zero**	[2] **Heterogenous &. RU**	[3] **Heterogenous &. RC**	[4] **RU & Zero**	[5] **RU & RC**
Panel A	*Q*	*Q*	*Q*	*Q*	*Q*
Heterogenous$_{t-1}$	0.224***	0.009	0.192***		
	(3.98)	(0.26)	(4.71)		
RU$_{t-1}$				0.123***	0.156***
				(3.11)	(2.80)
LIQAM$_{t-1}$	-0.142***	-0.145***	-0.120***	-0.149***	-0.128***
	(-5.94)	(-7.04)	(-5.32)	(-5.99)	(-5.43)
MV(ln)$_{t-1}$	0.346***	0.316***	0.297***	0.365***	0.314***
	(12.10)	(12.30)	(10.11)	(12.40)	(11.25)
RU Max$_{t-1}$	0.149	-0.192	-0.188	0.157	-0.007
	(0.57)	(-0.82)	(-0.76)	(0.59)	(-0.03)
RU Max$^2_{t-1}$	-0.233	0.270	0.258	-0.234	-0.001
	(-0.59)	(0.78)	(0.68)	(-0.60)	(-0.00)
RC Max$_{t-1}$	-0.526*	-1.144***	-0.714***	-0.870**	-0.934***
	(-1.79)	(-3.94)	(-2.58)	(-2.49)	(-2.87)
RC Max$^2_{t-1}$	0.812*	1.137**	0.629	1.419**	0.935*
	(1.80)	(2.54)	(1.61)	(2.54)	(1.96)
SGR$_{t-1}$	0.065***	0.033**	0.043**	0.028*	-0.004
	(3.73)	(2.03)	(2.10)	(1.68)	(-0.21)
LEV$_{t-1}$	-0.142**	0.050	-0.163**	0.067	0.103
	(-2.08)	(0.55)	(-2.20)	(0.76)	(1.05)
Div Yield$_{t-1}$	-0.868**	-0.019	-0.180	-0.483	0.726
	(-2.04)	(-0.04)	(-0.37)	(-1.08)	(1.26)
RDTA$_{t-1}$	0.554***	0.414**	0.829***	0.783***	0.850***
	(2.98)	(2.35)	(3.72)	(4.09)	(3.72)
AGE(ln)$_{t-1}$	-1.060***	-1.223***	-1.051***	-1.189***	-1.253***
	(-10.58)	(-11.22)	(-8.83)	(-11.80)	(-11.27)
IVOL$_{t-1}$	-0.550	1.539	2.666*	-1.361	-0.064
	(-0.46)	(1.17)	(1.92)	(-1.13)	(-0.05)
DA$_{t-1}$	0.750***	0.470***	0.450***	0.631***	0.320**
	(5.22)	(3.40)	(2.92)	(4.29)	(2.01)
Constant	1.561***	2.456***	1.776***	2.077***	2.421***
	(3.89)	(3.87)	(3.56)	(4.91)	(4.94)
Firm Dummy	Yes	Yes	Yes	Yes	Yes
Time Dummy	Yes	Yes	Yes	Yes	Yes
Industry × Year Dummy	Yes	Yes	Yes	Yes	Yes
Observations	39,371	33,054	28,128	40,199	28,956
Adjusted R^2	0.1746	0.1807	0.1754	0.1827	0.2003

Panel B

	[1] Heterogenous & Zero	[2] Heterogenous & RU	[3] Heterogenous & RC	[4] RU & Zero	[5] RU & RC
	ROA	***ROA***	***ROA***	***ROA***	***ROA***
Heterogenous$_{t-1}$	0.053**	-0.008	0.007		
	(2.07)	(-0.51)	(0.54)		
RU$_{t-1}$				0.012	0.005
				(0.86)	(0.26)
LIQAM$_{t-1}$	0.014	0.017	0.016	0.015	0.003
	(0.93)	(1.08)	(0.98)	(0.93)	(0.15)
MV(ln)$_{t-1}$	-0.018*	-0.031***	-0.026***	-0.023**	-0.034***
	(-1.76)	(-3.10)	(-2.64)	(-2.21)	(-2.96)
RU Max$_{t-1}$	-0.132	0.057	0.059	-0.075	-0.003
	(-1.06)	(0.61)	(0.54)	(-0.67)	(-0.03)
RU Max$^2_{t-1}$	0.273*	-0.031	-0.060	0.114	-0.023
	(1.70)	(-0.24)	(-0.38)	(0.72)	(-0.15)
RC Max$_{t-1}$	0.082	-0.114	0.034	-0.026	-0.082
	(0.70)	(-0.87)	(0.31)	(-0.22)	(-0.72)
RC Max$^2_{t-1}$	-0.018	0.248	0.007	0.094	0.169
	(-0.11)	(1.38)	(0.05)	(0.49)	(1.04)
SGR$_{t-1}$	0.012	0.028***	0.008	0.024**	0.035**
	(1.27)	(2.64)	(0.86)	(2.07)	(2.29)
LEV$_{t-1}$	0.085	-0.009	-0.031	0.065	0.024
	(0.70)	(-0.15)	(-0.29)	(1.07)	(0.47)
Div Yield$_{t-1}$	-0.337	-0.155	-0.226	-0.195	0.002
	(-1.56)	(-0.60)	(-1.17)	(-0.81)	(0.01)
RDTA$_{t-1}$	0.121	0.036	-0.019	0.126	0.031
	(0.76)	(0.34)	(-0.16)	(0.87)	(0.26)
AGE(ln)$_{t-1}$	0.084**	0.148***	0.037	0.075**	0.057
	(2.52)	(3.37)	(0.85)	(2.09)	(1.40)
IVOL$_{t-1}$	-0.230	0.396	-0.514	0.349	-0.600
	(-0.27)	(0.64)	(-0.66)	(0.50)	(-0.96)
DA$_{t-1}$	0.039	-0.028	0.030	-0.036	-0.007
	(0.54)	(-0.36)	(0.48)	(-0.57)	(-0.12)
Constant	0.171	0.157	0.396***	0.241**	0.388***
	(1.52)	(1.35)	(3.83)	(2.36)	(3.80)
Firm Dummy	Yes	Yes	Yes	Yes	Yes
Time Dummy	Yes	Yes	Yes	Yes	Yes
Observations	22,302	17,335	14,594	23,563	15,855
Adjusted R^2	0.0099	0.0115	0.0077	0.0126	0.0132

Table 3. 5

Heterogenous Blockholder Structure versus the All RU Structure

This table reports results of OLS regressions to compare the effectiveness of the Heterogenous Structure and the All RU Structure for firm value improvement. The dependent variable is the Total Q and the Long-Term ROA for 3 to 5 years ahead of the structure of blockholders. The key independent variable is $Heterogenous_{t-1}$, which is equal to 1 when the structure of blockholders includes at least one RU blockholder and at least one RC blockholder, and 0 otherwise. In each model, the sample includes all observations with the Heterogenous Structure and the All RU Structure (only RU blockholders are presented). Each column represents the subsample groups with a stated percentage of the number of RC blockholders out of the total number of blockholders (Block Ratio). Standard errors are shown in parentheses and are heteroskedasticity robust. $*p < 0.1$; $**p < 0.05$; $***p < 0.01$.

Panel A

	[1]	[2]	[3]	[4]
Block Ratio	**0%–24.99%**	**25%–49.99%**	**50%–74.99%**	**75%–99.99%**
	Q	*Q*	*Q*	*Q*
Heterogenous$_{t-1}$	0.028	-0.003	-0.050	0.220*
	(0.67)	(-0.06)	(-0.81)	(1.68)
LIQAM$_{t-1}$	-0.151***	-0.116***	-0.136***	-0.137***
	(-5.37)	(-4.52)	(-5.42)	(-4.73)
RU Max$_{t-1}$	-0.301	-0.188	-0.055	-0.151
	(-0.91)	(-0.61)	(-0.18)	(-0.43)
RU Max$^2_{t-1}$	0.549	0.217	0.095	0.264
	(1.12)	(0.52)	(0.23)	(0.57)
RC Max$_{t-1}$	-1.275***	-1.290***	-1.241***	-1.521***
	(-3.00)	(-3.10)	(-2.99)	(-3.23)
RC Max$^2_{t-1}$	1.172*	1.484**	1.421**	1.583**
	(1.73)	(2.41)	(2.23)	(2.14)
MV(ln)$_{t-1}$	0.296***	0.305***	0.319***	0.299***
	(9.51)	(9.82)	(10.36)	(9.08)
SGR$_{t-1}$	0.005	0.022	0.008	-0.003
	(0.22)	(1.05)	(0.42)	(-0.15)
LEV$_{t-1}$	0.110	0.090	0.182**	0.169*
	(1.16)	(0.85)	(2.18)	(1.94)
Div Yield$_{t-1}$	0.076	0.202	0.500	0.363
	(0.14)	(0.33)	(0.85)	(0.54)
RDTA$_{t-1}$	0.479**	0.322	0.441**	0.405*
	(2.19)	(1.50)	(2.17)	(1.73)
AGE(ln)$_{t-1}$	-1.237***	-1.218***	-1.317***	-1.257***
	(-9.05)	(-8.74)	(-9.97)	(-8.61)
IVOL$_{t-1}$	2.122	0.078	0.907	0.027
	(1.22)	(0.05)	(0.57)	(0.02)
DA$_{t-1}$	0.490***	0.371**	0.372**	0.449**
	(2.68)	(2.11)	(2.21)	(2.33)
Constant	1.986***	2.180***	3.411***	1.851***
	(3.49)	(5.12)	(6.94)	(3.02)
Firm Dummy	Yes	Yes	Yes	Yes
Time Dummy	Yes	Yes	Yes	Yes
Industry × Year Dummy	Yes	Yes	Yes	Yes
Observations	21,633	20,661	21,986	18,287
Adjusted R^2	0.2005	0.1997	0.1981	0.2048

Panel B

Block Ratio	[1] **0%–24.99%** ***ROA***	[2] **25%–49.99%** ***ROA***	[3] **50%–74.99%** ***ROA***	[4] **75%–99.99%** ***ROA***
$Heterogenous_{t-1}$	-0.024	-0.009	0.038*	0.092*
	(-1.37)	(-0.29)	(1.95)	(1.67)
$LIQAM_{t-1}$	0.036	0.013	0.012	0.023
	(1.41)	(0.63)	(0.64)	(0.94)
$RU\ Max_{t-1}$	0.081	0.071	0.033	-0.010
	(0.59)	(0.55)	(0.30)	(-0.08)
$RU\ Max^2_{t-1}$	-0.112	-0.078	-0.017	-0.010
	(-0.58)	(-0.41)	(-0.11)	(-0.05)
$RC\ Max_{t-1}$	-0.145	-0.370**	-0.344**	-0.244
	(-0.81)	(-2.38)	(-2.55)	(-1.64)
$RC\ Max^2_{t-1}$	0.328	0.611**	0.546***	0.385
	(1.23)	(2.56)	(2.59)	(1.59)
$MV(ln)_{t-1}$	-0.038**	-0.041***	-0.035***	-0.048***
	(-2.55)	(-2.87)	(-2.70)	(-3.08)
SGR_{t-1}	0.037**	0.035**	0.048***	0.054***
	(2.51)	(2.05)	(2.74)	(2.70)
LEV_{t-1}	-0.055	-0.004	-0.009	-0.014
	(-0.70)	(-0.08)	(-0.16)	(-0.24)
$Div\ Yield_{t-1}$	-0.015	-0.076	-0.169	-0.141
	(-0.04)	(-0.28)	(-0.63)	(-0.46)
$RDTA_{t-1}$	-0.096	0.052	0.145	0.070
	(-0.71)	(0.37)	(1.08)	(0.43)
$AGE(ln)_{t-1}$	0.131**	0.150**	0.113**	0.126**
	(2.27)	(2.56)	(2.30)	(2.26)
$IVOL_{t-1}$	1.278	0.057	-0.079	0.246
	(1.38)	(0.08)	(-0.12)	(0.33)
DA_{t-1}	-0.051	0.045	-0.061	-0.003
	(-0.50)	(0.47)	(-0.64)	(-0.03)
Constant	0.380*	0.293	0.546***	0.502***
	(1.92)	(1.56)	(3.31)	(2.64)
Firm Dummy	Yes	Yes	Yes	Yes
Time Dummy	Yes	Yes	Yes	Yes
Industry × Year Dummy	Yes	Yes	Yes	Yes
Observations	11,616	11,086	11,817	9,968
Adjusted R^2	0.0534	0.0661	0.0726	0.0846

Table 3. 6

Structures with RC Free-Rider Issues, RU Free-Rider Issues, and No Free-Rider Issues

This table reports coefficients estimated from an OLS model using the firm- and year-level data for regressing firms' performance on the structure of blockholders in the last year. The dependent variable in Panel A is the Total Q and that in Panel B is Long-Term ROA for 3 to 5 years ahead of the structure of blockholders. This table contains four key structures. High RC Free-Rider is equal to one where there is one RU blockholder and more than seven RC blockholders and 0 otherwise. Low RC Free-Rider is equal to 1 where there is one RU blockholders and fewer than three RC blockholders, and 0 otherwise. No Free-Rider is equal to 1 where there is one RU blockholder and no RC blockholder. RU Free-Rider is equal to 1 where there is more than one RU blockholders and no RC blockholder. Standard errors are shown in parentheses and are heteroskedasticity robust. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A

	[1]	[2]	[3]	[4]
	High RC Free-Rider vs. No Free-Rider	**High RC Free-Rider vs. RU Free-Rider**	**Low RC Free-Rider vs. No Free-Rider**	**Low RC Free-Rider vs. RU Free-Rider**
	Q	***Q***	***Q***	***Q***
High RC Free	1.147**	1.114**		
	(2.19)	(2.03)		
Low RC Free			0.092	-0.448**
			(0.89)	(-2.15)
Constant	5.074***	3.873***	4.600***	4.609***
	(3.44)	(4.21)	(4.41)	(5.67)
Control	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Observations	6,430	9,806	9,327	12,703
Adjusted R^2	0.0845	0.0671	0.0732	0.0746

Panel B

	[1]	[2]	[3]	[4]
	High RC Free-Rider vs. No Free-Rider	**High RC Free-Rider vs. RU Free-Rider**	**Low RC Free-Rider vs. No Free-Rider**	**Low RC Free-Rider vs. RU Free-Rider**
	ROA	***ROA***	***ROA***	***ROA***
High RC Free	-0.025	0.116**		
	(-0.22)	(1.98)		
Low RC Free			0.011	-0.004
			(0.53)	(-0.18)
Constant	1.107***	0.049	0.783***	0.068
	(3.34)	(0.18)	(3.51)	(0.34)
Control	Yes	Yes	Yes	Yes
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Observations	3,768	5,090	5,363	6,685
Adjusted R^2	0.0519	0.0479	0.0271	0.0464

Table 3. 7

Blockholder Turnover

This table reports coefficients estimated from an OLS model of blockholder turnover using the firm-level and year-level dataset. The dependent variables in columns (1) and (2) are the number of entering RU blockholders and quitting RU blockholders in each firm by year, conditioned on blockholder turnover occurring in that year. The dependent variable in columns (3) and (4) is the number of RC blockholders entering and the number of RC blockholders quitting in each firm by year, conditioned on blockholder turnover occurring in that year. The key independent variable is Block $Ratio_{t-1}$, which is equal to the number of RC blockholders divided by the total number of blockholders in the firm and the beginning of the year. Panel B replicates the same models from [1] to [4] but includes the Industry × Year dummy variables. Standard errors are shown in brackets and are heteroskedasticity robust. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

Panel A

	[1] ***RU enter***	[2] ***RU exit***	[3] ***RC enter***	[4] ***RC exit***
Block Ratio$_{t-1}$	0.131***	-0.137***	-0.185***	0.497***
	(9.51)	(-9.61)	(-12.49)	(34.21)
LIQAM$_{t-1}$	0.027***	0.043***	0.060***	0.041***
	(2.96)	(5.79)	(8.81)	(6.16)
RU Max$_{t-1}$	-1.120***	1.467***	-0.357***	0.147**
	(-11.80)	(17.30)	(-4.60)	(1.99)
RU Max$^2_{t-1}$	1.165***	-1.988***	0.153	-0.347***
	(8.38)	(-14.78)	(1.37)	(-3.02)
RC Max$_{t-1}$	-0.963***	0.882***	0.229*	1.573***
	(-7.94)	(7.41)	(1.88)	(12.54)
RC Max$^2_{t-1}$	1.148***	-1.040***	-0.600***	-2.374***
	(6.23)	(-4.76)	(-2.85)	(-9.91)
MV(ln)$_{t-1}$	-0.026***	0.019***	-0.003	0.034***
	(-3.35)	(2.86)	(-0.42)	(5.64)
SGR$_{t-1}$	0.015**	0.007*	-0.005	0.001
	(2.27)	(1.67)	(-1.28)	(0.38)
LEV$_{t-1}$	0.029*	0.037*	0.013	0.041***
	(1.95)	(1.95)	(0.91)	(3.04)
Div Yield$_{t-1}$	0.463**	-0.070	0.783***	-0.077
	(2.36)	(-0.39)	(4.21)	(-0.48)
RDTA$_{t-1}$	0.493***	-0.094**	0.131***	-0.068**
	(7.74)	(-2.35)	(3.12)	(-2.00)
AGE(ln)$_{t-1}$	-0.239***	0.027	-0.120***	0.098***
	(-8.93)	(1.28)	(-4.96)	(4.57)
IVOL$_{t-1}$	1.353***	2.357***	-0.742**	1.713***
	(3.14)	(6.59)	(-2.11)	(5.30)
DA$_{t-1}$	0.126***	0.029	0.102***	-0.004
	(2.72)	(0.83)	(2.82)	(-0.12)
Q-TOT$_{t-1}$	0.009**	0.001	-0.001	-0.002**
	(5.26)	(1.02)	(-0.92)	(-2.05)
Constant	0.780***	-0.053	0.460***	-0.283***
	(10.86)	(-0.90)	(7.25)	(-5.01)
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Industry × Year Dummy	No	No	No	No
Observations	68,366	68,366	68,366	68,366
Adjusted R^2	0.042	0.028	0.043	0.095

Panel B

	[5]	[6]	(7)	(8)
	RU enter	***RU exit***	***RC enter***	***RC exit***
Block Ratio$_{t-1}$	0.133***	-0.140***	-0.186***	0.496***
	(9.63)	(-9.82)	(-12.47)	(34.06)
LIQAM$_{t-1}$	0.025***	0.037***	0.060***	0.038***
	(2.71)	(4.82)	(8.53)	(5.71)
RU Max$_{t-1}$	-1.118***	1.467***	-0.373***	0.142*
	(-11.73)	(17.18)	(-4.79)	(1.91)
RU Max$^2_{t-1}$	1.152***	-1.989***	0.169	-0.333***
	(8.23)	(-14.69)	(1.49)	(-2.87)
RC Max$_{t-1}$	-0.957***	0.883***	0.179	1.583***
	(-7.85)	(7.29)	(1.46)	(12.75)
RC Max$^2_{t-1}$	1.142***	-1.047***	-0.510**	-2.387***
	(6.12)	(-4.65)	(-2.40)	(-10.23)
MV(ln)$_{t-1}$	-0.028***	0.021***	-0.002	0.034***
	(-3.46)	(3.04)	(-0.25)	(5.60)
SGR$_{t-1}$	0.014**	0.007	-0.005	0.001
	(2.13)	(1.56)	(-1.23)	(0.25)
LEV$_{t-1}$	0.027*	0.035*	0.014	0.039***
	(1.70)	(1.87)	(0.95)	(2.87)
Div Yield$_{t-1}$	0.427**	-0.075	0.794***	-0.064
	(2.15)	(-0.41)	(4.26)	(-0.40)
RDTA$_{t-1}$	0.495***	-0.099**	0.134***	-0.074**
	(7.68)	(-2.44)	(3.17)	(-2.17)
AGE(ln)$_{t-1}$	-0.251***	0.043*	-0.095***	0.101***
	(-8.70)	(1.88)	(-3.62)	(4.33)
IVOL$_{t-1}$	1.517***	2.012***	-0.635*	1.636***
	(3.38)	(5.52)	(-1.77)	(4.98)
DA$_{t-1}$	0.129***	0.019	0.097***	0.000
	(2.63)	(0.52)	(2.62)	(0.00)
Q-TOT$_{t-1}$	0.009***	0.001	-0.001	-0.001
	(5.08)	(0.73)	(-0.92)	(-1.63)
Constant	0.909***	-0.430*	0.438*	-0.131
	(4.34)	(-1.84)	(1.80)	(-0.47)
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Industry × Year Dummy	Yes	Yes	Yes	Yes
Observations	68,366	68,366	68,366	68,366
Adjusted R^2	0.0553	0.0405	0.0594	0.1076

Table 3. 8

Partial Adjusted Model for Blockholders' Reputation Consciousness

This table reports coefficients for the second stage of the partial adjustment models. The dependent variables are the difference of the block ratio in 1 year, 2 years, and 5 years for models (1), (2), and (3), respectively. The independent variables are the predicted value in the difference of the block ratio in 1 year, 2 years, and 5 years for models (1), (2), and (3), respectively. The prediction value is measured from the standard OLS model used in this paper. **p* < 0.1; ***p* < 0.05; ****p* < 0.01.

	(1)	(2)	(3)
	Dif-1	**Dif-2**	**Dif-5**
Variables	**Dif-Block Ratio**	**Dif-Block Ratio**	**Dif-Block Ratio**
$Dif\ \widehat{Block}\ Ratio$	0.536***		
	(98.68)		
$Dif\ \widehat{Block}\ Ratio$		0.755***	
		(109.23)	
$Dif\ \widehat{Block}\ Ratio$			1.021***
			(147.21)
Constant	0.015***	0.012***	-0.003***
	(85.32)	(47.77)	(-6.03)
Observations	86,345	69,516	46,583
Adjusted R^2	0.2736	0.4016	0.5809

Table 3. 9

Stock Liquidity and Blockholder Turnover

This table reports coefficients estimated from an OLS model of blockholder turnover on stock liquidity using the firm-level and year-level dataset. The dependent variables in columns (1) and (2) are the number of entering RU blockholders minus the number of RU blockholders quitting in each firm by year, conditioned on blockholder turnover occurring in that year. The dependent variable in columns (3) and (4) is the number of entering RC blockholders minus the number of RC blockholders quitting in the particular firm and particular year, conditioned on blockholder turnover occurring in that year. The key independent variables are $Block \times LIQFHT_{t-1}$ and $Block \times LIQAM_{t-1}$, which are the interaction between two liquidity variables and block ratio at the beginning of the year. Standard errors are shown in parentheses and are heteroskedasticity robust. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$.

	[1] **Net RU**	[2] **Net RU**	[3] **Net RC**	[4] **Net RC**
Block×LIQFHT$_{t-1}$	-9.244***		2.188***	
	(-8.55)		(3.47)	
Block×LIQAM$_{t-1}$		-0.036***		0.027***
		(-6.83)		(4.18)
LIQAM$_{t-1}$		-0.088***		0.067***
		(-3.63)		(2.69)
Block Ratio$_{t-1}$	0.304***	0.431***	-1.054***	-1.071***
	(7.67)	(12.96)	(-36.18)	(-39.08)
LIQFHT$_{t-1}$	-5.355**		-5.711***	
	(-2.31)		(-2.62)	
RU Max$_{t-1}$	-4.045***	-4.664***	-1.124***	-1.075***
	(-18.63)	(-21.62)	(-5.41)	(-5.32)
RU Max$^2_{t-1}$	5.254***	5.907***	1.075***	1.036***
	(15.57)	(16.85)	(3.28)	(3.23)
RC Max$_{t-1}$	-2.524***	-2.574***	-2.587***	-2.825***
	(-8.99)	(-9.41)	(-9.40)	(-10.22)
RC Max$^2_{t-1}$	2.707***	2.706***	3.438***	3.674***
	(5.21)	(5.44)	(6.79)	(7.06)
MV(ln)$_{t-1}$	-0.091***	-0.076***	-0.041**	-0.058***
	(-5.42)	(-4.76)	(-2.44)	(-3.70)
SGR$_{t-1}$	0.008	0.006	-0.016	-0.018
	(0.61)	(0.48)	(-1.31)	(-1.47)
LEV$_{t-1}$	-0.028	-0.028	-0.014	-0.022
	(-0.78)	(-0.76)	(-0.38)	(-0.62)
Div Yield$_{t-1}$	0.811	0.870*	1.881***	1.807***
	(1.61)	(1.79)	(3.91)	(3.90)
RDTA$_{t-1}$	0.776***	0.875***	0.277***	0.313***
	(7.01)	(7.85)	(2.59)	(3.00)
AGE(ln)$_{t-1}$	-0.507***	-0.563***	-0.411***	-0.425***
	(-7.78)	(-8.98)	(-6.35)	(-6.77)
IVOL$_{t-1}$	-0.798	-1.652	-7.257***	-4.596***
	(-0.71)	(-1.55)	(-6.66)	(-4.27)
DA$_{t-1}$	0.183*	0.152	0.079	0.080
	(1.67)	(1.41)	(0.75)	(0.79)
Q-TOT$_{t-1}$	0.011***	0.011***	-0.003	-0.001
	(2.79)	(3.35)	(-0.95)	(-0.54)
Constant	2.685***	2.856***	1.404**	1.606***
	(5.24)	(5.09)	(2.49)	(2.85)
Firm Dummy	Yes	Yes	Yes	Yes
Year Dummy	Yes	Yes	Yes	Yes
Industry × Year Dummy	Yes	Yes	Yes	Yes
Observations	31,309	32,828	32,682	34,456
Adjusted R^2	0.1117	0.1042	0.1430	0.1436

Chapter Four - When Blockholders Meet Short Sellers: Two Forms of Governance

4.1 Introduction

The global financial crisis incited the U.S. Security and Exchange Commission (SEC) to reinstate the uptick rule on short-selling activities in 2010.[1] The return of the short-selling uptick rule has provoked many active institutional investors, such as hedge funds, who have madly criticized this decision (Fang, Huang, and Karpoff, 2016). Two reasons help explain their resistance to the regulated constraints on short-selling activities. First, hedge funds demand engagement with short-selling trading. Second, by disseminating bad news about target firms into the financial market, short sellers can depress stock prices (Miller, 1977; Harrison and Kreps, 1978). Those target firms with temporarily depressing stock prices could be good investment opportunities for hedge funds, since hedge funds can acquire the large block at a cheaper price and earn abnormal returns through activism in the future (Brav et al., 2008; Brav, Jiang, and Kim, 2015).

However, those two explanations may not sufficiently reveal other institutional investors' attitudes toward short selling. This is because, apart from depressing stock prices, short-selling activities may also attract some shareholders who hold a long position and will benefit from better corporate governance and corporate information environment improved by short sellers in the long run. For instance, short sellers can facilitate the monitoring role to reduce earnings management and corporate fraud (Dechow, Sloan, and Sweeney, 1996; Christophe, Ferri, and Angel, 2004; Fang, Huang, and Karpoff, 2016). Thus, we have not understood well whether shareholders' views on high short-selling activities are different and whether such a difference affects shareholders making concerted efforts in monitoring managers. Therefore, this paper aims to address these questions by examining how the prospect of short selling affects active and passive blockholder governance distinctively.

[1] The uptick rule in 2010 restricted short selling from further driving down a stock price that had dropped more than 10% in a day. At this particular point, short selling would be allowed only if the price of trading was above the current best bid (SEC, 2010).

Blockholders are ubiquitous in public firms, and most of them can use various mechanisms, such as direct intervention and threat to sell[2], to improve the value of the target firm (Edmans and Holderness, 2017; Brav et al., 2008; Brav, Jiang, and Kim, 2015). But we know almost nothing about whether and how they interact with the other key corporate participants, such as short sellers. Restrictions on short-selling activities do not only defend against the unexpected decline of stock prices to some extent, but decrease the stock liquidity (Diamond and Verrecchia, 1987), impairs stock price efficiency (Miller, 1977), and deteriorates corporate information environment (Massa, Zhang, and Zhang, 2015; Fang, Huang, and Karpoff, 2016). All these factors can affect the incentive of blockholders to acquire the stocks and their efforts to engage in governance.

We use the SHO pilot program initiated by the SEC as a quasi-natural experiment to study the effect of an exogenous change in the prospect of short-selling activities on blockholder governance. The pilot program randomly selected 1,000 firms from the Russell 3000 index to temporally remove the uptick-rule from May 2005 to August 2007. The direct consequence of removing the uptick-rule is to incur a greater prospect for short-selling activities on these pilot firms. Because these firms are randomly chosen, the pilot program established a very solid exogenous shock to study the impact of short selling (Li and Zhang, 2015; Fang, Huang, and Karpoff, 2016). We further deploy Web crawler programs to download the entire blockholder filings stored in the Edgar database. By modifying the programs developed in Brown et al. (2018), we obtain all 13D filings (active blockholders) and 13G filings (passive blockholders) from 1994 to 2015. Next, we use textual analysis programs to

[2] In the theoretical framework, 'Threat to Sell' represents the implicit governance mechanism of passive blockholders (Edmans et al., 2011). However, in 13D form (active blockholders), a large number of them explicitly disclose 'Threat to Sell' as one of the governance mechanisms, too. In the rest of this paper, the passive blockholders would only use the implicit 'Threat to Sell' as the governance and we use 13G as the proxy of it. Alternatively, when we discuss the explicit 'Threat to Sell' disclosed by active blockholders, we will use 13D filings with 'Threat to Sell' to define it.

extract all material blockholder information, including their percentage of ownership, the types of entities for each blockholder, and the purposes of transactions (active blockholders only).

Our main finding suggests that blockholder size, measured by the percentage of ownership, is significantly reduced for the pilot firms during the program. However, the size of blockholders for the control firms slightly increases in the same period. After the termination of the pilot program, the size of blockholders in the pilot firms began to resume to the prior level. These findings reveal that blockholders fled from target firms when these firms were confronted with the stronger tendency of short-selling activities. Overall, the efficiency of blockholder governance toward these pilot firms seems to be weakened.

We further investigate how short-selling activities distinctively affect different forms of blockholder governance. Blockholder governance comes in two forms. The first is named "Voice," reflecting real actions raised by blockholders to discipline managers, and the second is termed "Threat to Sell," indicating that passive blockholders can threaten managers via selling stocks upon unsatisfactory firm performance (Edmans, Fang and Zur, 2013; Edmans, 2014; Edmans et al., 2017).

The costs and the benefits of both forms of blockholder governance could be different when confronted with short-selling activities. The high short-selling activities most likely harm passive blockholders. The most intuitive explanation is that the propensity for increasing the amounts of selling would have already signalled a threat to managers and, therefore, any further signal of "Threat to Sell" against incumbent managers offers less disciplining power. Furthermore, passive blockholders would anticipate large wealth loss (reduced stock prices, and target firms are more vulnerable to bad news) if they continue to stay in the pilot firms with increased propensity for short-selling activities.

Active blockholders, however, are different. They consider firms with temporary underperformance to be good investment opportunities (Brav, Jiang, and Kim, 2015). Firms with large short selling exposure could be an ideal target. This is because the lower price caused by short-selling pressures reduces the cost for active blockholders to acquire the target firm, and the activism and/or intervention becomes an effective mechanism to improve firm performance. In fact, most active blockholders, such as hedge funds, often aim their efforts at lower-performing targets, to improve target firms for realizing abnormal returns (Brav et al., 2008; Brav, Jiang, and Kim, 2015).

We find that the size and the number of passive blockholders that participated in pilot firms are significantly reduced after the enforcement of the pilot program. It reveals that short sellers impair the second blockholder governance mechanism ("Threat to Sell"). However, the findings of the active blockholders are controversial. The total size for all active blockholders in pilot firms is not affected, but the number of active blockholders that participated in pilot firms increases. These findings suggest that a great prospect of short selling prompts a larger number of active blockholders to raise "Voice" through direct intervention, but active blockholders tend to reduce the size of their initial acquisitions on those target firms with strong prospect of short selling.

The above findings can be further explained in two directions. First, the intensity of blockholder activism is not necessarily correlated with the size of their acquisitions, and some small blockholders, such as hedge funds and investment-based partnerships, are found to be the strongest activists (Brav et al., 2008; Clifford and Lindsey, 2016). They are the ones who play an important role in activism toward the target firms. Second, under high short-selling pressure, blockholders who acquire a smaller amount of a block to invest is also a good method to protect their wealth. That is because they would suffer smaller losses if stock prices greatly reduce due to short-selling pressure.

More in-depth analyses find that conditioning on block acquisition events, the possibilities for blockholders to raise activism is much higher than remaining passiveness. Furthermore, active blockholders are more likely to intervene in pilot firms by proposing activism events related to "Disciplining Managers" or "Business Strategies" issues rather than for the purpose of "Investment Only."[3] The results show that the blockholders that choose to invest in pilot firms with a large propensity for short-selling activities tend to become more active. Further analyses also uncover that the intention of stronger activism, stimulated by a high tendency of short-selling activities, is concentrated among the blockholder entity categories individual and investment, rather than corporations and financial institutions, such as banks and insurance companies. This finding is consistent with the findings of Chen, Harford and Li (2007). They show that financial intermediaries are weaker monitors.

After identifying the heterogenous impacts of short selling on block acquisitions and blockholder governance, we examine how short selling affects firm performance through the channel of blockholder governance. We find that a greater amount of active and passive ownership correspondingly improves the return on assets (ROA) and Tobin's Q in the pilot firms during the program. We further illustrate that the positive impact of blockholder activism being associated with a greater short-selling propensity is mainly attributed to activism purposes related to issues of "Governance," "Threat to Sell," and "Business Strategies." On the other hand, blockholder activism events with "Investment Purpose" do not affect firm performance during the program, rather, they negatively affect pilot firms' value after the program.

[3] The 'Investment Only' purpose is disclosed in 13D filings (active blockholders). These blockholders claim that they are activists, but they do not have any current plan to change the management. The similar finding is also documented in Edmans, Fang, and Zur (2013). This seems counterintuitive. However, one reasonable explanation is that SEC requires any blockholders holding more than 20% stocks are activists. These blockholders must file 13D filings regardless whether they want to influence the mangers of target firms or not.

We contribute to the literature in the two following ways. First, our findings provide legal and policy implications for financial regulators and corporate managers. On the regulator's side, we provide new evidence for regulators to review the current disclosure requirements for short selling (uptick rule) and blockholder filings (13D, 13F, and 13G filings). Also, it is important for regulators to trade off the benefits and the costs for the current short-selling constraints. Although removing a short-selling constraint policy may lead to a more efficient financial market, it also influences blockholder investment and behavior in the financial market. Our findings suggest that removing short-selling constraints potentially stimulates a large number of passive blockholders to leave. On corporate management's side, we show that the high short-selling tendency pushes the remaining blockholders to become more active, and these remaining blockholders can alleviate the price decline caused by short sellers. Therefore, it is important that blockholders are motivated to stay, be cooperative, and put more efforts in activism in the target firm with high short-selling pressure to improve firm performance.

Second, we contribute to the blockholder literature. Our empirical results demonstrate that the governance role of blockholders is particularly important when the target firm is threatened with high short-selling. The monitoring role of blockholders and the monitoring role of short sellers can benefit target firms through two different directions, but they are substitutive to a certain extent. To the best of our knowledge, all the above findings and contributions are new to the literature.

The rest of the paper is organized as follows. The next section reviews the relevant literature; Section 4.3 introduces the data, the sample, and the variables; Section 4.4 discusses the empirical results; and Section 4.5 concludes the paper.

4.2 Relevant Research

Blockholders could be concerned about the negative impact from short selling in three ways. The first issue is related to less earnings management and better corporate transparent improved by short selling. Leuz, Nanda, and Wysocki (2003) find that earnings management dramatically decreases shareholders' protection and private control benefits. Bebchuk et al. (2013) further demonstrate that blockholders are less interested in acquiring stocks without private control rents. Meanwhile, the prior research also suggests a positive influence from short selling on the corporate information environment. Efendi, Kinney, and Swanson (2005), Desai, Krishnamurthy, and Venkataraman (2006), and Karpoff and Lou (2010) find that short sellers monitor managerial earnings management. Massa, Zhang, and Zhang (2015) conduct a study based on global evidence and find that short selling reduces managerial earnings management. The finding is consistent with, and enhanced by, Fang, Huang, and Karpoff (2016), who even discover that short selling helps detect corporate fraud and earnings management that has not yet happened.

Second, short selling affects stock liquidity. Diamond and Verrecchia (1987) and Bris, Goetzmann, and Zhu (2007) find that short-selling constraints impair stock liquidity, because stock price adjustments slow significantly in response to negative information. Stock liquidity can affect block acquisitions in two directions. Coffee (1991) and Bhide (1993) find higher stock liquidity enables blockholders to quit the firm easily. On the other hand, Kyle and Vila (1991), Kahn and Winton (1998), and Maug (1998) demonstrate that higher stock liquidity can facilitate block acquisitions. Moreover, stock liquidity is also demonstrated as a key determination to change the effectiveness and the method of blockholder governance. Edmans (2011) and Edmans, Fang, and Zur (2013) find that passive blockholders are more effective at improving managerial performance with higher stock liquidity.

Lastly, short selling can damage stock price efficiency. Miller (1977), Harrison and Kreps (1978), and Duffie, Garleanu, and Pedersen (2002) theorize that stock prices become overstated when short sellers are restricted, because fewer pessimists choose to stay in a restricted market. Plenty of empirical evidence supports this view. The general understanding is that short sellers can possess better information about the fundamental value of the target firm, motivating them to trade in short and to earn excess return (Dechow et al., 2001; Desai, Krishnamurthy, and Venkataraman 2006; Cohen, Diether, and Malloy, 2007; Boehmer, Jones, and Zhang 2008). Stock prices also are overvalued if information from short sellers is not incorporated into the prices themselves (Lamont and Thaler, 2003; Mitchell, Pulvino, and Stafford, 2002). Bailey and Zheng (2013) find that short selling stabilizes prices during periods of crisis.

4.3 Data, Sample, and Variables

4.3.1 Data Source and Sample Selection

The time frame used in our sample corresponds to that of the SEC pilot program. The first pilot order was issued on July 28, 2004, and 986 stocks are selected from the Russell 3000 index to remove the price test for short selling.[4] The remaining stocks in the Russell 3000 index are still applied with short-selling price test. The pilot program is an ideal exogenous shock, because the SEC sorts the average daily dollar volume, measured from June 2003 to May 2004, to choose every third stock to remove price test. Therefore, these 986 stocks are treatment stocks, and the remaining 1,966 stocks are assigned in the control group. Because the short-selling price tests are removed for the treatment stocks only during the pilot program, treatment (pilot) firms are expected to suffer greater short-selling activities than are the control stocks during the program.

[4] The detailed information about the pilot program can be accessed online at http://www.sec.gov/rules/other/34-50104.htm.

The pilot program began on May 2, 2005, and ended on August 6, 2007. The program period effectively comprises 10 quarters. We choose a difference-in-differences (DiD) setting, which is facilitated by a beginning date and an ending date (Fang, Huang, and Karpoff, 2016). Our study uses a firm-quarter panel dataset. To be consistent, we choose 10 quarters before the third quarter in 2004 as the prior period and the program period as the during period. We omit the period between the third quarter of 2004 and the first quarter of 2005, because the list of stocks had been announced during that period, and blockholders could begin to alter their investment and governance toward treatment firms. We further choose another 10 quarters starting with the fourth quarter of 2007 as the post period. Therefore, the total time for our final sample involves 30 quarters, broken down by 10 quarters in the prior, during, and post periods, for the pilot program.

Our blockholder dataset is archived from the Edgar database, which is managed by the SEC. Since 1994, the SEC has requested all public firms to submit all important filings electronically, and all filings are stored in the Edgar database, which includes 13D filings (representing active blockholders) and 13G (representing passive blockholders).[5] We use Web crawler programs (based on Python) to download all 13D and 13G filings since 1994 to construct a comphrensive blockholder dataset.[6] Further, we use textual analysis programs (based on Perl and Regular Expression Technical) to extract unique data from 13D and 13G filings. To be more specific, we construct the types of entities, purposes of transactions/activism (13D filers only), number of blockholders, and the percentage of

[5] SEC 13-d rules require shareholders to choose to file either a 13D form or a 13G form once they accumulate 5% or more of stocks in any public firm. Shareholders must file a 13D form if they plan to influence management. Alternatively, a 13G form can be filed if shareholders have no intention to influence the current management style. 13D filers have a shorter time to complete the filing, and they must disclose much more information to the public. Therefore, the filings costs for 13Ds are higher. Please see the detailed discussion in Brav et al. (2008) and Edmans et al. (2013).

[6] We construct the blockholder dataset based on 13Ds and 13Gs from 1994 so that we can ensure the accuracy of the blockholder. Some blockholders could be with the target firm a long time before the SEC pilot program began; therefore, we need to trace back as early as we can.

ownership and the changes in the percentage of ownership.[7] As filings are based at the event level, we further aggregate all blockholder data at the firm-quarter level to match the data to other accounting and financial control variables.

The accounting data are collected from the COMPUSTAT quarterly dataset. The financial market data are collected from the CRSP daily dataset, which is further aggregated at the quarterly level. Our final dataset is constructed by merging the Russell 3000 index, the blockholder dataset (Edgar), the accounting dataset (COMPUSTAT), and the financial market dataset (CRSP). For any missing observation in the blockholders dataset (Edgar), after being merged with the COMPUSTAT and CRSP dataset, we replace them with zero, which indicates that there is no blockholder targeting the particular firm and/or quarter. We also delete any missing values for control variables from the accounting and financial market dataset. Observations with a negative book value of equity and firms in the financial service industry (SIC 6000–6999) and utilities (SIC 4900–4949) are also deleted. Our final sample comes to 43,555 firm-quarter observations.

4.3.2 Key Variables

The construction of interested independent variables follows that of Fang, Huang, and Karpoff (2016). We create the dummy variable *PILOT* to indicate firms selected in pilot programs (Treatment stocks). *PILOT* equals 1 when a firm is designated as a pilot stock in the SHO pilot program and 0 otherwise. We further construct the dummy variable *DURING*, which equals 1 to indicate the subperiod for the 10 quarters during the pilot program and 0 otherwise, and *POST*, which equals 1 to indicate the subperiod for the 10 quarters after the pilot program and zero otherwise. We should have another dummy variable to indicate the 10 quarters prior to the pilot program; however, it is omitted in our empirical model to avoid multicollinearity.

[7] Changes in ownership must be disclosed in 13D/As (amendments filings) and 13G/As (amendments filings). Specifically, based on the SEC-13 rule, active blockholders (13D filers) must disclose every 1% changes in their ownership, and passive blockholders (13G filers) must disclose every 5% changes in their ownership.

Most importantly, we use *PILOT× DURING* and *PILOT× POST* to measure the impact of pilot stocks during the program and after the program on blockholder governance.

The dependent variables are at two different levels. At the firm performance level, we use ROA (quarterly) and Tobin's Q (quarterly) to measure the firm's performance. Table A1 discusses the detailed steps for calculation. At the blockholder level, we use *OWNERSHIP* to measure the total percentile ownership controlled by all blockholders (active and passive) in each firm and each quarter. We further use *ACTIVE_SUM* to quantify the percentile ownership controlled by active blockholders and *PASSIVE_SUM* to quantify the percentile ownership of passive blockholders. *ACTIVISM_EVENT* and *PASSIVE_EVENT* measure the number of active blockholder acquisition events and the number of passive blockholder acquisition events occurring in each firm and each quarter.

Next, we use *DISCIPLINE_DUMMY* to indicate whether at least one blockholder targets the firm with the purpose of activism related to corporate governance, managerial behavior, or threat to sell stocks. *ADVISE_DUMMY* indicates whether the target firm is courted by at least one active blockholder who has the purpose of activism related to business strategies, corporation operations, or sales matters. These two dummy variables measuring purposes of transactions are only referred to as 13D (active blockholders), because passive blockholders are not required to disclose this information and their only purpose could be "Investment Purpose."

However, we also find that a large amount of 13D filers (active blockholders) also propose "Investment Only" for acquiring the stocks of the target firm. This finding is quite confusing, because filing a 13D is costlier than filing a 13G because of a greater amount of information required to be disclosed, legal requirements, and the short turnaround time in submitting the form. Thus, a blockholder who is not interested in activism should file a 13G, which is considered a cheaper filing to the public (Brav et al., 2016). However, Edmans et al. (2013) believe that active blockholders would like a more efficient way to modify their purposes in the future by filing a 13D to state with "Investment Purpose" in the begining, rather than filing a 13G and switching to the 13D later. Therefore, it is common to observe some blockholders declaring activism against management without an immediate plan to change the target firm.

We use dummy variables to indicate the types of blockholders entities. The variables for types of blockholders catch both active blockholders and passive blockholders from 13D and 13G filings. Our classification is consistent with the catalogue of blockholder types in SEC Sections 13.[8] *INTERMEDIARY_DUMMY*, which equals 1, indicates whether the target firm is courted by at least one blockholder of financial intermediaries, such as banks, insurance companies, charity organizations, or the other savings associations, in one particular quarter and 0 otherwise. Correspondingly, *TYPE_INVESTMENT_DUMMY* indicates whether the type of blockholder is an investment fund, investment advisor, or an investment bank; *CORPORATION_DUMMY* indicates whether blockholders are companies; and *INDIVIDUAL_DUMMY* indicates whether or not blockholders are individuals. If the target firm is courted by at least one blockholder in each quarter, the type of blockholder is recognized according to the above classifications.

Lastly, we follow Fang, Huang, and Karpoff (2016) to construct the control variables. Fang, Huang, and Karpoff (2016) find that most company characteristics for treatment and control firms are not significantly different. However, we still control for some key variables that are considered as determinations to blockholders acquisitions. These variables are return on assets (*ROA*), the logarithm of size (*SIZE*), leverage (*LEV*), market capitalization (*MV*),

[8] Please see section 2.3.1 in this dissertation for the detailed discussion.

market-to-book value (*MtB*), and the Amihud illiquidity measurement (*LIQAM*). Table A1 discusses the calculation steps for these variables. We follow Edmans et al. (2013) and Amihud (2002) to construct LIQAM. $AMIHUD_{i,t}$ is calculated as the daily ratio of the absolute value of the daily stock return to the volume in the dollar value. The ratio is averaged throughout the firm and fiscal year *t*:

$$AMIHUD_{i,t} = \frac{1}{D_{i,t}} \times \sum_{d=1}^{D} \frac{|RET_{i,d}|}{|VOLUME_{i,d}|},$$

where $RET_{i,d}$ stands for the stock returns, $VOLUME_{i,d}$ stands for the dollar trading volume, and $D_{i,t}$ is the number of trading days in fiscal year *t*. We also scale up AMIHUD by multiplying it with 1,000 to make the coefficient more readable. Finally, the liquidity measure is defined as $LIQAM_{i,t} = -\ln(1+AMIHUD_{i,t})$. All control variables with continuous values are winsorized at the 1% level.

4.3.3 Descriptive Statistics

Table 4.1 provides summary statistics for all variables based on 43,555 firm-quarter observations. Panel A reports the target firm-level variables, and panel B reports the blockholder-level variables. The market value (MV) and asset size (SIZE) are converted into the logarithm value. ROA are scaled by the assets at the beginning of each quarter. Amihud illiquidity (LIQAM) has a maximum value at 0, and the greater value corresponds to the higher liquidity.

[Table 4.1 goes here]

At the blockholder level, OWNERSHIP, ACTIVE_SUM, and PASSIVE_SUM represent the percentage of ownership for all blockholders, active blockholders, and passive blockholders, which range from 0 to 1. In our sample, at least 10% of firm-quarter observations do not have strong blockholder formation, because the total ownership is only 3.85% at the tenth percentile. The meaningful blockholder control occurs after the 25th percentile point (5.67%) based on SEC filings. ACTIVISM_EVENT and PASSIVE_EVENT show us how many active and passive block acquisitions occurred in our sample, and, accordingly, less than 5% of firm-quarter observations were targeted by at least one blockholder activism, but more than 25% of firm-quarter observations attracted passive blockholders. The largest blockholder activity is observed in one firm-quarter observation being targeted by ten passive blockholders in the same quarter. We also note that active blockholders are much bigger than passive blockholders after the 90th percentile. Put together, the activities of passive blockholders are more popular than are those of active blockholders, but a few active blockholders obtain much bigger shares in target firms. The finding is consistent with that of Brav et al. (2008), Brav, Jiang, and Kim (2015), and Edmans et al. (2013), who claim that the cost of activism is too high. [9] Therefore, we see passive blockholders dominate the blockholder world, but some active blockholders tend to acquire more shares to justify their efforts in costly monitoring and activism.

We further list the dummy variables for purposes of blockholder activism (13D filers only) and types of blockholders (13D and 13G filers). These dummy variables equal to one when a firm-quarter observation being filed a 13D and stated with the corresponding purpose of activism and/ or zero otherwise. The interested purposes of activism in this study are *GOVERNANCE_DUMMY*, *INVESTMENT_DUMMY*, *STRATEGIES_DUMMY*, and

[9] Blockholder activism comes with three main costs. Active blockholders have legal costs if they submit a 13D filing to inform the stock market of incorrect and/or misleading information about their activism. As the SEC states the following on their Web site: "A filer on Schedule 13D and 13G is subject to the anti-fraud provisions of Section 10(b) of the Exchange Act ('Section 10(b)') and Rule 10b-5 ('Rule 10b-5') thereunder, as well as Rule 12b-20 of the Exchange Act ('Rule 12b-20')" (https://media2.mofo.com/documents/faqs-schedule-13d-g.pdf). Active blockholders also have higher information costs for disclosing much more information within a much shorter time frame (only 10 business days).

THREAT_DUMMY, and we find that less than 5% of firm-quarter observations are being targeted by active blockholders with each of the above-mentioned purposes. We also study the dummy variables for four main types of blockholders. These are intermediary financial institutions (bank and insurance companies), investment-based institutions (investment bank and investment funds), corporations, and individuals, and, again, less than 5% of firm-quarter observations are targeted by each of those types of blockholders. This finding suggests that most blockholders are interested in a small group of firms in our sample.

4.4 Empirical Analysis

4.4.1 General Impact of Short Selling on Block Acquisition

We conduct detailed empirical analysis in this section. We begin by investigating the impact of short selling on the size and the number of active versus passive blockholder activities. Next, we conduct more analyses to show whether the tendency of blockholder governance is influenced. Finally, we show how the prospect of short selling affects the efficiency of blockholder governance on firm performance.

[Figure 4.1 goes here]

Figure 4.1 depicts the mean value of blockholder ownership for the pilot firm and the nonpilot firm in the PRIOR, DURING, and POST period. We learn that pilot firms suffered a sharp decline in blockholder ownership during the pilot program. However, the nonpilot firms seemingly do not experience any impact due to the size of blockholders. The initial impression from Figure 1 is that greater short-selling activities negatively affect the overall blockholder ownership.

We further deploy a DiD multivariable equation to address the empirical question of how short-selling changes the size and the activities of blockholders. To execute this equation and removing certain concerns that some firms are not covered in one or two periods out of PRIOR, DURING, and POST. We remove any firms with a time coverage of less than 15 quarters. According to Fang, Huang, and Karpoff (2016), the pilot program facilitates a solid and exogenous DiD environment, because pilot firms were chosen randomly, and the program has a start and an end date. Also, Fang, Huang, and Karpoff (2016) demonstrate that most firm-level characteristics are not statistically significantly different between the pilot and the nonpilot firms.

$$\begin{aligned} Ownership_{i,t} = \; & \beta_0 + \beta_1 \, Pilot_i \times During_t + \beta_2 \, Pilot_i \times Post_t \\ & + \beta_3 \, Pilot_i + \beta_4 \, During_t + \beta_5 \, Post_t + \boldsymbol{\delta} \, \boldsymbol{Control}_{i,t} \\ & + \varepsilon_{i,t} \end{aligned} \qquad (1)$$

[Table 4.2 goes here]

Table 4.2 displays the result for Equation (1). The dependent variable OWNERSHIP is defined as the total size (as a percentage) of all blockholders in each firm and each quarter. The interested independent variable is *PILOT* × *DURING*. That variable interprets the impact of higher short-selling activities on pilot firms during the program period. For robustness, Model 1 in Table 4.2 reports the DiD variables without further firm controls; Model 2 includes control variables and industry fixed effects; and Model 3 omits DURING and POST but includes Quarter fixed effects and Industry fixed effects. Consistent with what we find in Fig. 4.1, β_1 as the coefficient is negative and significant at the 1% level for all three models. And, in economics terms, that the coefficient is around -1.1 implies that, on average, pilot firms are 1.1% reduced in block ownership compared with nonpilot firms during the program. Importantly, considering that the average percentile ownership in our sample is 13.82%, the 1.1% reduction is approximately 8% lower than the benchmark level.

That the variable *PILOT* × *POST* is either not significant or not positively significant in our results further suggests that blockholder ownership stops decreasing when the pilot program terminates. Put together, we find that blockholders quit or reduce their ownership from the target firm because of higher prospect of short-selling activities.

4.4.2 Short-Selling Activities on Blockholder Activism and Passive Blockholders

We further analyze the impact of prospect of short selling on active blockholders and passive blockholder separately. The prior literature finds that active blockholders tend to be interested in poor-performing firms and to use real activism "Voice" to change the management explicitly (Brav et al., 2008; Brav, Jiang, and Kim, 2015). On the contrary, passive blockholders are more interested in highly liquid (good-performing) firms, and they rely on the "Threat to Sell" to discipline managers (Edmans et al., 2011, 2013). Consequently, we can deduce that the implications of higher short selling are different toward active blockholders and passive blockholders.

One important concern about high short selling is over negative information release, which depresses stock prices. Nevertheless, short sellers injecting negative information can create more opportunities for active blockholders to invest in those firms with lower stock price that are affected by negative news. Once active block acquisition is formed, the activism could be the effective mechanism against short selling and could improve the firm's performance.

However, the situation for passive blockholders is different, because they do not directly intervene, to influence managers, but instead rely on the "Threat to Sell," only. Therefore, investing in a firm exposed to a great amount of short-selling activities could be a dangerous strategy for passive blockholders. The effectiveness of this kind of blockholder governance, established on the "Threat to sell," is reduced when the large amount of stocks is sold by short positions in the market. Further, investing in a firm with currently high short selling exposes passive blockholders' wealth to more risks and that does not meet the principle investment philosophy of passive blockholders as targeting at good performing firms, which is discussed in the prior literature (Edmans et al., 2013). Put together, we predict that greater short selling could be attractive to active blockholders, but it can decrease the number of passive block acquisitions.

[Table 4.3 goes here]

Table 4.3 deploys the DiD equation to examine the impact of short selling prospect on active blockholders, using three measures of active blockholders as the dependent variables: *A_SUM* (Models 1 to 3), which represents the size of active blockholders (percentage of ownership at the end of the quarter) at the firm-quarter level; *A_EVENT* (Models 4 to 6), which represents the number of blockholder activism events occurring at the firm-quarter level; and *EVENT_A_SUM* (Models 7 to 9), which represents the percentage of shares that active blockholders acquire when they enter into the target firm for the first time (the initial 13D filing).

Models 1 to 3 in Table 4.3 indicate that the interested independent variable *PILOT* × *DURING* is negatively significant when there are no other control variables and not significant, but still negative, when control variables are included. Hence, we find that higher short-selling activities do not significantly affect the total size of active blockholders. However, from Models 4 to 6, we find that the events of blockholder activism increase for these pilot firms during the pilot program. In Model 6, *PILOT* × *DURING* is positive and significant at the 5% level. The coefficient is 0.009, but it is not a small number when compared with the mean of the average activism events in our sample, that is, 0.0254. The result indicates that the chance for at least one blockholder filed a 13D statement on the pilot firm during the pilot program is increased, that is, 35.4%.[10]

[10] Correspondingly, the average value of activism events for all pilot firms in our sample is 0.0186, and the effect of pilot programs on activism event is increased by 48.40% (0.009/0.0186).

Further, the results in Models 7 to 9 suggest that the initial size of the shares that active blockholders acquire when they first intervene in the target firm is strongly reduced for these pilot firms in the pilot program. The result suggests that there is about 9.2% reduced in the percentage of shares for initial active block acquisitions. Combining all results in the table, we find that more active blockholders intervene in pilot firms during the program, but most of them reduce the size of shares that they acquire. The finding reveals that higher short-selling activities attract active blockholders, but active blockholders also reduce their amount of investment to protect the downside risk of future stock price declines, which could be caused by short sales.

[Table 4.4 goes here]

Next, we examine the impact of the SHO pilot program on passive blockholders, and Table 4.4 shows the results. The dependent variable for columns 1 to 3 is ownership of passive blockholders, and, for columns 4 to 6, it is the number of events for passive block acquisitions. We find that both the size of passive blockholders and the number of passive block acquisition events are significantly reduced at the 5% and 1% levels accordingly. The economic impact is also large. In column 6, the coefficient for $PILOT \times DURING$ is -0.411, which implies that passive blockholder ownership is reduced by about 6%, on average, for all pilot firms during the program. The number of passive block acquisition events occurring for pilot firms is reduced by 0.149 during the pilot program. Based on the average number of passive block acquisition events in our sample (0.48), that is, almost 31% reduction.

Interestingly, we also find that the coefficient of $PILOT \times POST$ is not significant for the size of passive ownership but significantly positive for the number of passive block acquisition events. The results suggest that after the pilot program, the size of passive ownership for pilot firms resumes to the level from the prior period, which is omitted in the empirical model, and more passive blockholders return to the pilot firms after the program ends. In summary, passive blockholders are averse to the high short-selling activities. The findings in Tables 4.3 and 4.4 are strongly consistent with our prediction that active blockholders tend to participate in high short-selling firms, but passive blockholders avoid high short selling.

4.4.3 SHO Pilot Program and the Choice of 13D versus 13G

The above results show the impact of prospect of short selling on the attitudes of active and passive blockholders toward target firms, but we further show evidence for whether short selling affects the choice for new blockholders regarding the governance mechanism between "Voice" (13D) and "Threat to Sell" (13G). Although Edmans et al. (2013) finds that both mechanisms are effective blockholder governance, we predict that blockholder activism (13D) is encouraged, because blockholders may target these high short-selling firms and intervene more upon higher tendency of price declines. On the other hand, great short-selling prospect put passive blockholders into a risky situation. Section 4.4.2 addresses the detailed discussion.

[Table 4.5 goes here]

So, we aim to test whether higher short selling affects blockholders' choices about governance mechanism, conditioning on block acquisition events occurring. To examine this hypothesis, we perform the DiD model, with the dependent variable being the choice of 13D filings versus 13G filings upon block acquisition. All observations in the model must have at least one blockholder acquisition event occurring in the particular firm and quarter.

Table 4.5 presents the results. The dependent variable is 13D versus 13G as the dummy variable, and it equals 1 for a 13D filing and 0 for a 13G filing. We find that all coefficients for $PILOT \times DURING$ are positive and significant at the 1% level. This result suggests that conditioning on blockholder acquisition events, more blockholders tend to use the "Voice" mechanism to conduct governance instead of the "Threat to Sell" in the presence of high short-selling activities. In other words, blockholders who choose to invest in a firm exposed to high short selling tend to be more active in governance.

4.4.4 SHO Program and Different Impacts on Blockholder Governance Based on Types of Blockholders

The above analysis (section 4.4.2) finds that a large number of passive blockholders quit target firms that are exposed to higher prospect of short-selling activities and blockholders tend to use more "Voice" mechanisms to govern target firms with high prospect of short selling. In this section, we investigate the prospect of impact of short selling on blockholder governance based on blockholder heterogeneity. Blockholder type is the most interesting blockholder characteristic studied in the prior literature (Holderness and Sheehan, 1988; Barclay and Holderness, 1989; Clifford and Lindsey, 2016). Clifford and Lindsey (2016) show that individual and investment-based blockholders most actively discipline managers. Therefore, we examine whether the increasing usage of the "Voice" governance mechanism (the result in Section 4.4.3) is only concentrated in some specific types of blockholders, rather than in the universe of blockholders.

The SEC 13(d) and (g) rules require blockholders to disclose their types of entities when filing 13D and 13G.[11] In this study, we group blockholders into the following types:

(1) Intermediary financial institutions: Bank, insurance company, endowment fund, and savings association

(2) Investment-based institutions: Investment company, and investment adviser

(3) Corporation

(4) Individual

(5) Insider blockholders: Parent holding corporation or control person

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[11] The 13D and 13G forms have twelve categories of blockholder types: (1) broker-dealer, (2) bank, (3) insurance company, (4) investment company, (5) investment adviser, (6) employee benefit plan or endowment fund, (7) parent holding company/control personal, (8) savings association, (9) church plan, (10) corporation, (11) partnership, and (12) individual.

We then execute a DiD regression based on the choice of 13D or 13G in each subsample for these five types of blockholders. Table 4.6 presents the results.

[Table 4.6 goes here]

In untabulated results, corporate, intermediary financial institutions, and insider blockholders do not show any significant impact on the choice of blockholder governance between 13D and 13G. For brevity, we omit to report these results in the paper. However, we find that individual blockholders and investment institutions blockholders have strong intentions to use "Voice" governance (13D) against "Threat to Sell" (13G) when they enter into the pilot firm during the program. In all six models presented in Table 4.6, the coefficient of interested variable, *PILOT* × *DURING*, is positively significant at the 5% or the 1% level. This finding is consistent with the findings in Clifford and Lindsey (2016) that individual blockholders and investment-based blockholders are most likely associated with direct intervention/"Voice" because they have fewer agency problems within the blockholders' entity (individual blockholders) or more experience in investment (investment-based blockholders). Therefore, high short-selling pressure pushes individual and investment-based blockholders to be more active, compared with the other types of blockholders.

4.4.5 SHO Programs and the Purposes of Blockholder Activism

The results in Sections 4.4.2, 4.4.3, and 4.4.4 show that more active blockholders target the pilot firms during the program, and blockholders tend to use the "Voice" mechanism in the pilot firms during the program. This pattern is mainly driven by the individual and investment-based blockholders. However, we still lack an understanding of how those active blockholders act toward higher short-selling activities in these pilot firms during the program. In this section, we conduct a more in-depth analysis of active blockholders (13D).

Active blockholders must disclose the purposes of transactions or activism in item 4 for each 13D filing. Honestly disclosing true information about blockholder activism is the stringent legal responsibility of the blockholder. Therefore, the prior literature tends to believe that the content of item 4 is the real actions that active blockholders plan to undertake toward the target firm (Brav et al., 2008; Brav, Jiang, and Kim, 2015; Aslan and Kumar, 2016). We use a textual analysis program to read the content of each filing and to extract the purpose described in item 4. Next, we classify the purposes of activism into different categories. For the goal of this paper, we focus on the following purposes of activism:

(1) Governance: blockholders specifically mention they have a plan to influence the current management style, the board of directors, a legal suit, or any other matters related to the management team.
(2) Threat: blockholders state that they will sell the stocks upon unsatisfactory managerial performance.
(3) Business strategies: blockholders worry about the current matters, such as sales or customers relations, at the operational level, and they propose a change or providing suggestions to improve one aspect of the business.
(4) Investment only: blockholders state that they are only interested in investment. This purpose is different from 13G, as the investment purpose is stated by an activist (13D filings). Edmans et al. (2013) explain that active blockholders reserve the rights to change their purpose in the future, and they can step in as a 13D filer to show their activism intentions.

To be more specific, we further group "Governance" and "Threat" as discipline roles of blockholders and "Business Strategy" as advisory roles. Therefore, our analysis in this section shows how likely pilot firms are to receive blockholder activism with these purposes.

[Table 4.7 goes here]

To assess the effect of the pilot program on different purposes of activism, we deploy the DiD regression based on purposes of activism in each subsample. Table 4.7 presents the results. The dependent variables are dummy variables. *DISCIPLINE* (Models 1 to 3) equals 1 to indicate the firm-quarter observation being targeted by at least one activist with a purpose related to "Governance" or "Threat" and 0 otherwise. *STRATEGIES* (Models 4 to 6) equals 1 to indicate the firm was at least targeted by one activist event related to "Business Strategies" and 0 otherwise. *INVESTMENT* (Models 7 to 9) equals 1 to indicate at least one activism event related to "Investment only" and 0 otherwise.

We find that the coefficient of *PILOT* × *DURING* is positively significant for all six models related to the purpose of activism in "Discipline" roles or "Strategies" roles of blockholder activism. Interestingly, the variable *PILOT* × *POST* for Discipline and Strategies roles also remains positively significant. This is because the short-selling test is removed for both the pilot and the control firms after the program ends; therefore, the pilot firms would still suffer a higher prospect of short selling than during the prior period and more active blockholders continue to use those two purposes of activism in the post period. On the other hand, there is no significant change in the usage of "Investment Purpose" for the pilot firms during the program.

In summary, we find that active blockholders tend to use more specific purposes of activism to discipline managers or help managers than simply stating the investment purpose in 13D filings. The results suggest that in the middle of high-pressure short selling, active blockholders raise stronger activism to alleviate the negative impact of short selling and make attempts to improve firm value via more detailed activism plans.

4.4.6 Short Selling, Blockholder Governance, and Firm Performance

Lastly, we are interested in learning whether the changes in blockholder governance caused by short selling affects firm performance. The prior literature widely documents that blockholders improve firm value (Edmans, 2014; Edmans et al., 2013; Brav et al., 2008; Brav, Jiang, and Kim 2015). But we know almost nothing about whether blockholders can still enhance firm value when short-selling activities are increased. A large number of passive blockholders quit firms with high short-selling activities. How does their action affect firm performance? To answer this question, we deploy regression (2) as below:

$$Firm\_Performance_{i,t} = \beta_0 + \beta_1 \, Pilot_i \times During_t \times Block\_Ownership_{i,t} + \beta_2 \, Pilot_i \times Post_t \times Block\_Ownership_{i,t} + \beta_3 \, Pilot_i \times During_t + \beta_4 \, Pilot_i \times Post_t + \beta_5 \, Ownership_i + \beta_6 \, Pilot_i + \beta_7 \, During_t + \beta_8 \, Post_t + \boldsymbol{\delta Control}_{i,t} + \varepsilon_{i,t}. \qquad (2)$$

We use quarterly Tobin's Q and Return on Assets to measure firm performance. BLOCK_OWNERSHIP stands for the size of active blockholders and the size of passive blockholders in different models. Therefore, to examine the interacted impact of the pilot program and the effectiveness of blockholder governance on firm performance, the interested independent variable is $Pilot_i \times During_t \times Block\_Ownership_{i,t}$.

[Table 4.8 goes here]

Table 4.8 presents the results. We find that the coefficient of $Pilot_i \times During_t \times Block\_Ownership_{i,t}$ is positive and significant for passive ownership on Tobin's Q and is positively significant for active ownership on ROA. The interpretation for passive ownership on Tobin's Q is that every 1% passive block ownership in the pilot firm during the program increases 0.005 value in Tobin's Q. But this is a very small amount, considering the mean value of Tobin's Q in our sample is 2.03. To be more intuitive, a pilot firm during the program with 50% passive blockholders is about to have an increase in Tobin's Q of 0.025, which is about a 1.23% higher Q value for these pilot firms. In un-tabulated results, we also find that $Pilot_i \times During_t \times Block\_Ownership_{i,t}$ positively affects the ROA in three quarters ahead for both active and passive blockholders. The results reveal that greater blockholder ownership interacted with the pilot programs improves the target firms' ROA in these subsequent quarters.

An interesting question is why passive blockholders quit the pilot firm? Table 4.8 reveals that blockholders staying improves the firm's value, and the greater amount of investment is positively correlated with the firm's performance in the high short-selling environment. Therefore, blockholder acquisition should be a very effective mechanism to support the depressing price pressure from short selling. However, the early results in this paper find that passive blockholders dramatically flee from the target firm when high short selling occurs. We propose multiple explanations. The first explanation is the increasing risk associated with short selling and the less-effective "Threat to Sell" strategy mainly used by passive blockholders. Passive blockholders are concerned about their investment being exposed by a large amount of short selling. (See the section 4.4.2 for a discussion of this issue.)

More importantly, the higher Tobin's Q, related to passive blockholder ownership in the large short-selling firm, also depends on a collaborative work environment and trust between all passive blockholders in the same firm. Most passive blockholders would not choose to acquire more than 20% shares in the same firm.[12] Therefore, the greater Tobin's Q is based on all or the most passive blockholders in the same firm that choose to stay together. Otherwise, passive blockholders that are left behind would be harmed most when other passive

[12] According to the SEC 13(d) rule, more than 20% ownership in a U.S. public firm indicates blockholder activism, and a 13D filing must occur.

blockholders have already quit the target firm. As a result, this becomes a game theory problem, and the optimal solution for passive blockholders is to protect themselves by leaving the target firm.

We further analyze the impact of short selling associated with blockholder activism on firm performance at a more in-depth level. Tobin's Q reported in Table 4.8 is not significantly related to active blockholders, so we focus on ROA, another firm performance variable. ROA allows us to investigate the interacted impact between short selling and blockholder activism on firm performance.

The above analyses show that active blockholders tend to use more specific purposes of activism, rather than only stating investment as the purpose for acquiring the pilot firm with higher short-selling activities during the program. We run Regression (3) based on different subsamples with four main purposes raised by active blockholders: *GOVERNANCE*, *THREAT*, *STRATEGIES*, and *INVESTMENT*.

$$\begin{aligned} ROA_{i,t} = \; & \beta_0 + \beta_1 \, Pilot_i \times During_t \times Activism\_Purpose_{i,t} \\ & + \beta_2 \, Pilot_i \times Post_t \times Activism\_Purpose_{i,t} \\ & + \beta_3 \, Pilot_i \times During_t + \beta_4 \, Pilot_i \times Post_t \\ & + \beta_5 \, Activism\_Purpose_i + \beta_6 \, Pilot_i + \beta_7 \, During_t \\ & + \beta_8 \, Post_t + \boldsymbol{\delta Control}_{i,t} + \varepsilon_{i,t} \end{aligned} \tag{3}$$

The interested independent variable is $Pilot_i \times During_t \times Activism\_Purpose_{i,t}$. Table 4.9 presents the results.

[Table 4.9 goes here]

We find that the coefficient of $Pilot_i \times During_t \times Activism\_Purpose_{i,t}$ for *GOVERNANCE*, *STRAETEGIES*, and *THREAT* are all positively significant at the 1% level. On the other hand, in the subsample of *INVESTMENT*, no value is added to the pilot firms during the program. Therefore, we may conclude that blockholder activism related to more specific governance either in a disciplinary role or advisory role leads to better firm value. Therefore, greater blockholder activism with a stronger activism purpose is essential for firm performance in the presence of short-selling activities. On the other hand, active blockholders with the "Investment Purpose" provide no value to target firms in front of a great amount of short selling.

4.5 Conclusion

This paper examines the effect of short-selling activities on blockholder governance. By using a nature-experiment setting, we find that higher short-selling activities negatively affect passive blockholders to acquire the target firm but encourages small active blockholders to raise activism events. Further analysis reveals that, conditioning on block acquisition events, blockholders tend to use "Voice" (13D) more than "Threat to sell" (13G) to govern target firms. This is because higher short selling reduces the effectiveness of passive blockholders and harms their benefits, but it creates more opportunities for active blockholders to intervene in, improve firm performance, and earn profit via activism. With higher short-selling pressures, active blockholders raise more specific purposes of activism, such as disciplining managers or providing suggestions to improve operational business in target firms. Lastly, we find that both passive ownership and active ownership can improve a firm's value in the presence of higher short-selling activities.

The findings of this paper highlight important legal and policy implications for regulators and corporate managers. Short selling does not only affect the financial market but also changes blockholder governance at the corporate level. Although the prior literature finds that short-seller monitoring is effective at improving the corporate information environment, it can reduce the monitoring intensity from passive blockholders. One important future research direction is how to achieve the optimal monitoring intensity by balancing the monitoring from the short and long positions.

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Appendix

Table A1. Variable definitions

ASSET (SIZE)	Book value of total assets at the end of the fiscal quarter. The measurement is the natural logarithm of ASSET.
MtB	Market-to-book ratio in the fiscal quarter. It is calculated as the market value of equity (PRCC_F * CSHO), divided by the book value of equity (CEQQ)
MV	Natural logarithm of the market value of equity at the beginning of the fiscal quarter
ROA	Return on assets in the fiscal quarter. It is calculated as (IBQ+DPQ)/ATQ
LEV	Leverage in the fiscal quarter. It is calculated as long-term debt (DLTTQ), plus debt in current liabilities (DLCQ), scaled by the sum of long-term debt, debt in current liabilities, and total shareholder equity (SEQQ) at the end of each quarter.
Tobin's Q	Tobin's Q in each quarter. It is calculated as (ATQ – CEQQ+TXDBQ+ MV)/ATQ
OWNERSHIP	The percentage of total ownership held by all blockholders
ACTIVE_SUM	The percentage of total ownership held by active blockholders
PASSIVE_SUM	The percentage of total ownership held by passive blockholders
13D vs. 13G	Conditioning on block-acquisition, the choice between 13D filings and 13G filings. (Binary variable, 1=13D, 0=13G)
ACTIVISM_EVENT	The number of blockholder activism events (13D filings)
PASSIVE_EVENT	The number of passive blockholder acquisition (13G filings)
GOVERNANCE_DUMMY	Binary variable to indicate blockholder activism related to corporate governance purposes.
INVESTMENT_DUMMY	Binary variable to indicate blockholder activism related to investment only purposes.
STRATEGIES_DUMMY	Binary variable to indicate blockholder activism related to business strategies purposes.
THREAT_DUMMY	Binary variable to indicate blockholder activism related to threat to sell purposes.
INTERMEDIARY_DUMMY	Binary variable to indicate blockholder type being financial intermediaries.
TYPE_INVESTMENT_DUMMY	Binary variable to indicate blockholder type being investment banks or investment advisors.
CORPORATION_DUMMY	Binary variable to indicate blockholder type being companies.
INDIVIDUAL_DUMMY	Binary variable to indicate blockholder type being individuals.

Table 4. 1

Summary statistics

This table reports the summary statistics. Panel A presents the variables for firm characteristics, and panel B presents the variables for blockholder characteristics. Table A1 discusses the variable definitions. All firm-level variables are winsorized at 1% and 99% levels.

Variables	[1] N	[2] Mean	[3] SD	[4] Min	[5] p5	[6] p10	[7] p25	[8] p50	[9] p75	[10] p90	[11] p95	[12] Max
A. Firm level												
Q	43,393	2.03	1.29	0.60	0.88	1.01	1.22	1.62	2.36	3.56	4.72	8
ROA	41,852	0.028	0.04	-0.15	-0.05	-0.02	0.02	0.03	0.05	0.07	0.09	0.13
SIZE	43,555	6.86	1.52	3.86	4.66	5.06	5.74	6.66	7.79	9	9.76	10.99
LEV	41,960	0.26	0.25	0	0	0	0.006	0.227	0.424	0.622	0.749	1.000
MV	43,424	6.991	1.496	4.231	4.885	5.254	5.883	6.780	7.867	9.119	9.851	11.36
MtB	43,424	3.258	3.422	0.0409	0.689	0.978	1.467	2.278	3.695	6.075	8.828	24.10
LIQAM	43,417	-0.003	0.02	-1.72	-0.01	-0.006	-0.002	0.000	0.000	0.000	0.000	0.000
B. Blockholder level												
OWNERSHIP	43,555	13.82%	0.147	0	1.25%	3.85%	5.67%	9.72%	15.56%	28.20%	42.90%	100%
13D vs. 13G	16,053	0.0688	0.253	0	0	0	0	0	0	0	1	1
ACTIVE_SUM	43,555	7.140%	0.138	0	0	0	0	1%	7.74%	19.9%	34%	100%
PASSIVE_SUM	43,555	6.717%	0.599	0	0	1.54%	4.2%	5.93%	8.12%	10.81%	13.63%	95.6%
ACTIVISM_EVENT	43,555	0.0254	0.157	0	0	0	0	0	0	0	0	1
PASSIVE_EVENT	43,555	0.480	0.794	0	0	0	0	0	1	1	2	10
GOVERNANCE_DUMMY	43,555	0.0168	0.128	0	0	0	0	0	0	0	0	1
INVESTMENT_DUMMY	43,555	0.0035	0.059	0	0	0	0	0	0	0	0	1
STRATEGIES_DUMMY	43,555	0.0183	0.134	0	0	0	0	0	0	0	0	1
THREAT_DUMMY	43,555	0.0218	0.146	0	0	0	0	0	0	0	0	1
INTERMEDIARY_DUMMY	43,555	0.0037	0.060	0	0	0	0	0	0	0	0	1
TYPE_INVESTMENT_DUMMY	43,555	0.0191	0.137	0	0	0	0	0	0	0	0	1
CORPORATION_DUMMY	43,555	0.0158	0.125	0	0	0	0	0	0	0	0	1
INDIVIDUAL_DUMMY	43,555	0.0214	0.145	0	0	0	0	0	0	0	0	1

Table 4. 2

Pilot program and block ownership

This table reports ordinary least squares (OLS) regression results for differences in pilot and nonpilot firms' total blockholder ownership for the periods before, during, and after the SHO pilot program. The panel dataset is based on the firm and quarterly levels. The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating the firm characteristics variables. In all models, the dependent and independent variables are in the same period. Model 3 omits DURING and POST but includes quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard errors in all models. **p* < 0.1; ***p* < 0.05; ****p* < 0.01 (two-tailed tests).

	[1] **OWNERSHIP**	[2] **OWNERSHIP**	[3] **OWNERSHIP**
PILOT × DURING	-1.098***	-1.137***	-1.010***
	(-2.97)	(-3.01)	(-2.72)
PILOT × POST	-0.215	0.843**	0.621
	(-0.56)	(2.18)	(1.63)
PILOT	-1.054***	-0.563*	-0.517*
	(-3.48)	(-1.81)	(-1.69)
DURING	-0.273	0.479**	
	(-1.20)	(2.05)	
POST	-0.851***	-1.350***	
	(-3.64)	(-5.88)	
ROA		-3.608*	-8.440***
		(-1.81)	(-4.02)
LEV		6.702***	5.433***
		(18.98)	(14.09)
SIZE		-1.012***	-1.130***
		(-15.46)	(-17.83)
MtB		-0.127***	-0.145***
		(-5.12)	(-5.64)
LIQAM		-78.555***	-60.891***
		(-3.29)	(-2.73)
INTERCEPT	14.656***	19.418***	28.226***
	(79.64)	(37.69)	(16.02)
Industry effects	No	Yes	Yes
Quarterly effects	No	No	Yes
No. of obs.	43,555	40,208	40,208
Adjusted R^2	0.0030	0.0345	0.0783

Table 4. 3

SHO pilot program and blockholder activism

This table reports OLS regression results on differences in pilot and nonpilot firms active blockholder ownership (Models 1–3), number of active blockholders (Models 4–6) and the percentage of ownership acquired by active blockholder when they enter in the firm (Models 7–9) for the periods before, during, and after SHO pilot program. The panel dataset is based on firm and quarterly level. The sample is constructed based on Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Models 3 and 6 omit DURING and POST but include quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. **p* < 0.1; ***p* < 0.05; ****p* < 0.01 (two-tailed tests).

	[1] **A_SUM**	[2] **A_SUM**	[3] **A_SUM**	[4] **A_EVENT**	[5] **A_EVENT**	[6] **A_EVENT**
PILOT × DURING	-0.635*	-0.544	-0.544	0.007*	0.008**	0.009**
	(-1.88)	(-1.63)	(-1.64)	(1.89)	(2.28)	(2.36)
PILOT × POST	-0.240	0.749**	0.679*	-0.015***	0.008**	0.008**
	(-0.67)	(2.14)	(1.94)	(-4.12)	(2.32)	(2.26)
PILOT	-1.259***	-0.659**	-0.653**	-0.008***	-0.006**	-0.006**
	(-4.59)	(-2.42)	(-2.40)	(-3.19)	(-2.30)	(-2.31)
DURING	-0.209	0.554***		0.005**	0.007***	
	(-0.98)	(2.62)		(2.46)	(3.21)	
POST	0.310	-0.068		0.020***	-0.004*	
	(1.38)	(-0.32)		(8.18)	(-1.70)	
ROA		-10.033***	-11.346***		-0.135***	-0.137***
		(-5.35)	(-5.98)		(-6.47)	(-6.50)
LEV		6.032***	6.045***		0.035***	0.035***
		(16.83)	(16.83)		(8.77)	(8.70)
SIZE		-1.008***	-1.025***		-0.005***	-0.005***
		(-18.45)	(-18.79)		(-8.95)	(-9.14)
MtB		-0.182***	-0.195***		-0.002***	-0.002***
		(-8.14)	(-8.69)		(-8.98)	(-9.18)
LIQAM		-46.714***	-47.130***		-0.004	-0.005
		(-2.59)	(-2.60)		(-0.12)	(-0.16)
INTERCEPT	7.565***	18.938***	18.629***	0.019***	0.056***	0.051***
	(43.50)	(11.17)	(10.67)	(11.95)	(3.47)	(3.11)
Industry effects	No	Yes	Yes	No	Yes	Yes
Quarterly effects	No	No	Yes	No	No	Yes
No. of obs.	43,555	40,208	40,208	43,555	40,208	40,208
Adjusted R^2	0.0032	0.0796	0.0810	0.0031	0.0129	0.0142

Table 4.3 continued

	[7] EVENT_A_SUM	[8] EVENT_A_SUM	[9] EVENT_A_SUM
PILOT × DURING	-9.900**	-9.058**	-9.398**
	(-2.56)	(-2.36)	(-2.39)
PILOT × POST	-31.701***	-5.834	-5.994
	(-7.64)	(-1.46)	(-1.49)
PILOT	4.095	4.757	5.105
	(1.11)	(1.31)	(1.38)
DURING	-3.158	-1.695	
	(-1.63)	(-0.86)	
POST	22.390***	-2.510	
	(10.94)	(-1.21)	
ROA		1.597	-0.209
		(0.09)	(-0.01)
LEV		-1.088	-1.833
		(-0.40)	(-0.67)
SIZE		0.249	0.204
		(0.43)	(0.36)
MtB		0.497**	0.446*
		(1.99)	(1.70)
LIQAM		-124.333**	-130.816***
		(-2.52)	(-2.66)
INTERCEPT	18.737***	19.990**	13.903
	(11.08)	(1.98)	(1.23)
Industry effects	No	Yes	Yes
Quarterly effects	No	No	Yes
No. of obs.	1,074	764	764
Adjusted R^2	0.3046	0.1641	0.1921

Table 4. 4

SHO pilot program and passive blockholders

This table reports OLS regression results for differences in pilot and nonpilot firms' passive blockholder ownership (Models 1–3) and the number of passive blockholders (Models 4–6) for the periods before, during, and after the SHO pilot program. The panel dataset is based on the firm and quarterly levels. The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Models 3 and 6 omit DURING and POST but include quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$ (two-tailed tests).

	[1] **P-SUM**	[2] **P-SUM**	[3] **P-SUM**	[4] **P-EVENT**	[5] **P-EVENT**	[6] **P-EVENT**
PILOT × DURING	-0.368**	-0.397**	-0.411**	-0.129***	-0.147***	-0.149***
	(-2.03)	(-2.12)	(-2.19)	(-6.09)	(-6.72)	(-6.81)
PILOT × POST	0.150	0.069	0.020	0.081***	0.059**	0.049**
	(0.87)	(0.39)	(0.11)	(3.62)	(2.54)	(2.14)
PILOT	0.071	0.042	0.046	-0.003	0.010	0.011
	(0.46)	(0.26)	(0.29)	(-0.16)	(0.55)	(0.62)
DURING	-0.157	-0.117		0.059***	0.071***	
	(-1.57)	(-1.14)		(4.68)	(5.48)	
POST	-1.286***	-1.098***		-0.131***	-0.096***	
	(-14.19)	(-11.87)		(-10.91)	(-7.59)	
ROA		3.837***	3.351***		0.195*	0.023
		(3.90)	(3.37)		(1.71)	(0.20)
LEV		-0.610***	-0.667***		0.092***	0.092***
		(-3.68)	(-4.01)		(4.67)	(4.66)
SIZE		-0.107***	-0.099***		-0.030***	-0.031***
		(-3.87)	(-3.57)		(-10.02)	(-10.20)
MtB		0.054***	0.054***		-0.001	-0.003**
		(3.85)	(3.83)		(-0.98)	(-2.07)
LIQAM		-19.598***	-19.585***		-0.114	-0.106
		(-2.59)	(-2.61)		(-0.46)	(-0.43)
INTERCEPT	7.227***	8.891***	9.581***	0.509***	0.816***	0.924***
	(89.29)	(18.97)	(17.99)	(50.64)	(11.75)	(12.43)
Industry effects	No	Yes	Yes	No	Yes	Yes
Quarterly effects	No	No	Yes	No	No	Yes
No. of obs.	43,555	40,208	40,208	43,555	40,208	40,208
Adjusted R^2	0.0080	0.0319	0.0343	0.0086	0.0173	0.0344

Table 4. 5

SHO pilot program and the choice between 13D and 13G

This table reports OLS regression results for differences in pilot and nonpilot firms' choices on filing a 13D or a 13G form for the periods before, during, and after the SHO pilot program. The panel dataset is based on the firm and quarterly levels. The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Model 3 omits DURING and POST but includes quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. **p* < 0.1; ***p* < 0.05; ****p* < 0.01 (two-tailed tests).

	[1] **13D vs.13G**	[2] **13D vs.13G**	[3] **13D vs.13G**
PILOT × DURING	0.029***	0.034***	0.035***
	(3.13)	(3.53)	(3.68)
PILOT × POST	-0.055***	0.018*	0.018*
	(-5.33)	(1.84)	(1.88)
PILOT	-0.021***	-0.017**	-0.017**
	(-3.29)	(-2.53)	(-2.56)
DURING	0.007	0.011**	
	(1.32)	(1.96)	
POST	0.070***	0.001	
	(10.21)	(0.10)	
ROA		-0.353***	-0.339***
		(-6.56)	(-6.28)
LEV		0.085***	0.085***
		(8.29)	(8.26)
SIZE		-0.012***	-0.012***
		(-8.16)	(-8.38)
MtB		-0.005***	-0.005***
		(-9.18)	(-9.36)
LIQAM		-0.011	-0.014
		(-0.13)	(-0.17)
INTERCEPT	0.051***	0.120***	0.098***
	(12.14)	(3.98)	(3.23)
Industry effects	NO	YES	YES
Quarterly effects	NO	NO	YES
No. of obs.	16,053	14,785	14,785
Adjusted R^2	0.0136	0.0304	0.0338

Table 4. 6

Choice between 13D and 13G based on types of blockholders

This table reports OLS regression results for differences in pilot and nonpilot firms' choices on filing a 13D or a 13G form based on types of blockholders (Models 1–3 represent individual blockholders, and Models 4–6 represent investment funds and investment banks) for the periods before, during, and after the SHO pilot program. The panel dataset is based on the firm and quarterly levels. The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Models 3 and 6 omit DURING and POST but include quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. *p < 0.1; **p < 0.05; ***p < 0.01 (two-tailed tests).

	[1]	[2]	[3]	[4]	[5]	[6]
		INDIVIDUAL			**INVESTMENT INSTITUTIONS**	
	13D vs.13G	**13D vs.13G**	**13D vs.13G**	**13D vs.13G**	**13D vs.13G**	**13D vs.13G**
PILOT × DURING	0.056**	0.059***	0.055**	0.061***	0.068***	0.066***
	(2.57)	(2.61)	(2.46)	(2.89)	(3.10)	(3.06)
PILOT × POST	-0.111***	0.047**	0.048**	-0.122***	0.031	0.034
	(-4.76)	(2.05)	(2.11)	(-5.56)	(1.44)	(1.60)
PILOT	-0.048***	-0.041***	-0.039**	-0.037**	-0.037**	-0.038**
	(-3.24)	(-2.58)	(-2.45)	(-2.53)	(-2.39)	(-2.46)
DURING		-0.570***	-0.493***		-0.539***	-0.468***
		(-4.43)	(-3.82)		(-4.70)	(-4.06)
POST		0.151***	0.120***		0.136***	0.107***
		(6.63)	(5.36)		(6.26)	(5.00)
ROA		-0.024***	-0.018***		-0.014***	-0.011***
		(-6.58)	(-5.11)		(-4.14)	(-3.10)
LEV		-0.010***	-0.009***		-0.009***	-0.009***
		(-8.19)	(-7.39)		(-7.96)	(-7.38)
SIZE		-0.320	-0.343		-0.273	-0.420
		(-1.03)	(-1.13)		(-0.68)	(-1.05)
MtB	0.023*	0.027**		0.020*	0.025**	
	(1.83)	(2.07)		(1.70)	(2.05)	
LIQAM	0.145***	-0.010		0.147***	-0.002	
	(9.72)	(-0.70)		(10.36)	(-0.18)	
INTERCEPT	0.111***	0.268***	0.281***	0.095***	0.199***	0.204***
	(11.17)	(3.57)	(3.31)	(10.02)	(2.72)	(2.58)
Industry effects	NO	YES	YES	NO	YES	YES
Quarterly effects	NO	NO	YES	NO	NO	YES
No. of obs.	6,071	5,409	5,409	6,184	5,502	5,502
Adjusted R^2	0.0307	0.0586	0.0968	0.0329	0.0498	0.0817

Table 4. 7

SHO pilot program and the purposes of blockholder activism

This table reports probit regression results for differences in pilot and nonpilot firms being targeted by active blockholders based on different purposes (Model 1–3 represent proposed activism for discipling managers; Models 4–6 represent proposed activism for business strategies; and Models 7–9 represent active blockholders who are only interested in investment at the moment) for the periods before, during, and after the SHO pilot program. All dependent variables are dummy variables to indicate whether at least one active blockholder has intervened in the firm with the corresponding activism goal in the quarter. The panel dataset is based on the firm and quarterly levels. The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Models 3, 6, and 9 omit DURING and POST but include quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. *p < 0.1; **p < 0.05; ***p < 0.01 (two-tailed tests).

	[1] **DISCIPLINE**	[2] **DISCIPLINE**	[3] **DISCIPLINE**	[4] **STRATEGIES**	[5] **STRATEGIES**	[6] **STRATEGIES**
PILOT × DURING	0.192**	0.190**	0.177*	0.262**	0.261**	0.270**
	(2.19)	(2.05)	(1.92)	(2.40)	(2.29)	(2.37)
PILOT × POST	-0.213**	0.196*	0.176*	-0.196*	0.244*	0.240*
	(-2.24)	(1.89)	(1.67)	(-1.69)	(1.93)	(1.90)
PILOT	-0.207***	-0.153**	-0.139*	-0.284***	-0.211**	-0.212**
	(-2.79)	(-1.96)	(-1.77)	(-2.96)	(-2.11)	(-2.13)
DURING	0.101**	0.161***		0.163***	0.210***	
	(2.32)	(3.45)		(3.20)	(3.84)	
POST	0.347***	-0.081		0.481***	0.003	
	(8.22)	(-1.59)		(9.92)	(0.05)	
ROA		-2.207***	-2.760***		-2.573***	-2.545***
		(-5.65)	(-6.38)		(-5.40)	(-5.34)
LEV		0.830***	0.753***		0.631***	0.637***
		(11.76)	(9.62)		(7.29)	(7.32)
SIZE		-0.114***	-0.119***		-0.081***	-0.086***
		(-8.29)	(-8.38)		(-5.30)	(-5.61)
MtB		-0.049***	-0.054***		-0.041***	-0.043***
		(-6.87)	(-6.88)		(-4.97)	(-5.12)
LIQAM		-0.351	-0.255		-0.134	-0.154
		(-0.92)	(-0.64)		(-0.24)	(-0.28)
INTERCEPT	-2.125***	-1.434***	-1.476***	-2.307***	-1.493***	-1.621***
	(-59.04)	(-15.73)	(-5.11)	(-53.90)	(-5.43)	(-5.46)
Industry effects	No	Yes	Yes	No	Yes	Yes
Quarterly effects	No	No	Yes	No	No	Yes
No. of obs.	43,555	40,208	39,976	43,555	39,237	39,237
Adjusted R^2	0.016	0.0393	0.0686	0.0276	0.0549	0.0652

Table 4.7 continued

	[7] INVESTMENT	[8] INVESTMENT	[9] INVESTMENT
PILOT × DURING	-0.108	-0.050	-0.041
	(-0.75)	(-0.31)	(-0.26)
PILOT × POST	0.022	0.054	0.054
	(0.13)	(0.30)	(0.31)
PILOT	-0.015	-0.010	-0.020
	(-0.14)	(-0.08)	(-0.17)
DURING	-0.013	0.066	
	(-0.17)	(0.81)	
POST	-0.183**	-0.144	
	(-2.15)	(-1.60)	
ROA		-2.154***	-2.193***
		(-3.05)	(-3.13)
LEV		0.674***	0.647***
		(4.53)	(4.36)
SIZE		-0.172***	-0.171***
		(-5.34)	(-5.36)
MtB		-0.065***	-0.063***
		(-3.45)	(-3.40)
LIQAM		0.719	0.772
		(1.02)	(1.05)
INTERCEPT	-2.622***	-0.945**	-0.885**
	(-43.62)	(-2.57)	(-2.32)
Industry effects	No	Yes	Yes
Quarterly effects	No	No	Yes
No. of obs.	43,555	35,575	35,575
Adjusted R^2	0.0042	0.0754	0.0876

Table 4. 8

Firm performance

This table reports OLS regression results for differences in pilot and nonpilot firm performance based on the interacted impact between the SHO pilot program and active/passive ownership of blockholders for the periods before, during, and after the SHO pilot program. Firm performance is measured by Tobin's Q and return on assets. The panel dataset is based on the firm and quarterly levels. The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Models 2, 4, 6, and 8 omit DURING and POST but include quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$ (two-tailed tests).

	[1] **Q**	[2] **Q**	[3] **Q**	[4] **Q**
ACTIVE × PILOT × DURING	-0.001	-0.001		
	(-1.57)	(-1.42)		
ACTIVE × PILOT × POST	0.000	0.000		
	(0.01)	(0.12)		
PASSIVE × PILOT × DURING			0.005**	0.005**
			(2.18)	(2.26)
PASSIVE × PILOT × POST			-0.002	-0.002
			(-0.49)	(-0.61)
ACTIVE_SUM	-0.001***	-0.001***		
	(-3.75)	(-4.42)		
PASSIVE_SUM			0.005***	0.005***
			(6.17)	(6.12)
PILOT × DURING	-0.104***	-0.104***	-0.141***	-0.141***
	(-4.78)	(-4.81)	(-5.41)	(-5.45)
PILOT × POST	-0.043*	-0.050**	-0.032	-0.035
	(-1.84)	(-2.16)	(-1.01)	(-1.10)
PILOT	0.074***	0.073***	0.075***	0.074***
	(4.31)	(4.26)	(4.34)	(4.30)
DURING	0.092***		0.092***	
	(7.54)		(7.55)	
POST	-0.257***		-0.252***	
	(-21.20)		(-20.76)	
LEV	-2.066***	-2.054***	-2.070***	-2.059***
	(-87.01)	(-86.49)	(-87.52)	(-87.06)
SIZE	-0.018***	-0.022***	-0.016***	-0.020***
	(-5.53)	(-6.97)	(-4.90)	(-6.29)
MtB	0.269***	0.267***	0.269***	0.266***
	(76.71)	(75.72)	(76.79)	(75.83)
LIQAM	1.405***	1.327***	1.560***	1.489***
	(4.06)	(4.05)	(3.97)	(3.95)
INTERCEPT	2.238***	2.059***	2.173***	1.987***
	(28.90)	(25.85)	(28.38)	(25.17)
Industry effects	Yes	Yes	Yes	Yes
Quarterly effects	No	Yes	No	Yes
No. of obs.	41,727	41,727	41,727	41,727
Adjusted R^2	0.6391	0.6423	0.6395	0.6427

Table 4.8 Continued

	[5] **ROA**	[6] **ROA**	[7] **ROA**	[8] **ROA**
ACTIVE × PILOT × DURING	0.000*	0.000**		
	(1.94)	(2.03)		
ACTIVE × PILOT × POST	0.000	0.000		
	(0.06)	(0.22)		
PASSIVE × PILOT × DURING			-0.000	-0.000
			(-0.97)	(-0.94)
PASSIVE × PILOT × POST			0.000	0.000
			(0.94)	(0.78)
ACTIVE_SUM	-0.000***	-0.000***		
	(-6.92)	(-7.60)		
PASSIVE_SUM			0.000**	0.000**
			(2.57)	(2.50)
PILOT × DURING	-0.002*	-0.002*	-0.001	-0.001
	(-1.86)	(-1.95)	(-0.58)	(-0.64)
PILOT × POST	-0.000	-0.000	-0.001	-0.001
	(-0.06)	(-0.30)	(-0.63)	(-0.66)
PILOT	0.003***	0.003***	0.003***	0.003***
	(4.28)	(4.27)	(4.40)	(4.40)
DURING	0.002***		0.002***	
	(3.89)		(3.80)	
POST	-0.009***		-0.009***	
	(-13.78)		(-13.68)	
LEV	-0.027***	-0.026***	-0.028***	-0.027***
	(-24.53)	(-23.86)	(-25.25)	(-24.66)
SIZE	0.007***	0.007***	0.007***	0.007***
	(44.92)	(43.62)	(45.93)	(44.71)
MtB	0.001***	0.001***	0.001***	0.001***
	(9.27)	(7.87)	(9.45)	(8.10)
LIQAM	-0.073***	-0.076***	-0.065***	-0.068***
	(-4.54)	(-4.51)	(-4.82)	(-4.81)
INTERCEPT	-0.032***	-0.037***	-0.036***	-0.040***
	(-10.00)	(-10.36)	(-11.19)	(-11.51)
Industry effects	Yes	Yes	Yes	Yes
Quarterly effects	No	Yes	No	Yes
No. of obs.	40,338	40,338	40,338	40,338
Adjusted R^2	0.1642	0.1833	0.1629	0.1818

Table 4. 9

Firm performance and purposes of activism

This table reports OLS regression results for differences in pilot and nonpilot firm performance based on the interacted impact between the SHO pilot program and the specific purposes of blockholder activism for the periods before, during, and after the SHO pilot program. The firm performance is measured by return on assets. The panel dataset is based on the firm and quarterly levels. The purposes are governance (Models 1 and 2); business strategy (Models 3 and 4); threat to sell (Models 5 and 6); and investment only (Models 7 and 8). The sample is constructed based on the Russell 3000 index in 2004 and includes all firms without missing data for calculating firm characteristics variables. In all models, the dependent and independent variables are in the same period. Models 2, 4, 6, and 8 omit DURING and POST but include quarterly fixed effects to avoid multicollinearity. Table A1 discusses the variable definitions. The coefficient estimates on industry fixed effects and quarterly fixed effects are not reported for brevity. We use heteroskedasticity-robust standard error in all models. *$p < 0.1$; **$p < 0.05$; ***$p < 0.01$ (two-tailed tests).

	[1] **ROA**	[2] **ROA**	[3] **ROA**	[4] **ROA**
GOVERANCE × PILOT × DURING	0.015***	0.016***		
	(2.87)	(3.08)		
GOVERANCE × PILOT × POST	0.010	0.011		
	(1.21)	(1.36)		
STRATEGY × PILOT × DURING			0.014***	0.015***
			(2.87)	(3.06)
STRATEGY × PILOT × POST			-0.000	0.001
			(-0.01)	(0.10)
GOVERNANCE_DUMMY	-0.024***	-0.025***		
	(-11.28)	(-11.53)		
STRATEGIES_DUMMY			-0.021***	-0.022***
			(-11.14)	(-11.32)
PILOT × DURING	-0.001	-0.001	-0.001	-0.001
	(-1.50)	(-1.56)	(-1.46)	(-1.51)
PILOT × POST	-0.000	-0.001	-0.000	-0.000
	(-0.34)	(-0.54)	(-0.19)	(-0.39)
PILOT	0.003***	0.003***	0.003***	0.003***
	(4.32)	(4.32)	(4.27)	(4.26)
DURING	0.002***		0.002***	
	(4.04)		(4.02)	
POST	-0.009***		-0.009***	
	(-13.39)		(-13.48)	
LEV	-0.028***	-0.027***	-0.028***	-0.027***
	(-25.14)	(-24.51)	(-25.14)	(-24.51)
SIZE	0.007***	0.007***	0.007***	0.007***
	(45.50)	(44.23)	(45.53)	(44.27)
MtB	0.001***	0.001***	0.001***	0.001***
	(9.25)	(7.85)	(9.26)	(7.87)
LIQAM	-0.067***	-0.069***	-0.067***	-0.069***
	(-4.79)	(-4.78)	(-4.77)	(-4.76)
INTERCEPT	-0.034***	-0.039***	-0.034***	-0.039***
	(-10.74)	(-11.11)	(-10.71)	(-11.09)
Industry effects	Yes	Yes	Yes	Yes
Quarterly effects	No	Yes	No	Yes
No. of obs.	40,338	40,338	40,338	40,338
Adjusted R^2	0.1665	0.1857	0.1661	0.1852

Table 4.9 continued

	[5] **ROA**	[6] **ROA**	[7] **ROA**	[8] **ROA**
THREAT× PILOT × DURING	0.015***	0.015***		
	(3.50)	(3.62)		
THREAT× PILOT × POST	-0.008	-0.006		
	(-0.64)	(-0.57)		
INVESTMENT× PILOT × DURING			0.007	0.006
			(0.72)	(0.63)
INVESTMENT× PILOT × POST			-0.065**	-0.063**
			(-2.12)	(-2.04)
THREAT_DUMMY	-0.019***	-0.020***		
	(-10.32)	(-10.52)		
INVESTMENT_DUMMY			-0.008**	-0.007*
			(-2.04)	(-1.85)
PILOT × DURING	-0.001	-0.001	-0.001	-0.001
	(-1.52)	(-1.57)	(-1.36)	(-1.41)
PILOT × POST	-0.000	-0.000	0.000	-0.000
	(-0.10)	(-0.31)	(0.13)	(-0.07)
PILOT	0.003***	0.003***	0.003***	0.003***
	(4.26)	(4.25)	(4.40)	(4.40)
DURING	0.002***		0.002***	
	(3.97)		(3.79)	
POST	-0.009***		-0.009***	
	(-13.58)		(-13.90)	
LEV	-0.028***	-0.027***	-0.028***	-0.027***
	(-25.05)	(-24.42)	(-25.21)	(-24.63)
SIZE	0.007***	0.007***	0.007***	0.007***
	(45.44)	(44.17)	(45.81)	(44.61)
MtB	0.001***	0.001***	0.001***	0.001***
	(9.21)	(7.82)	(9.45)	(8.10)
LIQAM	-0.067***	-0.070***	-0.067***	-0.070***
	(-4.76)	(-4.74)	(-4.78)	(-4.77)
INTERCEPT	-0.034***	-0.039***	-0.035***	-0.039***
	(-10.68)	(-11.08)	(-10.96)	(-11.29)
Industry effects	Yes	Yes	Yes	Yes
Quarterly effects	No	Yes	No	Yes
No. of obs.	40,338	40,338	40,338	40,338
Adjusted R^2	0.1662	0.1853	0.1635	0.1823

Figure 4.1

Total percentage of blockholder ownership for pilot versus nonpilot firms

This figure illustrates the results reported in Table 2. The figure shows the mean blockholder ownership for the panel sample of the treatment firms and control firms for the periods before, during, and after the SHO pilot program.