Exit as Governance: An Empirical Analysis

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Abstract

Recent models such as Admati and Pfleiderer (2009) and Edmans (2009) show that block holders' threat of exit is in itself a strong governance mechanism. However, the threat of exit cannot be directly tested. We argue that an exogenous increase (decrease) in stock liquidity strengthens (reduces) block holder exit threats, and examine how these liquidity shocks affect the relation between block ownership and firm value. Using both positive and negative natural liquidity experiments (Decimalization, Russian, and Asian crises), we find strong empirical results. These results are stronger for firms whose managers are more sensitive to stock price, as analytically predicted.

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1 Introduction

The information content of stock prices facilitates not just investor portfolio allocation decisions but also investor monitoring of management. The key feature of stock markets that cause prices to impound information in the first place is liquidity: liquid markets encourage traders to collect information and trade on it, a process that ultimately improves the information content of the prices themselves (O'Hara 2003). Study of liquidity is thus central to research ranging from financial development and asset pricing to corporate governance. However, as Becht, Bolton, and Roell (2003, p.65) note in their survey, the role of liquidity in asset pricing has received far more attention than its role in spurring monitoring. This study explores the role of liquidity in block holder monitoring.

Exploring the channels through which block holders discipline management and improve firm value is a subject of considerable interest (Parrino, Sias, and Starks 2003; Hartzell and Starks 2003; Laeven and Levine 2008). The traditional view of block holders is that they supply explicit monitoring activities that are otherwise subject to the commons problem. (Shleifer and Vishny 1997, Section V). However, monitoring is a costly activity, and block holders sometimes choose to exit the firm instead (Parrino, Sias, and Starks 2003). Some studies (e.g., Bhide (1993), Coffee (1991)) argue that this outcome is a *shortcoming* of liquid markets, because liquidity allows block holders to cut and run opportunistically, thus reducing the supply of monitoring when it is most needed. On the other hand, a new and emerging theoretical literature argues that this threat of exit is in itself a disciplining device (Admati and Pfleiderer (2009), Edmans (2009), Edmans and Manso (2009)). In these models, block holders, by virtue of their ownership stakes, receive private information about firm prospects not available to atomistic investors. Depending on the nature of this information, in many instances block holders' only rational recourse (to minimize future expected losses) is to cut and run. However, this cut and run behavior imposes subsequent ex post costs on the management — management can't cut and run like the block holders; it has to stay with the firm. Further, the cut and run strategy of block holders exerts downward pressure on prices, which hurts the management's equity holdings. As a result, management has strong ex ante incentives to make sure that block holders are happy to stay with the firm. Thus, it is the threat of block holder exit that disciplines management.

This paper is a first attempt to empirically test these block holder exit threat models. The key difficulty in testing the impact of expanded choice sets is that realized outcomes do not necessarily inform us about the nature of the underlying choice set. Specifically, in exit threat models, equilibrium outcomes depend crucially on off-equilibrium events that may be never realized: a block holder may choose not to cut and run precisely because he or she can. That is, the block holder is likely to stay with the firm when the management is disciplined, and management is disciplined precisely because the block holder can cut and run. Empirically, therefore, testing the models require a clear and convincing measurement of block holders' *threat* of exit. Our identification strategy involves employing exogenous shocks to stock liquidity that affect the block holder's ability to exit. Increased stock liquidity by lowering selling costs of block holders enhances the potency of a threat of exit while decreased stock liquidity will blunt the power of such a threat. This approach provides a clear test of the credibility of block holder exit threats without appealing to any particular structural model of block ownership.

We utilize a series of three natural experiments that plausibly exogenously changed the liquidity environment of firms. The first of these natural experiments is decimalization, when the New York Stock Exchange (NYSE), from January 29, 2001, started quoting and trading its listed issues in dollars and cents (decimalization) as opposed to increments of a sixteenth of a dollar (sixteenths).[1] Furfine (2003) and Bessembinder (2003) argue that liquidity improved after decimalization on the NYSE and the NASDAQ. Our second and third natural experiments are the Russian default crisis and the Asian financial crisis. These were unexpected exogenous events (from an individual firm's perspective) that significantly decreased liquidity (Acharya and Pedersen 2005; Chordia, Sarkar, and Subrahmanyam 2005). Overall, therefore, we examine both exogenous liquidity increases and exogenous liquidity decreases.[2]

Our starting assumption is that any benefits of block holder governance through this channel of the threat of exit should be reflected in market-based measures of firm value, especially when block ownership information is public (Shleifer and Vishny 1997). Our main empirical tests therefore examine how the association between block holdings and firm value shifts around these exogenous liquidity shocks. Post-decimalization, we find that the association between Q (or returns) and block holder ownership increases significantly. This means that an exogenous increase in liquidity increases the value of firms, especially so for firms with higher block holdings, suggesting that liquidity enhances the disciplining role of block ownership. On the other hand, post-Asian Crisis and post-Russian Crisis, the association between firm value and block ownership decreases significantly. The crises results imply that an exogenous decrease in liquidity have a larger negative impact on firm value for

[1]The Nasdaq Stock Market decimalized shortly thereafter, on April 9, 2001.

[2]We do not focus on the current U.S. financial crisis because its economic impact on our sample of U.S. firms extended far beyond just liquidity shocks. It is therefore difficult to attribute results around the U.S. financial crisis to just liquidity effects. Likewise, firm-specific liquidity shocks such as expanded analyst coverage and investor recognition or inclusion in an index are also problematic in that they are not exogenous liquidity shocks but endogenously arise from value-relevant information events (e.g., Denis et al. 2003).

firms with higher block holdings, suggesting that illiquidity reduces the disciplining role of block ownership. The economic magnitudes are also large: the effect of block ownership on firm value approximately doubles post decimalization and approximately halves post Asian and Russian crises.[3]

To further demonstrate that the above results are consistent with the predictions of the block holder exit threat models, we run a falsification test by constructing periods of "pseudo-shocks" to denote periods of equal length before and adjacent to the actual liquidity shocks. We do not find any analogous significant effects around "pseudo-shocks", lending further confidence to our interpretation that the effect of liquidity on the association between firm value and block ownership is causal. We also supplement our natural experiment tests with detailed panel regressions. These regressions also provide consistent findings.

We next directly investigate the channels through which the possibility of block holder exit disciplines managers. In Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2009), managers hold some portion of equity in the firm, and suffer the negative price impact when block holders exit.[4] Thus, these models predict that block holder exit threat will be more effective in firms whose manager's wealth is more sensitive to the stock price. Accordingly, we find that the impact of liquidity shocks on the block holder-firm value association is far more pronounced for firms whose managers have significant equity exposure. Interestingly, this effect is equally pronounced for both entrenched and unentrenched managers, suggesting that even entrenched managers are sufficiently concerned about their stock-based wealth, thus making the threat of exit a credible governance mechanism in such firms.

[3]To put these magnitudes in context, Chordia et al. (2008, Table 1) show that the decimalization shock to liquidity was also economically large, reducing the bid-ask spread by 61%.

[4]Block holders also suffer the price impact, but recall that block holders' decision to exit is their optimal strategy given their private information.

1.1 Implications

The traditional view of block holders is that their ownership stakes give them the power to monitor management (Shleifer and Vishny 1997, Section V). However, recent studies argue that many block holders are passive in their monitoring behavior and do not always exercise their formal authority to intervene (Davis and Kim (2007), Aghion and Tirole (1997)). Instead, they sometimes exit when they are dissatisfied (e.g., Parrino, Sias, and Starks 2003). Our study shows that the block holder exit option is in itself a strong disciplining device.

We demonstrate the disciplining role of the block holder exit option in the context of stock liquidity. This block holder governance aspect of liquidity also builds on recent studies such as Fang, Noe, and Tice (2009) who demonstrate that liquidity in itself is value enhancing. However, as Fang, Noe, and Tice (2009) note, the valuation impact of liquidity can arise from several channels unrelated to block holders. For example, liquidity can improve the informativeness of share price, thus facilitating various value-enhancing decisions such as more effective performance-based compensation of managers. Liquidity in the stock prices also benefits operating and financing activities that depend critically on the stock price (e.g., financing from suppliers and other stakeholders), and this feedback effect improves firm value. As a result, Fang, Noe, and Tice's focus in on empirically demonstrating the *overall* impact of liquidity on firm value; we specifically explore how liquidity facilitates the block holder exit threat channel.

Finally, our study is important in the larger context of understanding the role of liquidity in corporate governance. Liquidity can induce governance through multiple channels: it can enhance the external market for corporate control; it can indirectly enhance the market for factor inputs (e.g., market for management skills); it can enhance internal governance mechanisms (e.g., Cremers and Nair (2005)) and shareholder activism or "voice" (e.g., Norli et al. 2010). Finally, liquidity can improve explicit contractual mechanisms (e.g., by making the stock price a more informative contractual performance measure (Holmstrom and Tirole (1993)). Our point is that liquidity also facilitates implicit contractual mechanisms such as expanding the *choice set* of block holders to include the threat of strategic exit. In this sense, our study harks back to basic textbook microeconomics where competitive markets discipline producers by making consumers' threats to exit to the competition credible.

Section 2 presents the development of testable hypotheses. Section 3 describes the data we use while Section 4 discusses the results. Section 5 discusses additional comparative statics and Section 6 concludes.

2 Discussion of theory and development of hypotheses

2.1 Analytical models

Traditional models of corporate governance argue that stock liquidity dissuades monitoring by block holders. For example, Coffee (1991) and Bhide (1993) argue that by reducing transaction costs, greater stock liquidity makes it easier for the large shareholder who is discontented with the manager's actions to sell his stake (commonly known as the "Wall Street Rule" or the "Wall Street Walk"). Large shareholders are therefore less likely to exert costly effort to discipline the manager when it is cheaper to exit. However, recent analytical studies argue that market liquidity facilitates governance by large shareholders. In Maug (1998) and Kahn and Winton (1998), liquidity helps a potential investor to build up block ownership without moving the stock price. Having the acquired the block at a low price, the block holder now has every incentive to monitor the firm and increase the value of his block holdings. As Edmans (2009, p.2485) notes, this monitoring argument relates only to the initial buildup decision and does extend to subsequent *exit* choices. Faure-Grimaud and Gromb (2004) explicitly model the exit decision by assuming that the block holder is subject to idiosyncratic shocks and must sell his block holdings for personal liquidity reasons. For this reason, the block holder prefers that the stock price be liquid enough to quickly reflect his monitoring activities. Edmans (2009, p. 2496) calls this strategy unintentional exit. The next set of models make the exit choice intentional. Specifically, these models explore the disciplining role of the threat of block holder exit. As Admati and Pfleiderer (2009, p. 2646) point out, "...what seems to have not been widely recognized is that the threat of exit itself can be a form of shareholder activism". A similar argument is made by Palmiter (2002, pp. 1437 - 1438) who suggests that large shareholders may be able to affect managerial decisions through the "threat (actual or implied) of selling their holdings and driving down the price of the targeted company".

While each of the "threat of exit" models employs a different modeling setting, their key common feature is i) a manager who has an interest in stock price, and ii) block holders who, through the control obtained by their block position, gain private information about future firm prospects (i.e., information that is not available in standard public disclosures for the duration of the model). When block holders receive bad news, their sequentially rational move (based on rational expectations of the pricing process) sometimes is to exit. That is, this exit can incur losses, but it still remains the least costly action given the circumstances. The ancillary effect of this exit is that the resulting drop in the stock price hurts the manager through his stock price exposure (either directly though his stock holdings or the possibility of job loss and board intervention). The manager therefore has ex ante incentives to exert effort to make sure that block holders have less reason to exit. It is through this ex ante behavior inducement that the possibility of block holder exit disciplines management.[5]

While sharing the above logic overall, the block holder exit models differ is how they model the sequential rationality of the block holders' exit decision as well as the manager's ex ante incentives to prevent it. We turn to the specifics of the models next. Admati and Pfleiderer (2009) model a large shareholder who has private information about the manager's actions and decides whether or not to sell his stake depending on this information. Admati and Pfleiderer (2009, pp. 2673) predict that the disciplinary impact of the large shareholder will be lower when the market for the firm's stock is less liquid.[6] The intuition behind this result is that less liquid firms have high transaction costs (including information leakage) that erode the large shareholder's trading gains.

The above argument does not immediately imply that high liquidity increases the credibility of the exit threat. In an infinitely liquid market where the block holder can trade anonymously, block holder exit will have no effect on the stock price and thus will not impose any harm to the manager. It is therefore crucial to the model that other investors learn about block holder exit and impound the meaning of that action into the stock price. Admati and Pfleiderer (2009) suggest two ways in which this disclosure can happen. The first is the block holder's 13D filing, which alerts the market to the block holder exit (see

[5]The key assumptions underlying the argument above are that a) block holders obtain private information by virtue of their ownership, and b) exit is not prohibitively costly. Both assumptions — see the discussion in Edmans and Manso (2009) — are institutionally reasonable. For instance, mandated disclosures are necessarily incomplete or not sufficiently timely on several important dimensions. As a result, Bushee, Jung, and Miller (2010) document that one of major advantages of large shareholders is that they have access to key *informal* information channels through which they can glean highly valuable "soft" information such as managerial talent, management ability to execute strategy, management's overall understanding of business challenges, etc. Such "soft" information can be highly valuable (Petersen 2004), difficult to bring under a public disclosure mandate such as Reg FD, and most important, difficult to use as a basis for insider trading litigation. In addition, the exit threat models by no means deny the possibility that block holders have other mechanisms to discipline managers: the threat of exit, as these models' authors note, is a *ceteris paribus* feature.

[6]See also Gopalan (2008).

their footnote 23). Alternatively, the block holder takes the liquidity effect into account and trades more aggressively on his private information when the market is more liquid. Thus, in equilibrium, more information is impounded in the stock price and hence there is a larger stock price reaction to the sale when the stock is more liquid.[7] As a result, the effectiveness of block holder disciplining increases when block holder trading transaction costs are lower.

Another study in a similar vein is Edmans (2009). In this model, the large stake of the block holder enables him to gather and trade on private information, thereby impounding more information into the stock price. The more informative stock price alleviates myopia concerns and encourages the manager to invest in value increasing long-term projects. Edmans (2009) shows that greater liquidity is the very mechanism through which the block holder adds value. Edmans (2009, pp. 2496-2497) argues that... "the power of loyalty relies on the threat of exit. By making exit more feasible, increased liquidity renders loyalty more meaningful...the block holder does not promote investment simply by being a "long-term" investor who never sells; by contrast it is the possibility of selling in the short-run that encourages the manager to make long-term decisions. Indeed, if market illiquidity compelled the block holder always to hold for the long run, she has no effect on stock prices and investment. The fact that she has not sold upon bad news is uninformative if she was unable to sell in the first place."

Finally, Edmans and Manso (2009) build on Edmans (2009) and explore the disciplining role of exit with (institutionally common setting) of multiple block holders. As in the previous models, block ownership yields private information. However, the presence of multiple block holders generates free-rider problems that hinder value-enhancing interventions based on

[7] In other words, for block trades to have no impact on the price, liquidity has to asymptotically increase faster than the block holder's feasible trading volume. However, this possibility does not appear realistic. Empirical evidence such as Holthausen et al. (1990) indicates that block trades do impact price.

such private information. On the other hand, the same co-ordination difficulties strengthen the disciplining of the manager through trading (i.e., exit). Since multiple block holders cannot co-ordinate to limit their orders and maximize combined trading profits, they trade competitively based on their private information. This competitive "run for the exit" to beat other block holders when the private news is bad has the cumulative effect of impounding more information into prices. The manager whose wealth is tied to the stock price after all block holders have traded is particularly keen on taking ex ante actions to prevent bad news outcomes. Liquidity, by enabling such block holder trades, strengthens the threat of disciplinary exit and induces higher ex ante managerial effort.

2.2 Empirical predictions

Both Admati and Pfleiderer (2009) and Edmans (2009) offer detailed suggestions on cross-sectional empirical predictions. However, as the papers themselves recognize (e.g., Edmans 2009, Section III), the key difficulty in implementing these predictions is accounting for the endogenous nature of ownership structures. For example, as Brav et al. (2008) note, shareholders such as hedge funds and Warren Buffett have considerable management and activism expertise: this expertise plays a critical role in the kinds of firms these shareholders choose to invest in. One could build a full-fledged structural model of block ownership incorporating these factors, but finding robust measures of primitive parameters is difficult. For example, configuring an empirical model of Admati and Pfleiderer (2009) requires data on the frequency with which the block holder is subjected to idiosyncratic liquidation shocks. Measuring such block holder characteristics is not easy. Likewise, the models are driven by the information that block holders glean by virtue of their ownership. It is virtually impossible for researchers to measure this information directly.

The innovation in our paper is to recognize that the central and common prediction of the above models, namely that the threat of exit is less credible when stock liquidity is lower, does not require a full-fledged structural model. Instead, one can follow the Angrist and Krueger (2001, pp. 73) natural experiment approach where one measures the change in the association between two variables after one variable experiences an exogenous shock. The key assumption here is that this exogenous shock does not change the underlying structural model. As as a result, any change in the association between the two variables can be interpreted in causal terms.

A rich literature argues that the benefits of block holder disciplining should result in higher firm value, especially when block ownership information is public (see Laeven and Levine (2008), Fang, Noe, and Tice (2009) and the references therein). Following these studies, our key association of interest is between firm value (dependent variable) and block ownership (independent variable). We then examine how exogenous shocks to liquidity change this association. The idea is that an exogenous and visible shock to liquidity is an exogenous and visible shock to block holders' ability to exit. In rational markets, this should impact firm value.[8]

We use three shocks to liquidity whose origins appear exogenous to any individual firm. These shocks are: the decimalization of the minimum tick size, the Russian default crisis during 1998, and the Asian financial crisis during 1997. We provide a brief description of each of the events below.

In early 2001, U.S. stock and option markets began quoting prices in decimal increments

[8]Our assumption therefore is that the main effect of the liquidity shock is on block holder exit credibility and not on other block holder attributes such as their ability to monitor using other mechanisms. This appears an entirely reasonable assumption. As Brav et al. (2008) note, other monitoring techniques such as activism and intervention require skill and talent that can only be built over time; a liquidity shock is unlikely to impact these skills or their marginal impact in a material way.

rather than fractions of a dollar. At the same time, the minimum price increment (or tick size) was reduced to a penny on the stock markets. While New York Stock Exchange (NYSE) replaced the system of fractional pricing on January 29, 2001, the Nasdaq Stock Market decimalized shortly thereafter, on April 9, 2001. Prior studies such as Bessembinder (2003) and Chordia, Roll, and Subrahmanyam (2008) document increases in stock liquidity as a result of decimalization. Bessembinder (2003) also provides evidence that decimalization related increases in stock liquidity are present for both NYSE and Nasdaq markets and for stocks in all market capitalization groups. As a result, studies such as Chordia, Roll, and Subrahmanyam (2008) and Fang, Noe and Tice (2009) use the decimalization as an exogenous shock to stock liquidity. Following these studies, we use the decimalization as the first natural experiment that leads to an exogenous *increase* in stock liquidity.

Three features of decimalization invite explicit mention: although exogenous to any individual firm's performance, the decimalization event was anticipated, it was permanent, and it increased liquidity. We next locate settings that, from an individual firm's perspective were exogenous, were unanticipated, were severe, and which decreased liquidity. Financial crises are natural candidates, but we have to be careful to ensure that the primary impact of the crisis on our sample firms was a liquidity shock. The current U.S. financial crisis does not meet this criterion because its economic impact on our sample of U.S. firms was far more than just liquidity effects.[9] We therefore look to foreign crises. The effect of these crises on our sample of U.S. firms are primarily liquidity shocks transmitted through international capital markets, as opposed to shocks to operating fundamentals. Our first candidate is the Russian default crisis. On August 17, 1998, the Russian government and the Central Bank of Russia

[9] It is for the same reason we cannot use firm-specific shocks to liquidity. Events that drive these shocks, e.g., expanded investor recognition and analyst following or inclusion in an index do not occur randomly but are triggered by changes in firm fundamentals (e.g., Denis et al. (2003)).

issued a statement effectively declaring that Russia was forced to default on its sovereign debt, devalue it currency and declare a suspension of payments by commercial banks to foreign creditors (Desai 2000). Declining productivity, an artificially high fixed exchange rate between the ruble and foreign currencies to avoid public turmoil, and a chronic fiscal deficit were the background to the meltdown. The inability of the Russian government to implement a coherent set of economic reforms led to a severe erosion in investor confidence and a chain-reaction that led to investors fleeing the financial markets. Studies such as Acharya and Pedersen (2005) and Chordia, Sarkar, and Subrahmanyam (2005) provide evidence of a significant drop in stock liquidity during the Russian crisis, suggesting that the liquidity shock was indeed substantive. We denote the period from August 1998 to December 1998 as the Russian default crisis and use it as a period of exogenous *decrease* in stock liquidity.

The third natural experiment is the Asian Financial Crisis that gripped much of Asia beginning in July 1997 and raised fears of a worldwide economic meltdown due to financial contagion. The crisis started in Thailand with the financial collapse of the Thai baht. As the crisis spread, most of Southeast Asia and Japan saw slumping currencies, devalued stock markets and other asset prices, and a precipitous rise in private debt. The "Asian flu" also put pressure on the United States and Japan. Although the markets did not collapse, they were severely hit. On 27 October 1997, the Dow Jones industrial plunged 554 points or 7.2%, amid ongoing worries about the Asian economies.[10] The New York Stock Exchange briefly suspended trading. The crisis led to a drop in consumer and spending confidence. Prior studies such as Acharya and Pedersen (2005) and Chordia, Sarkar and Subrahmanyam (2005) provide confirmatory evidence of a sizeable decrease in stock liquidity during the Asian financial crisis. We denote the period from July 1997 to December 1997 as the Asian

[10]This clearly implies that the shock was not perceived as fleeting or insignificant.

crisis and use it as a period of exogenous decrease in stock liquidity.

Our main prediction therefore is that the association between firm value and block ownership increases in the post-decimalization period and decreases during the Russian default crisis and the Asian financial crisis. An immediate corollary then is that these effects should be absent during tranquil (i.e., regular) periods. In other words, we expect no change in the association between firm value and block ownership measures during tranquil periods. To test this prediction, we create three pseudo shock periods of equal length (as the original shocks) and adjacent to the periods of decimalization, the Russian and Asian crises. Finding no evidence of a relation between firm value and block holdings during these pseudo shock periods serves as a placebo test and provides a baseline against which to compare the results of the exogenous shocks.

Next, as Angrist and Krueger (2001, p. 78) note, the response to the shock is likely to be heterogeneous across the treatment firms, which the empirical researcher can use to conduct additional cross-sectional variation or comparative statics tests. To do so, we dig deeper into the theoretical models to identify the key mechanisms that drive the link between stock liquidity and block holder exit-based disciplining. One such key mechanism in the Admati and Pfleiderer (2009), Edmans (2009) and Edmans and Manso (2009) models is managerial equity ownership. The threat of block holder sales disciplines the manager because the latter holds equity in the firm and therefore suffers a loss from the drop in stock prices. As comparative statics, therefore, we examine whether the common exogenous shock to block holder disciplining is felt more severely for firms where the manager's wealth is more closely tied to the stock price of the firm.

We discuss the results of the above tests in more detail in the subsequent sections.

3 Sample and Variable Definitions

3.1 Data

Our sample period is 1996 to 2002. We use block holder data from two public sources. For the years 1996-2001, we use the block holder data set of Dlugosz, Fahlenbrach, Gompers, and Metrick (2006). As Dlugosz et al. (2006) note in detail, the Securities Exchange Act of 1934 (SEA) defines block holders as parties whose beneficial ownership in the firm exceeds 5 percent. These parties have to publicly disclose both their transactions and holdings. Dlugosz et al. (2006) and Jeng, Metrick, and Zeckhauser (2003), among others, argue that while trading data would appear to provide the most current and comprehensive block holder information, this data is noisy and cannot be used to infer the level of individual block holdings. Dlugosz et al. (2006) therefore recommend the annual proxy data required by Regulation 14 A of SEA as the preferred data source of block holding information. They have also provided this data to the public.[11]

However, the Dlugosz et al. (2006) sample stops in 2001; our decimalization tests require post-2001 data since some firms have fiscal year ends before decimalization. We therefore hand-collect block holder data from the proxy statements for the year 2002 following the procedure outlined in Dlugosz et al. (2006). We then merge our block holder data with CRSP and Compustat. Our final sample consists of 7,143 observations for 1,587 unique large, publicly-listed U.S. firms covered by the Investor Responsibility Research Center (IRRC) for the period 1996 to 2002.

[11] http://www.som.yale.edu/faculty/am859/data.html.

3.2 Variable definitions

Our measure of firm value is Tobin's Q (Q). We define Q as the ratio of market value of assets divided by the book value of assets.

There is no single accepted measure of block ownwership in the literature. Following Edmans (2009) and Edmans and Manso (2009) who argue that both the block ownership levels and the number of block holders matter for "threat of exit" models (also see Laeven and Levine (2008)), our constructs of block holder ownership measure the share of all block owners, the share of the largest block owner, and the number of block owners. We also combine the total block ownership and the number of block owners into a single measure ($Block^{Ownership}$) using the first principal component of the common variation, computed each fiscal year. While these measures are highly correlated, each is likely to measure a different facet of block ownership and finding consistent results across all these measures will increase the confidence in our results. Note that management can also be block holders, and the models we test pertain to non-management block holders. In our construction of block ownership measures, we therefore exclude management.[12]

The main theoretical construct we employ to measure stock liquidity is "depth" as used in Kyle (1985) and popularly known as the "Kyle lambda". Following Amihud (2002) and Hasbrouck (2005), we measure the Kyle lambda as daily unsigned movements in stock returns divided by dollar trading volume. This price-impact measure captures the amount of trading

[12]For a small set of firms in the sample, management also has block ownership. Identification of management is easy in the Dlugosz et al. (2006) data set because they explicitly indicate whether the beneficial owner is an officer. However, the Dlugosz et al. (2006) data set is not available for 2002, and we had to hand-collect it. To economize on collection costs, we did not explicitly identify the beneficial owners who are also officers for 2002; instead we simply assumed that management block ownership was unchanged from 2001 and 2002 and used the 2001 management block ownership data as proxies for 2002 management block ownership data. This imputing procedure is unlikely to be critical. For a sample of 50 firms in year 2002 we manually collect the management block ownership. The correlation between this measure and the imputed value from the 2001 data is 95%. As a further robustness check, we also verify that our main results hold when we drop the 2002 sample.

associated with a movement in prices, with larger values indicating higher illiquidity. As this measure is highly skewed, we define stock liquidity (*Liquidity*) as the log value of this measure. We also multiply by -1 so that larger values of *Liquidity* indicate greater stock liquidity. We use this measure in our panel regressions to corroborate the findings from our three natural experiments.

Our control variables are motivated by Laeven and Levine (2008). These include firm size defined as the log of market value of equity (*Size*). Growth is measured by annual percentage change in sales (*Growth*). The investment ratio is defined as the ratio of capital expenditures to total assets (*Capex*). Asset tangibility is measured by the ratio of fixed assets to total assets to measure asset tangibility (*Fixed Assets*). *Leverage* is defined as the ratio of total debt to total assets. Finally, we include two additional ownership measures. First, we define an indicator variable (*Majority*) that denotes whether or not the largest of all reported block holders holds more than 50%. Second, we define an indicator variable (*Wide*) to denote widely-held ownership defined as firms where no reported block holder holds more than 10%. Detailed variable definitions are in Appendix 1.

Table 1 Panels A and B presents the descriptive statistics of the sample. The mean and median Q of 1.91 and 1.43 correspond closely to the 1.97 and 1.41 of Dlugosz et al (2006). The largest non-officer block holder in the sample holds on average 11.77% of the firm's shares. The median firm has 2 non-officer block holders while the sample maximum is 7. As the sample comprises of large firms, the average market value is US$1.5 billion. The largest block holder holds a majority in only 1.7% of the sample, while only 12.3% of all firms is widely-held.[13] The median firm grew its sales by around 7% during the year. Consistent with the presence of growth opportunities, the average firm invested in capital expenditures

[13] This result is consistent with Holderness (2009) who argues that ownership patterns in the U.S are not as diffuse as is commonly believed.

to the tune of 6% of its asset base. Mean leverage is 26%. While Table 1, Panel C provides data on the executive compensation characteristics which we describe and use later in our tests in section 5.2, Table 1, Panel D provides the year wise means of the various blockholder ownership measures which appear to be stable over time.[14]

4 Results

Our panel data regressions use Q as the dependent variable and block ownership measures and various interaction terms as regressors. Following Himmelberg, Hubbard and Palia (1999), these specifications use firm-fixed effects to difference out the unobservable, time-invariant firm-specific characteristics. In addition, we use year fixed effects and compute our standard errors robust to heteroscedasticity and clustered by firm.[15] Finally, following Laeven and Levine (2008), we use ownership variables and all other firm specific variables, computed a year before Tobin's Q to avoid the possibility of reverse causality.

Table 2 Panel A examines how liquidity mediates the relation between firm value and block ownership measures. For all four block ownership measures, we find liquidity significantly improves the association between block ownership and firm value (i.e, the interaction term Liquidity * Block Ownership is positive and significant at the 5% level or stronger in all 4 specifications). At a preliminary level, this result is consistent with our main premise that stock liquidity disciplines management by making the threat of block holder exit more credible.[16]

[14]Our hand-collection procedure for 2002 yielded fewer observations than in 2001. However, the 2002 means in Table 1 Panel D are statistically not different from the prior year 2001 values; our hand-collected 2002 data are thus conformable with the 1996-2001 Dlugosz et al. (2006) data set.

[15]Our regression specification ensures that the included year fixed effects are not collinear with indicators for liquidity shocks.

[16]Our evidence of a positive effect of stock liquidity on firm value through block holdings is in contrast to the results in Fang, Noe and Tice (2009). While direct comparisons between our study and theirs is difficult

The association between firm value and liquidity could be heterogeneous in the cross-section. Table 2 Panel A partly controls this possibility by including firm fixed effects that transform all variables from levels specification to firm-demeaned changes. Table 2 Panel B further expands on this issue by employing changes in firm value as the dependent variable and changes in block ownership and liquidity as the independent variables. When changes in Q are the dependent variable, we see that increases in liquidity (column 1, interaction term) significantly improve the association between firm value and block ownership. The remainder of the paper identifies this association by using *exogenous* changes in liquidity. Similarly, we also find that increases in block ownership at a given level of liquidity (column 2, interaction term) improve firm value.

4.1 Exogenous increase in liquidity: Decimalization

We now turn to the main tests of our study, namely natural experiments based on both positive and negative exogenous liquidity shocks. In these tests, we replace *Liquidity* in the previous regression specifications with an indicator variable that denotes the relevant period of the shock. Specifically, we define *Decimalization* as an indicator variable that takes the value of 1 for fiscal-year ends after January 2001. Similarly, we define *Russian* and *Asian* as indicator variables to denote the Russian default crisis and the Asian financial crisis respectively. In particular, *Russian* is set to 1 for fiscal-year ends between August 1998 and December 1998, while *Asian* takes the value of 1 for fiscal year-ends between July 1997

because they do not tabulate their findings regarding the effect of stock liquidity on block holder measures, we conjecture that the differences in inferences might be on account of differences in both the measures employed and the specifications employed. For example, we use lagged independent variables to reduce the possibility of reverse causality while Fang, Noe, and Tice (2009) use contemporaneous measures. Second, while we use firm-fixed effects in all our specifications and identify off intra firm variation, Fang, Noe, and Tice (2009) use industry fixed effects and identify using inter firm variation in their primary specifications. Finally, note that it is difficult to interpret the main effect of liquidity in the presence of an interaction effect.

and December 1997.

Table 3 presents the results of the decimalization shock. Panel A with Q as the dependent variable, indicates that for all four measures of block ownership, the relation between block ownership and firm value is significantly more pronounced in the post-decimalization period (the interaction term Block * Decimalization is positive and significant at the 1% level or higher in all the four specifications). Chordia et al. (2008, Table 1) show that decimalization reduced the bid-ask spread by 61%. In our context, the economic magnitude of this liquidity shock is also equally large, with the coefficients on the ownership measures more than doubling once *Decimalization* turns on.[17]

In Table 3 Panel B we follow Daniel and Titman (1997) and Faulkender and Wang (2006) and use excess stock returns over the year instead of Tobin's Q as our measure of firm value. We define excess returns as the difference between the firm's annual stock return less the benchmark portfolio return based on the firm's size and its market-to-book ratio (see Faulkender and Wang (2006) for detailed variable definitions and methodology). We use the 25 Fama and French portfolios formed on size and book-to-market as our benchmark portfolios. Specification 1 shows that the interaction between total block ownership and liquidity is positive and significant (as found before in table 2). Specifications 2 through 5 use decimalization as the natural experiment. Consistent with our earlier results, we find that decimalization significantly increases the association between block ownership and firm value. Three out of four interactions terms are significant at the 1% level or higher. The only insignificant interaction involves the ownership of the largest block holder and decimalization,

[17]Our maintained assumption is that decimalization was a shock to liquidity and not to the overall structural model of block ownership. Consistent with this assumption, we find that block ownership did not significantly change upon the onset of decimalization. The result therefore is driven by shocks to liquidity and not by changes in block ownership. We also include the level of block ownership in all our specifications to control for the direct effect as well.

though the right sign is significant only with a p-value of about 13%. The robust conclusion that emerges from table 3 is that the threat of block holder exit appears to be an empirically significant monitoring device and is causally related to firm value.

4.2 Exogenous decreases in liquidity: Asian and Russian Crises

Decimalization was an exogenous shock that increased liquidity. We now explore exogenous shocks that decreased liquidity. We focus on two shocks: the Russian Crisis and the Asian Crisis. Table 4 presents the results. The two crises significantly weakened the association between block ownership and firm value, as predicted. The economic magnitude is also large, with the coefficients on the total ownership measures approximately halving once the crisis indicators turn on. In seven out of the eight specifications we employ the interaction term Block * Crisis is negative and significant at the 10% level or stronger. In later tests in the paper, we combine the Asian and Russian crisis variables into one variable "Crisis" for brevity. [18]

Overall, the above results suggest that events that resulted in an exogenous increase (decrease) in stock liquidity are associated with a pronounced (attenuated) relation between block holder ownership and firm value. These findings lend further credence to the idea that stock liquidity disciplines management by making the threat of block holder exit more credible.

[18] The only insignificant result is the number of block holders for the Russian Crisis even though the interaction term is of the right sign. As with decimalization, our maintained assumption is that crises were exogenous shocks to liquidity and not to the overall structural model of block ownership. Consistent with this assumption, we find no significant changes in block ownership measures around the Russian and Asian crises. Overall, therefore, the force of the interactive effect is coming from the exogenous liquidity shock. We also include the level of block ownership in all our specifications to control for the direct effect as well.

4.3 Additional analysis

Decimalization and financial crises among themselves capture exogenous liquidity shocks that were both positive and negative, and were both permanent (decimalization) and of uncertain duration (crises) at the time of the onset. Our tests survive all these settings, but one could still argue that the above results are merely capturing time-trends in stock liquidity. As stock liquidity is increasing over time, one could argue that decimalization and crises merely denote secular trends. Note that all the empirical specifications include appropriate year dummies to capture these effects. Nevertheless, we perform additional falsification tests to reinforce our inferences.

Specifically, we create “pseudo-shocks” periods and examine whether the relation between block ownership and firm value changes substantially during these periods. We define three indicator variables as representing the six-month period prior to Decimalization, Russian Crisis, and Asian Crisis periods. We examine how the association between firm value and total block ownership changes in these “pseudo-shock” periods. At the very least, as a placebo test, we do not expect to find any significant results. The results are in Table 5. The coefficients of all three interaction terms of the block ownership variable with the three pseudo experiments are insignificant, suggesting no difference in the relation between total block ownership and firm value between regular periods and “pseudo-shock” periods. Thus, our three original events capture exogenous shocks to stock liquidity and are not mere manifestations of time-trends in stock liquidity or other spurious temporal factors.

We then examine whether our results are sensitive to using industry-adjusted measures of Q. To do so, we modify the dependent variable by subtracting the median industry Q from the firm-level measure. Industries are defined at the 2-digit SIC level. In unreported tests, we find that our findings are similar in economic and statistical significance to those reported earlier.

While the Asian and Russian ended after a certain period of time, the decimalization event is permanent. In this sense the decimalization event is unbalanced: our panel has two years post decimalization, but five years pre-decimalization. As an alternative specification, we balance the panel in event time by restricting the sample to the years 1999 - 2002. The decimalization results continue to hold, lending further credence to the robustness of the tests.

We then examine whether the effect of decimalization (Russian and Asian crises) is more pronounced for firms that have lower (higher) ex-ante liquidity in the periods prior to the shocks. In unreported results, we do not find any evidence that the shocks affected these subsets of firms. These results indicate that the exogenous shocks have a pervasive effect (consistent with studies such Bessembinder (2003) who finds that decimalization reduced trading costs for stocks in all market capitalization groups), thereby providing assurance that our inferences apply to all firms.

Finally, we examine the association between firm value and block ownership around S&P 500 additions and deletions. Albeit firm-specific and not strictly exogenous, these events significantly change the investor base and plausibly change the firm's liquidity environment. These events do appear to have some weakly significant effects in mediating the association between block ownership and firm value. Statistical power issues aside, an economic explanation for the results is that recent research shows that S&P additions are *not* information-free events as had been traditionally assumed (Denis et al. (2003)). If so, the liquidity changes around these events are no longer exogenous events and do not form a good setting to explore the efficacy of the threat of block holder exit. Similar results obtain qualitatively, if we use initiation of analyst following (again not exogenous) as a proxy for liquidity enhancing event in the life of a firm.

5 The role of investor and manager characteristics

5.1 Investor characteristics

The theoretical studies of Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2009) rely on block holders a) receiving private information, b) actively evaluating that information, and c) deciding to exit if necessary. However, the empirical reality is that not all block holders are sufficiently vigilant: some block holders may themselves be subject to agency problems, others may have some nexus with management (e.g., they may be selected by management to manage pension and stock option plans), yet others may be passive. It is therefore instructive to see which category of block holders primarily drive our findings.

It is a difficult task for an empirical researcher to unambiguously measure block holder intent and vigilance. For example, block holders have to disclose their ownership intent in item 4 of 13D filings. However, any such textual disclosure is open to ambiguity and multiple interpretations, and studies that use these filings have had to exercise significant judgment in classifying intent (e.g., Brav et al. (2008, Section II)). We therefore do not interpret the 13D filings explicitly, but simply partition our block holders into the following mutually exclusive categories: officers, or otherwise those who manage of employee stock option plans (ESOP), or otherwise those who are directors, outsiders, and other categories.

Table 6 provides the results based on block holder type. We find that liquidity level and exogenous liquidity shocks both significantly impact (in the right direction) the association between firm value and director/outsider and ESOP block holders. That is, both these type of block holders exert significant exit threat on the firm. The lack of behavioral variation across block holder types is consistent with Davis and Kim (2007). Those authors find that mutual funds' nexus with management through pension plans only rarely make these funds acquiescent to management decisions. That is, client relationships do not significantly matter for block holder governance activities.

In stark contrast, Table 6 also shows the very comforting result that officer block holders exert *no* exit threat. This should be the case because officers are on the receiving end of the exit threat made by external block holders.[19] However, management ownership plays a different but crucial role in enabling exit threats by outside block holders. We document this phenomenon next.

5.2 Management characteristics

In all the threat-of-exit models (Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2009)), the threat of block holder exit works because the actual exit depresses stock price and adversely affects the manager's stock based wealth. We now explicitly test the presence of this specific channel by using managerial (CEO) equity holdings data from Execucomp database. In particular, we compute the sensitivity of the manager's equity portfolio to changes in the stock price (*Delta*) using the methodology in Core and Guay (2002). We then split the sample into two based on the median *Delta* in each fiscal year.[20] Observations with *Delta* above the median are called the *High* group and those below form the *Low* Group. If managerial equity holdings play a role in the relation between stock

[19] Our assumption here is that management as a group is unified. That is, one manager is not securing the cooperation of other managers by threatening to exit.

[20] For the few firms that do not have data in the Execucomp database, we classify them conservatively in the low delta group

liquidity and block holder disciplining, we expect this association between firm value and block ownership to be stronger the *High* group (in the sense that those manager's are more sensitive to threats that affect the stock price adversely and hence their compensation) than in the *Low* group. Similar predictions extend to the three natural experiment exogenous liquidity shock periods.

Results of the above tests are in Table 7 Panel A. While we report these results using the total block ownership measure for brevity, results are similar using the other three measures as well. Each set of columns presents results first for the high *Delta* group (*High*) and then for the low *Delta* group (*Low*). In the overall sample, the interaction effect of block ownership and liquidity is positive and significant for both groups. However, the effect is about four times bigger in the *High* group compared to the *Low* group. The test for the difference between the coefficients of the interaction term across the two groups is significant with a p-value of 0.012. Similar results obtain for the exogenous liquidity shock periods. For both decimalization and crises, we find that the effect of these periods is significantly more strongly felt (in the correct direction) by the high delta group, consistent with our predictions. Further the tests for difference between the coefficients of the interaction term across the two groups in both natural experiments is also significant with a p-value around 1%.

Edmans et al. (2009) point out that existing measures of managerial incentives are strongly related to firm size. They compute a measure called the "scaled-wealth-performance sensitivity" which is defined as the dollar change in CEO wealth for a one-percentage-point change in firm value (effectively the Core-Guay measure), divided by annual pay. We examine the robustness of our inferences to the use of the Edmans et al. (2009) measure to stratify the firms into the high and low groups.[21] The results, in Table 7 Panel B, are similar to Panel A, with the provision that the p-value of the difference across the sub-samples for the decimalization shock is significant only at 16%. For all other specifications the differences are significant at the 5% level or higher.

One concern with the use of management wealth is that to the extent the wealth is illiquid, capital losses are unrealized losses and are therefore of lesser concern to management. We therefore repeat the analysis with a *flow* compensation measure that is directly affected by current stock price, viz., the proportion of annual equity-based compensation to total annual compensation (*Optiongrant*). Equity-based compensation is defined as the Black-Scholes value of stock option grants and restricted stock grants. Similar to Table 7 Panel A, we divide the sample into High and Low groups based on the sample median *Optiongrant* every fiscal year. The results in Table 7 Panel C show that the threat of block holder exit operates significantly more strongly in the high equity-based compensation group (though the difference is only marginally significant at 11% p-value for the crisis setting). Collectively, in 7 out of the 9 specifications, the difference between the high and the low groups is significant at the 5% level or higher. Overall, these results strongly implicate managerial interest in the stock price as the force that makes managers sensitive to the threat of block holder exit, consistent with the models of Admati and Pfleiderer (2009), Edmans (2009), and Edmans and Manso (2009).

Management sensitivity to stock price is driven not just by stock-based compensation, but also by the extent to which stock price drops can trigger job loss, board intervention, raiders, etc. Management entrenchment therefore can be a significant component determining the sensitivity of management welfare to stock price movements. We test if the efficacy

[21] The data are available at http://finance.wharton.upenn.edu/ aedmans/data.html

of the threat of exit by blockholders is affected by the level of managerial entrenchment. We measure management entrenchment using the Entrenchment index (*E-index*) of Bebchuk, Cohen, and Farrell (2009). This index is based on six provisions (from the ones listed by Gompers et al.(2003)): staggered boards, limits to shareholder bylaw amendments, poison pills, golden parachutes, and super-majority requirements for mergers and charter amendments. Higher values of the (*E-index*) indicate more provisions that make it harder to replace incumbent managers and thus measure greater managerial entrenchment.

We split our sample into two and define *Low E* (*High E*) as the group with below sample median (above median) takeover protection. The *Low E* firms are therefore less entrenched. The results, presented in Table 8, indicate that level of entrenchment has no significant differential effect on the efficacy of exit threats. These results lend themselves to the provocative argument that the threat of exit a credible governance mechanism even in entrenched firms.

6 Conclusion

The traditional view that liquidity weakens monitoring by encouraging block holder exit has been supplanted by new models such as Admati and Pfleiderer (2009), Edmans (2009) and Edmans and Manso (2009) that argue that the threat of block holder exit is also an important disciplining mechanism. This study uses exogenous liquidity shocks — both positive and negative — to empirically make the case that the threat of exit is indeed a viable disciplining mechanism.

The fundamental difficulties in testing block holder governance mechanisms are the classic choice theory ones: it is often difficult for an outsider to directly measure not just the decision maker's (i.e., the block holder's) actual governance action, but also his or her choice sets, off-equilibrium strategies, and motives. In our case, it is difficult to *directly* test block holder exit threats. Our key innovation in this study is to exploit changes in liquidity to indirectly infer the value of these exit threats. Our study thus represents a first test of exit threat models; future studies can examine more precisely how exit threats operate. We believe that such investigations on the role of stock market liquidity in corporate governance are clearly important in the current financial environment where the financial markets have experienced severe liquidity shocks.

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Appendix 1: Variable definitions

Variable	Definition
Abnormal return	$r_{i,t}$-$R^B_{i,t}$. $r_{i,t}$ is the stock return for firm i during fiscal year t and $R^B_{i,t}$ is stock i's benchmark portfolio return at year t. We use the 25 Fama and French portfolios formed on size and book-to-market as our benchmark portfolios. A portfolio return is a value-weighted return based on market capitalization within each of the 25 portfolios. For each year, we group every firm into one of 25 size and BE/ME portfolios based on the intersection between the size and book-to-market independent sorts.
Asian Crisis	Indicator variable denoting the Asian crisis. It takes the value of 1 for firm-years with fiscal year ends between July 1997 and December 1997.
Block^{Total}	Sum of the ownership stakes of all the non-officer block holders in percent.
Block^{Number}	The number of non-officer block holders holding at least 5%.
$\text{Block}^{Ownership}$	Composite measure of non-officer block holder ownership formed by combining Block^{Total} and Block^{Number} using principal components.
$\text{Block}^{Largest}$	Ownership stake of the largest non-officer block holder in percent.
Capex	Capital expenditures (data128) scaled by total assets (data6).
Decimalization	Indicator variable denoting the decimalization period. It takes the value of 1 for firm-years with fiscal year ends after January 2001.
Delta	Sensitivity of the CEO's own firm equity holdings to changes in the firm's stock price using the methodology of Core and Guay (2002).
E index	The Entrenchment index of Bebchuck et al (2009).
Fixed Assets	Ratio of fixed assets (data8) to total assets (data6).
Growth	Annual sales growth (percent change in data12).
Leverage	Ratio of long term debt (data9+data34) to total assets (data6).
Liquidity	Log of (Amihud (2002) measure of illiquidity times -1). The Amihud measure is computed as the annual average of the monthly ratio of unsigned stock returns to dollar trading volume.
Majority	Indicator variable to denote firms with more than 50% block ownership.
Option grant	Ratio of the Black Scholes value of annual stock options grants and restricted stock grants to total annual compensation for the CEO of the firm.
Pseudo Experiments1-3	Indicator variables that denote pseudo experiments (which are set to a date six months before the actual event) corresponding to the Decimalization, Russian Crisis and Asian Financial crisis events respectively.
Q	Tobin's Q is defined as the ratio of book value of assets (data6) minus book value of equity (data60) plus market value of equity (data25*data199) to the book value of total assets (data6).
Russian Crisis	Indicator variable denoting the Russian crisis. It takes the value 1 for firms with fiscal year ends between August 1998 and December 1998.
Scaled WPS	Dollar change in CEO wealth for a one percentage point change in firm value, divided by annual pay as in Edmans et al. (2009).
Size	Log of (Market value of equity defined as number of shares outstanding (data25) times stock price (data199)).
Wide	Indicator variable to represent firms with no block owners $> 10\%$.

Table 1: Descriptive statistics
This table presents the summary statistics of variables used in the study. Detailed variable definitions are in Appendix 1.

Panel A: Firm characteristics

Number of observations = 7143

Variable	**Mean**	**Median**	**Std dev**	**Min**	**Max**
Q	1.906	1.430	1.358	0.709	8.712
Liquidity	19.304	19.413	2.057	13.995	23.764
Size	7.309	7.208	1.632	3.581	11.748
Majority	0.017	0.000	0.129	0.000	1.000
Wide	0.123	0.000	0.329	0.000	1.000
Growth	0.107	0.069	0.267	-0.535	1.369
Capex	0.063	0.050	0.052	0.000	0.290
Fixed Assets	0.336	0.281	0.234	0.003	0.894
Leverage	0.261	0.261	0.184	0.000	0.851

Panel B: Block holdings characteristics

Number of observations = 7143

Variable	**Mean**	**Median**	**Std dev**	**Min**	**Max**
Block^{Total}	22.180	19.700	16.821	0.000	77.000
$\text{Block}^{Largest}$	11.769	10.000	9.753	0.000	56.700
Block^{Number}	2.280	2	1.554	0	7
$\text{Block}^{Ownership}$	0.000	-0.186	1.336	-1.970	4.453

Table 1 (continued): Descriptive statistics

Panel C: Executive compensation characteristics

Variable	N	Mean	Median	Std dev	Min	Max
Delta	6374	506.627	141.474	1079.593	0.000	7293.253
Scaled WPS	6443	97.616	6.838	2168.779	0.000	113868.600
Option Grant	5819	0.434	0.447	0.286	0.000	0.952
E Index	7098	2.380	2	1.322	0	6

Panel D: Year-wise distribution of the mean of block holding characteristics

Year	N	$\textbf{Block}^{Total}$	$\textbf{Block}^{Largest}$	$\textbf{Block}^{Number}$	$\textbf{Block}^{Ownership}$
1996	931	19.369	11.154	1.971	-0.259
1997	860	19.583	11.217	1.978	-0.247
1998	1196	21.972	11.734	2.252	-0.022
1999	1084	23.028	12.006	2.363	0.074
2000	1085	23.521	12.042	2.434	0.126
2001	1059	23.239	11.745	2.424	0.110
2002	928	23.905	12.373	2.467	0.157

Table 2 Panel A: Block ownership, stock liquidity, and Tobin's Q

The dependent variable is Tobin's Q. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)
	Q_t	Q_t	Q_t	Q_t
Const.	5.749***	5.777***	5.365***	4.889***
	(.584)	(.571)	(.539)	(.442)
$Block_{t-1}^{Total}$	-.037***			
	(.011)			
$Block_{t-1}^{Total}$ * $Liquidity_{t-1}$	.002***			
	(.0006)			
$Block_{t-1}^{Largest}$		-.072***		
		(.020)		
$Block_{t-1}^{Largest}$ * $Liquidity_{t-1}$		.004***		
		(.001)		
$Block_{t-1}^{Number}$			-.236**	
			(.100)	
$Block_{t-1}^{Number}$ * $Liquidity_{t-1}$			.013**	
			(.005)	
$Block_{t-1}^{Ownership}$				-.386***
				(.128)
$Block_{t-1}^{Ownership}$ * $Liquidity_{t-1}$				.022***
				(.007)
$Liquidity_{t-1}$	-.276***	-.279***	-.254***	-.227***
	(.036)	(.036)	(.034)	(.029)
$Size_{t-1}$	.209***	.209***	.207***	.209***
	(.036)	(.036)	(.036)	(.036)
$Majority_{t-1}$	.038	-.061	.092	.076
	(.163)	(.162)	(.176)	(.167)
$Wide_{t-1}$	.017	.054	-.004	.014
	(.060)	(.064)	(.059)	(.060)
$Growth_{t-1}$	.171***	.173***	.170***	.170***
	(.061)	(.061)	(.061)	(.061)
$Capex_{t-1}$	-.444	-.433	-.499	-.473
	(.385)	(.384)	(.385)	(.385)
Fixed $Assets_{t-1}$	.497**	.506**	.517**	.507**
	(.247)	(.246)	(.250)	(.249)
$Leverage_{t-1}$	-.659***	-.655***	-.655***	-.658***
	(.206)	(.205)	(.206)	(.206)
Obs.	7143	7143	7143	7143
Adj R^2	.787	.787	.787	.787

Table 2 Panel B: The assocation of liquidity on firm value in changes

The dependent variable in specifications (1) and (2) is ΔQ which denotes annual change in Tobin's Q . Standard errors (reported within parentheses) are robust to heteroscedasticity in the regressions. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)
Const.	-.075***	.818***
	(.019)	(.107)
$\text{Block}_{t-1}^{Total}$	.001*	
	(.0006)	
$\text{Block}_{t-1}^{Total} * \Delta Liquidity$	.003***	
	(.001)	
$\Delta Liquidity$	-.294***	
	(.046)	
$\Delta Block^{Total}$		-.024*
		(.012)
$\Delta Block^{Total}$ * Liquidity		.001**
		(.0007)
Liquidity_{t-1}		-.046***
		(.006)
$\Delta Size$	-6.87e-06**	-8.40e-06***
	(3.22e-06)	(3.17e-06)
$\Delta Majority$	-.023	-.032
	(.127)	(.109)
$\Delta Wide$	.00009	.030
	(.042)	(.045)
$\Delta Growth$	.082	.014
	(.050)	(.050)
$\Delta Capex$	-1.264***	-1.835***
	(.393)	(.393)
$\Delta FixedAssets$	.149	.437*
	(.226)	(.233)
$\Delta Leverage$	-.408**	-.191
	(.178)	(.176)
Obs.	5466	5466
R^2	.043	.029

Table 3 Panel A: Threat of exit: Decimalization, Experiment 1.

We examine the impact of an exogenous increase in the threat of exit post decimalization on firm value. The dependent variable is Tobin's Q. Decimalization is a dummy variable that assumes the value one for the period after January 31, 2001 and zero otherwise. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)
	Q_t	Q_t	Q_t	Q_t
Const.	1.909***	1.938***	1.971***	1.980***
	(.233)	(.235)	(.233)	(.233)
$Block^{Total}_{t-1}$	.003**			
	(.002)			
$Block^{Total}_{t-1}$ * Decimalization	.006***			
	(.002)			
$Block^{Largest}_{t-1}$		.007**		
		(.003)		
$Block^{Largest}_{t-1}$ * Decimalization		.010***		
		(.002)		
$Block^{Number}_{t-1}$			.009	
			(.013)	
$Block^{Number}_{t-1}$ * Decimalization			.064***	
			(.018)	
$Block^{Ownership}_{t-1}$				.021
				(.017)
$Block^{Ownership}_{t-1}$ * Decimalization				.081***
				(.021)
Decimalization	-.437***	-.408***	-.439***	-.413***
	(.057)	(.054)	(.060)	(.039)
$Size_{t-1}$	.010	.002	.006	.008
	(.028)	(.028)	(.028)	(.028)
$Majority_{t-1}$	.123	.022	.240	.198
	(.156)	(.149)	(.163)	(.158)
$Wide_{t-1}$	-.027	-.003	-.045	-.031
	(.061)	(.065)	(.061)	(.061)
$Growth_{t-1}$	.161***	.160***	.164***	.163***
	(.061)	(.062)	(.062)	(.061)
$Capex_{t-1}$	-1.143***	-1.132***	-1.172***	-1.156***
	(.395)	(.395)	(.396)	(.396)
Fixed $Assets_{t-1}$	.618**	.617**	.634**	.620**
	(.256)	(.260)	(.255)	(.255)
$Leverage_{t-1}$	-.633***	-.634***	-.612***	-.620***
	(.210)	(.209)	(.210)	(.210)
Obs.	7143	7143	7143	7143
Adj R^2	.783	.783	.783	.783

Table 3 Panel B: Threat of exit: Decimalization, Experiment 1.

We examine the impact of an exogenous increase in the threat of exit post decimalization on firm returns. The dependent variable is abnormal returns $r_{i,t}$-$R^B_{i,t}$. Decimalization is a dummy variable that assumes the value one for the period after January 31, 2001 and zero otherwise. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	$r_{i,t}$-$R^B_{i,t}$				
	(1)	(2)	(3)	(4)	(5)
Const.	3.738***	-3.331***	-3.290***	-3.275***	-3.235***
	(.455)	(.170)	(.170)	(.169)	(.168)
$\text{Block}^{Total}_{t-1}$	-.035***	.004***			
	(.009)	(.001)			
$\text{Block}^{Total}_{t-1}$ * Liquidity_{t-1}	.002***				
	(.0004)				
$\text{Block}^{Total}_{t-1}$ * Decimalization		.003**			
		(.001)			
$\text{Block}^{Largest}_{t-1}$			.008***		
			(.003)		
$\text{Block}^{Largest}_{t-1}$ * Decimalization			.003		
			(.002)		
$\text{Block}^{Number}_{t-1}$				.022**	
				(.009)	
$\text{Block}^{Number}_{t-1}$ * Decimalization				.034***	
				(.011)	
$\text{Block}^{Ownership}_{t-1}$					.037***
					(.011)
$\text{Block}^{Ownership}_{t-1}$ * Decimalization					.039***
					(.014)
Liquidity_{t-1}	-.531***				
	(.029)				
Decimalization		.030	.066	.012	.088***
		(.042)	(.041)	(.042)	(.029)
Size_{t-1}	.906***	.461***	.455***	.458***	.460***
	(.030)	(.020)	(.020)	(.020)	(.020)
Majority_{t-1}	.008	.263	.189	.383	.335
	(.267)	(.281)	(.294)	(.294)	(.286)
Wide_{t-1}	.035	-.009	-.004	-.020	-.009
	(.036)	(.040)	(.043)	(.039)	(.040)
Growth_{t-1}	.090***	.058	.059	.060	.059
	(.033)	(.040)	(.040)	(.040)	(.040)
Capex_{t-1}	-1.179***	-2.838***	-2.818***	-2.868***	-2.856***
	(.240)	(.283)	(.286)	(.284)	(.283)
Fixed Assets_{t-1}	.063	.517***	.504***	.524***	.519***
	(.155)	(.183)	(.184)	(.184)	(.183)
Leverage_{t-1}	-.194*	-.245**	-.237**	-.226**	-.235**
	(.100)	(.113)	(.114)	(.113)	(.113)
Obs.	5760	5760	5760	5760	5760
Adj R^2	.560	.399	.396	.397	.398

Table 4: Threat of exit: Russian Financial Crisis, Experiment 2 and Asian Financial Crisis, Experiment 3.

We examine the impact of an exogenous decrease in the threat of exit during the Russian and Asian Financial crisis on firm value. The dependent variable is Tobin's Q. Russian Crisis is a dummy variable that assumes the value one for the period August 1, 1998 to December 31, 1998 and zero otherwise. Asian Crisis is a dummy variable that assumes the value one for the period July 1, 1997 to December 31, 1997 and zero otherwise. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Q_t	Q_t	Q_t	Q_t	Q_t	Q_t	Q_t	Q_t
	Russian				Asian			
Const.	1.857***	1.882***	1.928***	1.995***	1.831***	1.864***	1.901***	1.965***
	(.233)	(.235)	(.233)	(.232)	(.234)	(.236)	(.234)	(.233)
$Block_{t-1}^{Total}$	.006***				.006***			
	(.001)				(.001)			
$Block_{t-1}^{Total}$*Russ	-.004**							
	(.002)							
$Block_{t-1}^{Total}$*Asian					-.003**			
					(.0015)			
$Block_{t-1}^{Largest}$		.012***				.011***		
		(.003)				(.003)		
$Block_{t-1}^{Largest}$*Russ		-.007***						
		(.002)						
$Block_{t-1}^{Largest}$*Asian						-.0044*		
						(.0025)		
$Block_{t-1}^{Number}$			.034***				.035***	
			(.012)				(.012)	
$Block_{t-1}^{Number}$*Russ			-.022					
			(.019)					
$Block_{t-1}^{Number}$*Asian							-.034**	
							(.017)	
$Block_{t-1}^{Ownership}$				.056***				.055***
				(.015)				(.016)
$Block_{t-1}^{Ownership}$*Russ				-.040*				
				(.022)				
$Block_{t-1}^{Ownership}$*Asian								-.039**
								(.019)
Russian	.002	.002	-.032	-.083				
	(.071)	(.067)	(.073)	(.059)				
Asian					-.016	-.010	.001	-.079
					(.066)	(.065)	(.068)	(.057)

Table 4 (continued): Threat of exit: Russian Financial Crisis, Experiment 2 and Asian Financial Crisis, Experiment 3.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Russian Crisis				Asian Crisis			
Size_{t-1}	.007	.0007	.003	.006	.012	.004	.008	.010
	(.028)	(.028)	(.028)	(.028)	(.028)	(.028)	(.028)	(.028)
Majority_{t-1}	.096	-.027	.249	.187	.086	-.044	.256	.189
	(.164)	(.161)	(.160)	(.161)	(.167)	(.164)	(.162)	(.165)
Wide_{t-1}	-.028	-.005	-.046	-.032	-.025	-.002	-.045	-.029
	(.061)	(.065)	(.061)	(.061)	(.061)	(.065)	(.061)	(.062)
Growth_{t-1}	.164***	.163***	.166***	.165***	.161***	.161***	.162***	.162***
	(.062)	(.062)	(.062)	(.062)	(.062)	(.062)	(.062)	(.062)
Capex_{t-1}	-1.150***	-1.153***	-1.188***	-1.168***	-1.173***	-1.170***	-1.197***	-1.186***
	(.395)	(.395)	(.396)	(.395)	(.394)	(.394)	(.395)	(.395)
$\text{Fixed Assets}_{t-1}$	.667***	.671***	.677***	.670***	.666***	.672***	.667***	.665***
	(.257)	(.259)	(.257)	(.256)	(.258)	(.260)	(.258)	(.258)
Leverage_{t-1}	-.643***	-.644***	-.619***	-.629***	-.646***	-.642***	-.622***	-.632***
	(.210)	(.209)	(.210)	(.210)	(.210)	(.210)	(.210)	(.210)
Obs.	7143	7143	7143	7143	7143	7143	7143	7143
Adj R^2	.782	.782	.782	.782	.782	.782	.782	.782

Table 5: Threat of exit: Pseudo Experiments

The dependent variable is Tobin's Q. Pseudo Experiment1, Pseudo Experiment2, and Pseudo Experiment3 are indicator variables that denote pseudo experiments (which are set to a date six months before the actual event) corresponding to the Decimalization, Russian Crisis and Asian Financial crisis events respectively. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)
	Q_t	Q_t	Q_t
Const.	1.851***	1.854***	1.853***
	(.234)	(.234)	(.233)
$\text{Block}_{t-1}^{Total}$	.005***	.005***	.005***
	(.001)	(.001)	(.001)
$\text{Block}_{t-1}^{Total}$ * Pseudo Experiment1	-.0004		
	(.004)		
Pseudo Experiment1	.034		
	(.101)		
$\text{Block}_{t-1}^{Total}$ * Pseudo Experiment2		-.002	
		(.004)	
Pseudo Experiment2		.069	
		(.106)	
$\text{Block}_{t-1}^{Total}$ * Pseudo Experiment3			-.002
			(.006)
Pseudo Experiment3			.168
			(.183)
Size_{t-1}	.009	.009	.009
	(.028)	(.028)	(.028)
Majority_{t-1}	.085	.084	.083
	(.163)	(.163)	(.162)
Wide_{t-1}	-.024	-.026	-.025
	(.061)	(.061)	(.061)
Growth_{t-1}	.162***	.162***	.162***
	(.062)	(.062)	(.062)
Capex_{t-1}	-1.178***	-1.174***	-1.194***
	(.394)	(.395)	(.394)
$\text{Fixed Assets}_{t-1}$	.677***	.677***	.675***
	(.258)	(.258)	(.258)
Leverage_{t-1}	-.648***	-.648***	-.643***
	(.210)	(.210)	(.210)
Obs.	7143	7143	7143
Adj R^2	.782	.782	.782

Table 6: Threat of Exit: Block Owner Type

The dependent variable is Tobin's Q. Block holders are mutually exclusively classified as those who manage employee stock option plans, or are otherwise officers, or are otherwise directors, outsiders, and others. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. Other control variables are included as in Table 2, but not reported. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1)	(2)	(3)
	Q_t	Q_t	Q_t
Const.	5.669***	1.771***	1.704***
	(.620)	(.231)	(.233)
$\text{Block}_{t-1}^{Dir,Outsiders,others}$	-.039***	.006***	.009***
	(.012)	(.002)	(.002)
$\text{Block}_{t-1}^{Dir,Outsiders,others}$ * Liquidity_{t-1}	.002***		
	(.0006)		
$\text{Block}_{t-1}^{Dir,Outsiders,others}$ * Decimalization		.008***	
		(.002)	
$\text{Block}_{t-1}^{Dir,Outsiders,others}$ * Crisis			-.004***
			(.001)
$\text{Block}_{t-1}^{ESOP}$	-.074*	.0009	.009**
	(.045)	(.004)	(.004)
$\text{Block}_{t-1}^{ESOP}$ * Liquidity_{t-1}	.004*		
	(.002)		
$\text{Block}_{t-1}^{ESOP}$ * Decimalization		.018***	
		(.005)	
$\text{Block}_{t-1}^{ESOP}$ * Crisis			-.009**
			(.004)
$\text{Block}_{t-1}^{Officers}$	.016	.022***	.021***
	(.036)	(.005)	(.005)
$\text{Block}_{t-1}^{Officers}$ * Liquidity_{t-1}	.00009		
	(.002)		
$\text{Block}_{t-1}^{Officers}$ * Decimalization		.005	
		(.003)	
$\text{Block}_{t-1}^{Officers}$ * Crisis			.001
			(.005)
Liquidity_{t-1}	-.273***		
	(.037)		
Decimalization		-.475***	
		(.061)	
Crisis			.010
			(.063)
Obs.	7136	7136	7136
Adj R^2	.789	.786	.785

Table 7: Threat of exit and the role of managerial compensation

Panel A: Delta

The dependent variable is Tobin's Q. High (Low) firms are those with Delta (Sensitivity of the CEO's own firm equity holdings to changes in the firm's stock price using the methodology of Core and Guay (2002)) values above (below) the sample median in any fiscal year. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. The χ^2 and p-value pertain to the test of the null hypothesis that the coefficients of the interaction term across the High and Low firms are equal. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low
Const.	6.554***	4.706***	2.144***	1.643***	2.029***	1.609***
	(1.171)	(.687)	(.465)	(.298)	(.470)	(.301)
$\text{Block}^{Total}_{t-1}$	-.071***	-.021	.005**	.003	.009***	.004**
	(.025)	(.013)	(.002)	(.002)	(.002)	(.002)
$\text{Block}^{Total}_{t-1}$ * Liquidity_{t-1}	.004***	.0012*				
	(.001)	(.0007)				
Liquidity_{t-1}	-.286***	-.233***				
	(.066)	(.047)				
$\text{Block}^{Total}_{t-1}$ * Decimalization			.008**	.002**		
			(.004)	(.001)		
Decimalization			-.549***	-.262***		
			(.094)	(.070)		
$\text{Block}^{Total}_{t-1}$ * Crisis					-.007**	-.0008
					(.003)	(.002)
Crisis					.093	-.090
					(.103)	(.068)
Size_{t-1}	.181***	.193***	.012	.005	.020	.003
	(.063)	(.054)	(.051)	(.040)	(.052)	(.040)
Majority_{t-1}	.658*	-.080	.481	-.002	.460	-.037
	(.338)	(.155)	(.362)	(.163)	(.390)	(.171)
Wide_{t-1}	.090	-.020	.046	-.049	.035	-.044
	(.096)	(.058)	(.098)	(.060)	(.098)	(.060)
Growth_{t-1}	.292***	.044	.267**	.057	.261**	.057
	(.106)	(.072)	(.105)	(.075)	(.105)	(.076)
Capex_{t-1}	-1.187*	.228	-1.830***	-.445	-1.772**	-.443
	(.701)	(.462)	(.706)	(.497)	(.708)	(.496)
Fixed Assets_{t-1}	.842**	.150	.999**	.269	.965**	.321
	(.413)	(.310)	(.422)	(.327)	(.424)	(.325)
Leverage_{t-1}	-1.245***	-.039	-1.272***	.026	-1.263***	.014
	(.369)	(.223)	(.375)	(.228)	(.375)	(.226)
χ^2 High vs Low Interaction diff.	6.31		5.72		6.58	
p.val of diff.	.012		.017		.010	
Obs.	3573	3570	3573	3570	3573	3570
$Adj\ R^2$	.799	.837	.797	.832	.797	.832

Table 7: Threat of exit and the role of managerial compensation

Panel B: Scaled Wealth-Performance Sensitivity

The dependent variable is Tobin's Q. High (Low) firms are those with Scaled Wealth-Performance Sensitivity (dollar change in CEO wealth for a one percentage point change in firm value, divided by annual pay as in Edmans, Gabaix, and Landier (2009)) values above (below) the sample median in any fiscal year. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. The χ^2 and p-value pertain to the test of the null hypothesis that the coefficients of the interaction term across the High and Low firms are equal. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low
Const.	7.111***	4.009***	2.292***	1.840***	2.174***	1.804***
	(1.066)	(.632)	(.508)	(.329)	(.515)	(.328)
$\text{Block}^{Total}_{t-1}$	-.050**	-.017	.004	.0009	.008***	.003
	(.020)	(.014)	(.003)	(.002)	(.002)	(.002)
$\text{Block}^{Total}_{t-1}$ * Liquidity_{t-1}	.003***	.0009				
	(.001)	(.0007)				
Liquidity_{t-1}	-.336***	-.164***				
	(.061)	(.039)				
$\text{Block}^{Total}_{t-1}$ * Decimalization			.007**	.003**		
			(.003)	(.002)		
Decimalization			-.460***	-.327***		
			(.093)	(.082)		
$\text{Block}^{Total}_{t-1}$ * Crisis					-.008***	-.002
					(.003)	(.002)
Crisis					.079	-.016
					(.094)	(.075)
Size_{t-1}	.230***	.118**	-.008	-.014	-.002	-.015
	(.070)	(.052)	(.058)	(.042)	(.058)	(.042)
Majority_{t-1}	-.210	-.062	-.062	.003	-.070	-.019
	(.241)	(.138)	(.208)	(.134)	(.229)	(.141)
Wide_{t-1}	.019	-.043	-.030	-.067	-.038	-.063
	(.087)	(.062)	(.089)	(.067)	(.089)	(.068)
Growth_{t-1}	.227**	.055	.213**	.058	.217**	.057
	(.102)	(.077)	(.104)	(.078)	(.104)	(.078)
Capex_{t-1}	-1.796***	-.146	-2.679***	-.605	-2.627***	-.618
	(.664)	(.436)	(.681)	(.461)	(.684)	(.462)
Fixed Assets_{t-1}	1.027**	.279	1.349***	.341	1.364***	.366
	(.469)	(.270)	(.479)	(.280)	(.479)	(.273)
Leverage_{t-1}	-1.098***	-.363	-1.158***	-.326	-1.174***	-.330
	(.373)	(.240)	(.382)	(.241)	(.381)	(.241)
χ^2 High vs Low Interaction diff.	4.18		1.95		6.18	
p.val of diff.	.040		.163		.013	
Obs.	3573	3570	3573	3570	3573	3570
Adj R^2	.833	.769	.823	.766	.830	.766

Table 7: Threat of exit and the role of managerial compensation

Panel C: Equity Based Compensation

The dependent variable is Tobin's Q. High (Low) firms are those with Option Grant (ratio of the Black Scholes value of annual stock options grants and restricted stock grants to total annual compensation for the CEO of the firm) values above (below) the sample median in any fiscal year. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. The χ^2 and p-value pertain to the test of the null hypothesis that the coefficients of the interaction term across the High and Low firms are equal. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low
Const.	7.055***	3.771***	2.170***	1.398***	2.071***	1.343***
	(1.093)	(.562)	(.407)	(.308)	(.406)	(.310)
$\text{Block}^{Total}_{t-1}$	-.072***	-.012	.003	.003	.007***	.005**
	(.021)	(.013)	(.002)	(.002)	(.002)	(.002)
$\text{Block}^{Total}_{t-1}$ * Liquidity_{t-1}	.004***	.0008				
	(.001)	(.0007)				
Liquidity_{t-1}	-.328***	-.183***				
	(.067)	(.038)				
$\text{Block}^{Total}_{t-1}$ * Decimalization			.008**	.003***		
			(.003)	(.001)		
Decimalization			-.519***	-.338***		
			(.089)	(.072)		
$\text{Block}^{Total}_{t-1}$ * Crisis					-.006**	-.002
					(.003)	(.002)
Crisis					.063	-.058
					(.111)	(.070)
Size_{t-1}	.190***	.230***	-.020	.077*	-.015	.078*
	(.059)	(.054)	(.043)	(.040)	(.043)	(.041)
Majority_{t-1}	.598*	-.040	.517	.020	.487	-.019
	(.363)	(.157)	(.375)	(.172)	(.396)	(.189)
Wide_{t-1}	.044	.022	-.010	.007	-.021	.011
	(.101)	(.060)	(.103)	(.058)	(.104)	(.058)
Growth_{t-1}	.259**	-.053	.226**	-.040	.224**	-.040
	(.105)	(.062)	(.103)	(.063)	(.104)	(.063)
Capex_{t-1}	-.559	-.192	-1.392**	-.645	-1.373**	-.623
	(.668)	(.535)	(.690)	(.558)	(.693)	(.556)
Fixed Assets_{t-1}	1.104***	-.175	1.283***	-.096	1.261***	-.065
	(.421)	(.331)	(.447)	(.330)	(.453)	(.328)
Leverage_{t-1}	-.993***	-.195	-1.033***	-.152	-1.015***	-.151
	(.350)	(.244)	(.355)	(.249)	(.357)	(.248)
χ^2 High vs Low Interaction diff.	10.16		4.79		2.55	
p.val of diff.	.001		.028		.110	
Obs.	3573	3570	3573	3570	3573	3570
Adj R^2	.795	.857	.791	.855	.791	.855

Table 8: Threat of exit and the role of management entrenchment

The dependent variable is Tobin's Q. High (Low) firms are those with Entrenchment index (Bebchuk, Farrell and Cohen (2009)) values above (below) the sample median in any fiscal year. All regressions contain firm fixed effects, year fixed effects and standard errors (reported within parentheses) are robust to heteroscedasticity and firm level clustering. The χ^2 and p-value pertain to the test of the null hypothesis that the coefficients of the interaction term across the High and Low firms are equal. Detailed variable definitions are in Appendix 1. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels respectively.

	(1) High	(2) Low	(3) High	(4) Low	(5) High	(6) Low
Const.	3.899***	7.089***	1.561***	2.371***	1.496***	2.270***
	(.637)	(.853)	(.319)	(.341)	(.321)	(.344)
$\text{Block}_{t-1}^{Total}$	-.029*	-.044***	.001	.004	.003*	.008***
	(.016)	(.015)	(.002)	(.002)	(.002)	(.002)
$\text{Block}_{t-1}^{Total}$ * Liquidity_{t-1}	.002*	.003***				
	(.0008)	(.0008)				
Liquidity_{t-1}	-.170***	-.330***				
	(.036)	(.053)				
$\text{Block}_{t-1}^{Total}$ * Decimalization			.005**	.008***		
			(.002)	(.002)		
Decimalization			-.406***	-.493***		
			(.079)	(.081)		
$\text{Block}_{t-1}^{Total}$ * Crisis					-.005***	-.005**
					(.002)	(.002)
Crisis					.041	.022
					(.064)	(.095)
Size_{t-1}	.193***	.170***	.068*	-.052	.070*	-.050
	(.044)	(.054)	(.040)	(.039)	(.040)	(.040)
Majority_{t-1}	-.169	.054	.002	.120	-.012	.084
	(.287)	(.184)	(.140)	(.177)	(.134)	(.196)
Wide_{t-1}	-.049	.057	-.074	-.003	-.079	-.0009
	(.063)	(.101)	(.065)	(.101)	(.066)	(.103)
Growth_{t-1}	-.038	.323***	-.042	.302***	-.035	.299***
	(.058)	(.091)	(.058)	(.092)	(.058)	(.092)
Capex_{t-1}	-1.377***	-.278	-1.775***	-1.169**	-1.761***	-1.162**
	(.446)	(.563)	(.451)	(.573)	(.456)	(.573)
Fixed Assets_{t-1}	.236	.827**	.309	.936**	.316	.981**
	(.329)	(.392)	(.333)	(.407)	(.337)	(.406)
Leverage_{t-1}	-.468**	-.924***	-.469**	-.848***	-.454*	-.876***
	(.229)	(.309)	(.233)	(.318)	(.232)	(.320)
χ^2 High vs Low Interaction diff.	1.27		1.71		0.00	
p.val of diff.	.258		.191		.997	
Obs.	3142	4001	3142	4001	3142	4001
$Adj\ R^2$	.836	.793	.834	.788	.834	.787