THE INFLUENCE OF LARGE SHAREHOLDERS ON CORPORATE GOVERNANCE THROUGH VOICE AND EXIT

by

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ABSTRACT

This report reviews the theoretical literature on the influence, both positive and negative, that blockholders have on external and internal corporate governance. Particularly, it is concerned with the literature on the avenues through which blockholders exert control over managerial behaviour and decision making. The traditional avenue through which blockholders exert governance is via direct intervention, commonly termed "voice", where blockholders are able to directly impact managerial performance. However, over the past decade, an alternative form of activism has emerged in the literature, namely; intervention through "exit". This channel is concerned with blockholders trading on private information and influencing market prices. In reviewing these two channels, this report discusses the literature on the role that market liquidity plays in shareholder intervention and the impact of ownership and information structures on shareholder activism. Lastly, this report mathematically analyzes part of Maug's (1998) model.

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1.0 INTRODUCTION

In the corporate world, it is common for firm managers and shareholders to have distinct goals. Specifically, when management and ownership are disconnected, management may face insufficient incentives to maximize firm value. Simply put, when managers have inadequate stakes in the firm they may have alternative motives to maximizing firm value and may underperform from the perspective of shareholders. For example, managers may be reluctant to induce value increasing restructuring, or may participate in uneconomical investments, or may extract excessive private benefits, just to name a few. The possibility of such firm value destruction calls for some form of corporate governance to affect managerial decisions so as to better align shareholders' and management's interests. Large shareholders, generally termed blockholders,[1] can play a vital role in exerting such governance as their sizeable stakes provide them with an incentive to incur the costs associated with monitoring managers, and potentially acting on the acquired information to improve firm value and functioning where necessary. This exertion of governance by shareholders is termed shareholder activism, a now very popular topic of discussion and research in the business and academic world. According to Holderness (2009), 96% of US firms consist of a minimum of one large shareholder, where a large shareholder is representative of a shareholder with at least a 5% holding in this case. It is important to note that of his findings, this percentage denotes the 15th highest amongst the 22 countries included in his study, demonstrating

[1] Although the definition of a blockholder can vary across countries, according to Edmans (2014, 25), "empirical literature typically defines a blockholder as a 5% shareholder, because this level triggers disclosure requirements in the United States." See *Appendix A* for information on Canadian disclosure requirements.

the importance of considering large shareholders' roles in corporate governance (Holderness 2009). (Edmans 2014)

As discussed in previous literature, there exist two broad channels through which large shareholders are able to exert governance. Primarily, via direct intervention, most commonly referred to as "voice", whereby large shareholders have the ability to directly affect firm value through participating in, potentially costly, value-increasing activities. Such activities include jawboning, a mechanism encompassing informal negotiations between the large shareholder and management to implement strategic value-increasing changes, and initiating proxy fights, a method used to replace underperforming executives on the board of directors, just to name a couple. It is important to note that irrespective of the method of intervention chosen, there exists a free rider problem; whereby, the large shareholder incurs all intervention costs, while realizing only a portion, if any, of the benefits. (Edmans 2014)

Until recently, this mechanism was the sole channel considered when modelling shareholder activism. Over the past couple decades however, an alternative form of activism has emerged in the literature, referred to as informed trading, more commonly known as "exit". This mechanism concerns large shareholders collecting private information regarding the firm's fundamental value and/or the actions of managers and impounding it into market prices via trading, causing stock prices to better reflect the fundamental value of the firm. In other words, presuming managers' compensations are tied to share prices, informed trading provides incentives for managers to select investment options and perform in such a way that is better aligned with increasing the fundamental firm value. In the case where managers erode firm value, the large

shareholders are able to sell their stakes in the firm, which in turn decreases the stock price, and punishes the manager. In certain cases, as discussed later on in this report, the threat of "exit" itself may be sufficient to influence managerial decision making. (Edmans 2014; Edmans and Manso 2009)

On the contrary, although large shareholders can potentially improve firm value and functioning, they may also worsen agency problems. Specifically, although blockholders may help to better align managers' and investors' interests, there may arise "conflicts of interest between blockholders and small shareholders" (Edmans 2014, 24). For example, blockholders may induce the firm to participate in a suboptimal investment from which she receives some form of private benefit. (Edmans 2014)

This report seeks to review the theoretical literature on the role, both positive and negative, that large shareholders, henceforth referred to as blockholders, play in both external and internal corporate governance. More specifically, this report is concerned with the literature on the mechanisms through which these blockholders engage in said corporate governance; namely intervention through "voice" and intervention via "exit", in addition to the contributions to ongoing research regarding the efficiency of corporate control/ownership allocation. Through studying such mechanisms, this report discusses the controversial perspectives presented over the past three decades with regard to the relationship between liquidity and corporate governance, while addressing agency problems, such as the free rider problem. Moreover, the factors that determine the optimal blockholder structure under various assumptions are pinpointed and discussed. In order to achieve this aim, multiple models based on similar but varying assumptions are incorporated and discussed; to name a few, this report reviews models assuming a

concentrated ownership structure compared with a dispersed ownership structure, a single blockholder structure extending to a multiple blockholder structure, internal blockholders and external blockholders, that is, those able to directly affect firm value and those who are not; in addition to assuming exogenously given block sizes and endogenously determined block sizes. Lastly, this report mathematically analyzes part of Maug's (1998) model.

In order to achieve this aim, the report is organized as follows: Section 2.0 presents theories on intervention through voice, Section 3.0 describes exit theories, Section 4.0 illustrates some mathematical analysis of Maug's (1998) model, and Section 5.0 discusses the conclusions drawn from, and the limitations associated with some of the models analyzed, and suggests a direction for future research.

2.0 INTERVENTION THROUGH "VOICE"

Intervention through voice was the first channel analyzed through which blockholders were able to exert some form of governance over management. Via this channel, blockholders are able to influence firm value either by initiating takeovers, proxy fights, or jawboning just to name a few. This section reviews the literature on voice theories. In doing so, it discusses the link between liquidity and corporate governance, while addressing agency problems, such as the free rider problem and the lemons problem. Additionally, the trade-off between concentrated and dispersed ownership structures, the efficiency of corporate control allocation through the analysis of control transfers and the selection of transfer modes, and the interaction of internal and external corporate governance are discussed.

Shleifer and Vishny (1986) analyze the blockholder's free-rider problem, by focusing on the ways in which large shareholders implement their value-increasing changes in corporate policy by considering three common mechanisms, namely, takeovers, proxy fights, and jawboning. They consider a single firm whose shares are owned by a risk neutral blockholder ($\alpha < 0.5$), and the remaining shares $(1 - \alpha)$ by a group of risk neutral atomistic small shareholders. Although management is assumed to perform at his best with his main objective to maximize firm value, the blockholder is capable of improving firm performance through the implementation of a more profitable operating system. Through monitoring the incumbent manager and conducting research, the large shareholder is able to identify these value-increasing changes to the manager's strategy, and implement them via one of the three mechanisms mentioned above. Using notation consistent with that presented in Edmans' (2014) review, assume V and V*

represent firm value without and with intervention, respectively, where G denotes the value generated by intervention, privately known by the blockholder, that is, $G = V^* - V$. (Shleifer and Vishny 1986; Edmans 2014)

Primarily, Shleifer and Vishny (1986) consider the takeover mechanism. This sequential game consists of three stages, with the sequence of actions as follows. Initially, the blockholder decides whether to partake in the costly monitoring of the manager and gathering of information. Specifically, she has access to some form of technology used for finding improvements in the manager's strategy through monitoring and research. This technology gives her a positive probability, directly related to her research intensity, of identifying a valuable improvement from an atomless cumulative distribution function. Given she chooses not to invest in monitoring, the game ends at stage 1, however, given she chooses to invest in monitoring and identifies an improvement, she has the option to make a conditional tender offer for the equity stake of the firm. Given she decides against making such an offer, the game ends at stage 2, however, given the blockholder makes the conditional offer, the game continues to the third and final stage, where the small, atomistic shareholders non cooperatively choose whether or not to tender. The stages of the game are discussed more in depth below. When solving this model Shleifer and Vishny (1986) are concerned with the sequential equilibrium in which the blockholder bids the minimum amount necessary for a successful takeover. There are however, in general, multiple other pure strategy sequential equilibria, in which the blockholder bids more than the minimum amount, while still gaining a profit. They argue that the case for the minimum bid equilibrium is more convincing and demonstrate its uniqueness. (Shleifer and Vishny 1986, 465-467)

As mentioned previously, Shleifer and Vishny (1986) explain that upon investing in monitoring and identifying an improvement, the large shareholder may attempt to acquire majority control (in order to implement this improvement). She can achieve this by making a cash tender offer for $0.5 - \alpha$ shares; whereby half of the firm's shares represents the minimum proportion required for a successful takeover in this model. Shleifer and Vishny (1986, 471) demonstrate that there "exists no pure strategy sequential equilibrium in which bids for more than $0.5 - \alpha$ shares are made", thus analysis is restricted to tender offers for $0.5 - \alpha$ shares. (Shleifer and Vishny 1986, 466, 471)

Shleifer and Vishny (1986) point out that tender offers are costly, incorporating both clerical and legal costs, together with any premium paid to those shareholders who tender their shares. Thus, the blockholder only makes an offer if her expected profits from taking over weakly exceed the associated takeover costs. It is important to note that if sufficient shares are not tendered, all tendered shares are returned to their owners and the change is not implemented. Thus, it is necessary that the small shareholders are at least indifferent between tendering and holding their shares, which in turn requires the tender offer price to weakly exceed their expectations of the post takeover value of their shares. This gives rise to Grossman and Hart's (1980) free-rider problem; whereby the small shareholders demand a tender offer price, P, that reflects their expectations of the restructuring gains. (Shleifer and Vishny 1986, 466-467)

Since the actual restructuring gains, G, are the blockholder's private information, the small shareholders' expectations of the post intervention firm value V*, are typically underestimated. By purchasing the additional $0.5 - \alpha$ shares at a price, P, below V*, the

blockholder realizes a profit. In addition to this, the blockholder realizes a direct benefit, αG, from the value-increase of her initial stake, post intervention. Due to this direct benefit, Shleifer and Vishny (1986, 466) demonstrate that "for a sufficiently large initial stake, α, it is not necessary for the large shareholder to bid less than the true posttakeover value in order to make a positive profit". From this follows their first significant contribution: As the large shareholder's initial stake, α, increases, a takeover becomes more probable and the pretakeover market price increases. This follows intuitively since a larger initial stake, α, increases her direct benefit, αG, which enables her to more easily recover her takeover costs. Consequently, since the pretakeover market price reflects the prospect of a value-increasing takeover; as the probability of a takeover increases, likewise the market price increases. Furthermore, Shleifer and Vishny (1986) demonstrate that, given the large shareholder takes over, the larger her initial stake, the lower the takeover premium (the premium over the pretakeover market price, paid to the small shareholders who tender). Due to a larger stake, and therefore a larger share of the restructuring gains αG, the blockholder is prepared to take over for a smaller increase *G*. As a result, small shareholders' expectations of the posttakeover value are lower, along with their corresponding price demanded, P; implying a lower takeover premium. Due to this lower takeover premium, the blockholder participates in monitoring activities more often. In sum, they demonstrate that an increase in the large shareholder's initial stake results in an increase in the likelihood of takeover bids, whereby these bids indicate smaller increases in posttakeover profits on average and are more profoundly mirrored in the pretakeover share price. (Shleifer and Vishny 1986, 464-466)

Secondly, Shleifer and Vishny (1986) consider the intervention mechanism, proxy fights.[2] Upon investing in monitoring and identifying an improvement, the blockholder may consider an alternative method for implementing her value-increasing strategies, namely via proxy contests, through which the board of directors are switched out by the shareholders. By acquiring majority of the board's positions, the large shareholder can take control of strategic decision making and appoint efficient management. Similarly to takeovers, this is a costly method and through the classic free-rider argument, a larger initial stake is favourable, as it provides her with an adequately large share of the restructuring gains to cover these associated costs. (Shleifer and Vishny 1986, 472)

Thirdly, Shleifer and Vishny (1986) discuss another alternative, namely jawboning, which encompasses informal negotiations between the large shareholder and management to implement these value-increasing changes.[3] Similarly to proxy fights, this method does not incorporate the additional purchase of shares, however in contrast to both the proxy fight and takeover options, jawboning is essentially costless. It is also important to note that in comparison, this method is assumed to be significantly less effective, specifically, only a portion of the potential value formation $(1-\beta)G,\ \beta < 0$, is realized; which must be taken into consideration when the large shareholder selects her method of acquiring control. She will select the option that maximizes her profits, while rational small shareholders form their expectations of the value-increase taking this into account. Shleifer and Vishny (1986) demonstrate that a larger initial stake, α,

[2] See *Appendix B* for the formal definition of a proxy fight.
[3] See *Appendix B* for the formal definition of jawboning.

urges her to cover the costs associated with a takeover, as opposed to jawboning, create the full improvement G, and realize her direct benefit αG of this improvement. Overall, Shleifer and Vishny (1986) deduce that firm value is monotonically increasing in block size. (Shleifer and Vishny 1986, 472-474)

As demonstrated by Shleifer and Vishny (1986), the size of a blockholder's stake influences intervention incentives. Edmans and Manso (2011) extend this analysis to consider the role of multiple small blockholders, as they relate to these incentives. For notational consistency, assume a large block of size α is divided amongst n investors, giving rise to n small blockholders, each with a share α/n. They demonstrate that dividing the block amongst multiple shareholders aggravates the free rider problem and weakens direct intervention. Due to the lower direct return on their activism ($\frac{\alpha G}{n}$), each small blockholder has less motivation to incur/bear the costs associated with intervening. Furthermore, consistent with Shleifer and Vishny's (1986) analysis of block size, Edmans and Manso (2011) prove that "fewer, more concentrated blocks maximize the effectiveness of governance through direct intervention", since larger (more concentrated) stakes help "overcome the free-rider problem and maximize their intervention incentives" (2396, 2399). The set up of this model is discussed in more detail in section 3.0. (Edmans and Manso 2011)

On the contrary, as discussed by Kahn and Winton (1998), it is not uncommon for blockholders with adequately large stakes (to compensate for intervention costs) to refuse to intervene, and alternatively sell their stake, if the option to do so exists. Specifically, Kahn and Winton (1998) analyze the profit-maximizing decision between intervention versus pure speculation (informed trading) faced by a blockholder, given a

pre-existing ownership structure. They assume the blockholder has the ability to use her private information regarding firm value and performance for intervening and/or informed trading; each of which can yield a profit. For clarification, blockholder trading in this model does not exert any form of corporate governance. (Kahn and Winton 1998)

As explained by Shleifer and Vishny (1986), by increasing firm value through intervention, the blockholder realizes a direct increase in the value of her initial stake, thus an increase in her initial stake augments this direct impact (profit) of intervention. On the other hand, she also factors in trading profits when making her decision, which are dependent on the accuracy of her information compared with that of the uninformed traders[4]. (Shleifer and Vishny 1986)

Kahn and Winton (1998) use two contradictory examples to explain this intuition. Initially, suppose the market thinks the firm is likely to underperform; intervention forces the firm's return in the unanticipated direction, which in turn increases the value of the blockholder's private information relative to that of uninformed traders (information asymmetry), and thus increases the blockholder's trading profits. Conversely, suppose the market thinks the firm is expected to perform well; in this case intervention would uphold these expectations, and thus decrease her informational advantage over the uninformed traders, decreasing her trading profits. Thus, in such a situation, avoiding intervention and allowing the firm to underperform is

[4] As discussed by Shleifer and Vishny (1986), trading gains can also be realized indirectly through intervention, and thus are taken into consideration when evaluating the tradeoff between intervening and "cutting and running". Specifically, by purchasing additional shares (prior to intervening) at a price below the actual post intervention value V*, the blockholder realizes this return in addition to her direct profit from her initial stake.

the unexpected result. Consequently, upon receiving unfavorable information in advance of uninformed traders, the blockholder may select the option to sell her shares and reap the associated trading profits, since the market price P, at which she can sell her shares, exceeds the actual value of her shares (P>V). Essentially, an increase (decrease) in predicted trading profits is dependent on whether intervention increases (decreases) the worth of the blockholder's private information compared to that of uninformed traders. Intuitively, Kahn and Winton (1998) demonstrate that, in order for the blockholder to intervene upon learning the firm is underperforming, her expected return to intervention, dependent on the value of her initial stake, the speculative profits from informed trading, and the cost of intervention, must weakly exceed the return to purely trading on information after avoiding intervention. It is important to note that these trading profits, and the ability itself to trade, depend heavily on the liquidity of the stock market, which therefore plays an important role in determining intervention incentives. This role of liquidity is discussed in the subsequent section. (Kahn and Winton 1998, 100-101)

Kahn and Winton (1998) demonstrate the above intuition by considering a single firm whose shares are exogenously allocated between a blockholder and a continuum of infinitesimal small shareholders, who are unable to intervene or speculate due to the high fixed costs associated with these actions. The firm trades in a stock market that consists of a competitive market maker and other large investors, referred to as speculators. The competitive market maker is responsible for estimating bid and ask prices, dependent on the expected value of a share, conditional on a sale or buy, respectively. The speculators are capable of attaining costly, firm-value specific information, including the blockholder's intervention decision and outcome, to aid in

their trading. The decision by each speculator to become informed is made in the first stage of the game at time 0. Subsequently, at time 1, the competitive market opens, and the blockholder and active speculators observe the base return of the firm. In the case where the blockholder observes a low base return, she decides whether to intervene. Given she attempts intervention, the outcome (success or failure) is immediately observed by both the blockholder himself and the speculators who have chosen to incur the cost of becoming informed. In contrast, the market maker is only aware of the "ex-ante equilibrium probabilities that these events have transpired" (105). Subsequently, following small investors potentially being hit by liquidity shocks, trading occurs. Finally, at time 2, investors realize the final return on their shares. (Kahn and Winton 1998, 103-105)

Kahn and Winton (1998) solve the model backwards commencing with time 1. When considering the speculators' and blockholder's choices of actions, prior to trading, that is, deciding whether to become informed and whether to intervene, respectively, Kahn and Winton (1998, 107) demonstrate that "an equilibrium set of action choices always exists." Furthermore, under the following additional assumptions, they prove this equilibrium to be unique. In order to ensure speculators become informed, it is obligatory for them to recover their costs of gathering information through informed trading. This in turn requires a sufficiently high level of liquidity trading. Thus, they assume the probability of small shareholders facing liquidity shocks to be sufficiently high, the blockholder's maximum stake permitted to be adequately low, but still large enough to intervene, and the cost of becoming informed to also be sufficiently low. (Kahn and Winton 1998, 105-108)

2.1 The Role of Liquidity

The topic of stock liquidity and how it relates to intervention incentives has been surrounded by controversy and conflicting perspectives for quite some time. Initial empirical findings intuitively suggested that more liquid markets permit the disposal of investors' shares upon receiving unfavourable information regarding the firm, and in contrast, a less liquid market compels these investors to retain their shares and intervene to improve firm value. As noted by Maug (1998, 65-66),

> a typical example is British Airways' experience, when its senior management came under attack for using unfair competitive practices against one of its smaller rivals, Virgin Atlantic. At the time, the Financial Times noted that Fidelity, the second largest shareholder with a holding of 4.5 percent, "has disposed of almost its entire position, and the Prudential and Standard Life stakes have fallen below 3 percent."[5]

In favour of this, Coffee (1991) and Bhide (1993) reasoned that liquid stock markets obstruct effective governance via direct intervention. However, contrary to popular belief at the time, Maug (1998, 66) argued that this "alleged trade-off between liquidity and control was non-existent." Although, Maug (1998) agreed with the intuition that liquid markets permit large shareholders to easily sell their shares in advance of a predicted fall in stock prices, as opposed to intervening; he also proposed an opposing effect, that more liquid markets encourage corporate governance by allowing large shareholders to accrue larger stakes without significantly influencing the stock price. Maug (1998) considers both effects and concludes that the overall effect of liquidity on corporate control is explicitly positive.

In order to achieve such a strong and important result, Maug (1998) considers a

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[5] *Financial Times*. 1993. "Cleaning up 'the world's favourite airline': British Airways' directors meet today to decide on action," January 21.

single firm economy whose current value is public knowledge and could be increased given restructuring; a manager, who is assumed reluctant to induce these value increasing changes; a large outside shareholder, with the potential to acquire a sufficient fraction of shares to partake in costly monitoring, improve management and implement restructuring; a continuum of small shareholders, referred to as households, occupying the remaining shares and faced with liquidity shocks with positive probability; and lastly, a market maker who sets the market price based on the expected firm value, conditional on the order flow. (Maug 1998, 70-71)

In Maug's (1998) dynamic model, the large shareholder is faced with the decision to either buy additional shares, intervene, and improve management, given she owns an initial stake, α, and that subsequent to buying these additional shares she will have sufficient shares (μ, not necessarily equal to 0.5) to exert voting control and intervene; or to sell a portion of her initial stake and not intervene. The large shareholder realizes profits from both of these activities. As similarly discussed by Shleifer and Vishny (1986), the blockholder not only realizes a direct profit from her initial stake upon intervening (αG), but also, through purchasing additional shares prior to intervening she realizes an indirect profit, due to the informational advantage she has over the uninformed liquidity traders, as her decision to intervene is private, thus market prices are not fully reflective of the adjusted firm value *(P<V*)*. In addition to these profits, the large investor is faced with monitoring/ intervention costs, that she endures solely, once again giving rise to the classic free-rider problem. On the other hand, as similarly discussed by Kahn and Winton (1998), given the blockholder sells her shares, she too can make a profit from trading given her informational advantage, that is, since

the market price P reflects the prospect of intervention, she is able to sell her shares at P>V.

Maug (1998) solves for the subgame perfect equilibrium of this dynamic model. Furthermore, he demonstrates that the large shareholder plays the following mixed strategy: she purchases additional shares, intervenes, and improves management with probability q, and sells and avoids intervention with complementary probability, $1-q$. "All other possible strategies (e.g. sell and monitor, or buy and do not intervene) are strictly dominated" as their associated profits are never positive in any feasible equilibrium, while the expected profits associated with "buy and intervene" and "sell and do not intervene" are strictly positive (Maug 1998, 72). Primarily, the blockholder's initial stake, α, is taken exogenously, allowing for the subgame with a given allocation of shares to be solved. Under this assumption, Maug (1998) solves for a unique mixed strategy equilibrium. Later on, he analyzes the equilibrium size of the blockholder's initial stake after deriving it endogenously. (Maug 1998, 71-72, 75)

As explained above, information asymmetry is key to realizing trading profits; thus, market liquidity not only enables large shareholders to accumulate larger stakes, but also enables them to do so with disguised motives, and thus at favorable terms. As stated by Edmans (2014 27), a consequence "of illiquidity is price impact- a large trade moves the price because the market maker fears that the trader is informed. In turn, price impact can be reduced by the presence of investors who trade for non-informational reasons, such as financing consumption", or in this case, households facing liquidity shocks. Based on the above assumptions, Maug (1998) demonstrates that, if and only if, the exogenously given initial block size, α, is sufficiently small, this advantage of

liquidity outweighs the cost. With regard to larger stakes, the role of liquidity is less significant, as there already exists "sufficient incentive to intervene" without purchasing additional shares (Edmans 2014, 27).

Maug (1998) extends this model to analyze the equilibrium size of the large shareholder's initial stake. Particularly, he assumes the blockholder chooses her initial stake endogenously via an observable purchase in the first stage of the game. Intuitively, a larger initial stake, α, implies a less liquid market, since households own a smaller fraction of the shares (1-α), thus decreasing her predicted trading profits. On the other hand, such an initial holding makes the return on the firm's shares more notable for the large shareholder, thus increasing her intervention incentives. Consequently, she can choose a larger initial stake thus relinquishing herself to more interventions, or she can select a smaller stake evading such a commitment. Maug (1998) proves that the equilibrium size of the large shareholder's initial stake is such that the capital gain on her stake does not completely offset the monitoring/intervention costs. Consequently, being able to buy additional shares in the stock market at a price unrevealing of her improvements, that is, being able to cover her monitoring costs through informed trading, motivates her to monitor/intervene. As a result, Maug (1998) reaches his central conclusion, contrary to popular belief, that a more liquid market increases the large shareholder's incentive to monitor, since it enables her to fully recover her intervention costs via informed trading. Specifically, under the above assumptions, Maug (1998, 80) proves that "her equilibrium probability of monitoring the firm and intervening increases strictly in the liquidity of the stock market". In other words, increased liquidity has a positive effect on corporate control. (Maug 1998, 78-81)

Furthermore, Maug (1998) discusses two different intervention/restructuring approaches and the impact of liquidity. He considers intervention through hostile takeovers and intervention through less antagonistic techniques, with respect to both their effectiveness (determined by the likelihood of successful restructuring) and costs. His findings illustrate that given an illiquid market, large shareholders are unable to cover the costs associated with intervention, through trading, thus the large shareholder favours the cheaper approach. On the other hand, given a more liquid market, the large shareholder realizes profits through informed trading as discussed earlier. These profits reflect the stock's unpredictability; as a result, she will be partial towards the approach that is more likely to have a greater effect on firm value and stock price. The associated cost in this situation is less significant as it can be covered through informed trading. Consequently, in this case, the large shareholder favours the more effective approach. In other words, Maug (1998) determines that liquid stock markets encourage effective corporate governance. Mathematical analysis and further discussion of Maug's (1998) results are presented in Section IV. (Maug 1998, 68, 83-89)

Fraure-Grimaud and Gromb (2004) identify a distinct advantage of liquidity, based on different assumptions. As opposed to modeling liquidity as the ability to disguise one's trade à la Kahn and Winton (1998) and Maug (1998); Fraure-Grimaud and Gromb's (2004) main findings are based on the assumption that the blockholder is unable to trade secretly. Specifically, they examine the impact of public trading on a large shareholder's incentives to engage in costly intervention.

Fraure-Grimaud and Gromb's (2004) model assumes that public trading plays a role in determining the stock price by impounding information regarding firm value and

the large shareholder's activity, via speculators, into these prices. Specifically, liquidity traders, a speculator and a market maker engage in public trading. The speculator can attain information regarding firm value, which is reflective of the blockholder's actions, at a cost, and then submit an order demand based on what he observes; while the competitive market maker is responsible for the stock price formation, that equals the expected firm value conditional on the trade orders submitted by the speculator and liquidity traders anonymously. Thus, in equilibrium, stock price informativeness is partly determined by the "speculator's decision whether to become informed" and his consequent trading strategy (his submitted order flow) (Fraure-Grimaud and Gromb 2004, 992). Further, the "speculator's decision whether to become informed" in the first place relies on his ability to disguise his intentions to some extent and avoid his trade perfectly reflecting his information and spoiling his prospects of realizing a trading profit (992). Following this, it is intuitive that trading by informed speculators is encouraged by stock liquidity. (Fraure-Grimaud and Gromb 2004)

Fraure-Grimaud and Gromb (2004) consider a model consisting of an inside blockholder with the ability to directly affect firm value; and otherwise dispersed shareholders (outsiders), who engage in the public trading of their shares. The model consists of four periods. At time 1, the insider decides whether or not to intervene. Through exerting a costly level of effort, e, that is privately observed, the insider is able to increase firm value. This value, V*, is realized at time 2, however is not publicly apparent until the final stage of the game. The speculator can however decide to privately observe the firm value at time 2 and become informed at a cost. Additionally, during the second stage, liquidity traders, a speculator, and a market maker engage in

public trading; and the stock price is formed, as described above. Subsequently, at time 3, the insider faces a publicly witnessed liquidity shock with positive probability, such that she is required to sell her entire stake. Finally, at time 4, the firm's value becomes public knowledge and shareholders realize their payoffs. (Fraure-Grimaud and Gromb 2004, 989-990)

Similarly to Kahn and Winton (1998) and Maug (1998), there exist two components that motivate the insider to participate in these value-increasing activities: her direct return on her initial stake, and the indirect incentive of trading profits. However, unlike the models developed by Kahn and Winton (1998) and Maug (1998); Fraure-Grimaud and Gromb (2004) extend their analysis to consider the publicly observed event in which the insider may be faced with a liquidity shock and forced to sell her entire stake before her value-increasing impact is realized by the public. Note that this assumption may be weakened to only a portion of her stake, yielding similar results. Supposing the blockholder will inevitably face this liquidity shock; she will only partake in the implementation of this value-increasing action so far as it is mirrored in the stock price. If however, there is only a trivial amount of information reflected in the price, the insider has little motivation to participate in such undertakings, since $P<V^*$. Public trading however, as assumed above, can increase price informativeness and reduce this level of information asymmetry, forcing P closer toward V^*. From this it follows that blockholders' incentives to participate in firm value-increasing activities (intervention) can be increased through public trading, and therefore through more liquid stock markets. (Fraure-Grimaud and Gromb 2004, 985-986)

2.2 The Trade-Off between Ownership Structures

Thus far, with the exception of Maug's (1998) extended model, the effect of liquidity on intervention incentives for a given block size, α, has more or less dominated the discussion. However, it is also important to note that liquidity plays a role in determining the initial block size formed. Bolton and von Thadden's (1998) analysis of market liquidity concentrates on this initial ownership structure of the firm. They consider two alternative designs of ownership structure, namely: "dispersed ownership (combined with a takeover mechanism)", which depends on the formation of concentrated blocks through secondary market trading for intervention, when needed; and concentrated ownership, whereby the large shareholder continuously exerts control over management (2). Furthermore, they establish a model to analyze the costs and benefits associated with such ownership structures. Specifically, they are concerned with the liquidity and risk diversification benefits associated with dispersed ownership versus the control benefits associated with concentrated ownership. According to Bolton and von Thadden (1998, 3), "if a firm commits to a large controlling block, it decreases the number of shareholders able to partake in trading the firm's stock, consequently reducing the market capitalization and therefore the liquidity of its stock". Conversely, they assume that better exertion of control over managers and therefore improved firm performance results from concentrated ownership. (Bolton and von Thadden 1998, 1-3)

Bolton and von Thadden (1998) demonstrate the trade-off between the opposing ownership structures. They explain that, although firms committing to a large controlling block (concentrated ownership) improve the incentives for controlling management, since the value of the firm and therefore the value of the controlling block

are directly influenced by managerial decisions, they simultaneously reduce potential trading profits for all shareholders, due to the consequent decrease in liquidity trading. Conversely, they show that, maximal ownership dispersion increases trading possibilities, while simultaneously causing lack of control and firm value decline. It is important to note that, initial dispersion does not necessarily indicate dispersion after a subsequent trading round; particularly, a shareholder may purchase a sufficient number of shares to create a controlling block and intervene, given the manager is not behaving optimally from the perspective of the shareholders, and exerting control becomes more crucial. (Bolton and von Thadden 1998, 9)

Bolton and von Thadden (1998) show that, given more vigorous trading in the secondary market and guidelines that encourage acquisitions as a mode of attaining control, a firm is more prone to select a dispersed ownership structure. Furthermore, they establish that increased secondary market liquidity trading on its own assists in takeovers through mitigating the free rider problem. From a more broad-spectrum perspective, Bolton and von Thadden (1998) illustrate that under various firm characteristics and operating circumstances, both ownership structures can in fact be ideal. Specifically, they find that "higher average liquidity demanded by investors, lower costs of controlling management, higher potential benefits from correcting managerial failures, and higher transaction costs for secondary market trading all favor a dispersed ownership structure, and vice versa for concentration" (Bolton and von Thadden 1998, 4). The finding that; "lower costs of controlling management and higher potential benefits from correcting managerial failures favor dispersed ownership", seems counter-intuitive (4). Bolton and von Thadden (1998) explain that although higher control-

benefits make initial ownership concentration more appealing; they also make concentration more easily attainable through secondary market trading, by reducing the stake required for effective intervention. Further, since concentrated ownership reduces potential trading profits for all shareholders, by decreasing liquidity trading, a dispersed ownership structure with dependence on secondary market trading for intervention is favoured. Similar reasoning follows for lower intervention (controlling) costs. (Bolton and von Thadden 1998, 4, 21)

2.3 Control Transfers and Inefficiencies

Burkhart, Gromb, and Panunzi (2000) take a slightly different direction to the literature previously discussed and focus on control transfers and various transfer modes. Specifically, given a controlling shareholder, Burkhart, Gromb, and Panunzi (2000, 648), add to the ongoing research regarding the "efficiency of corporate control allocation" through the evaluation of control transfers and the selection of transfer modes. The theoretical view regarding such transfers at the time this paper was written was greatly influenced by two opposing effects of blockholder control. Either, control could be transferred from the existing shareholder to a more efficient manager, benefitting small shareholders and increasing firm value, or, it could be transferred to a blockholder whose principal incentives are to extract private benefits at the expense of small shareholders. Empirical evidence suggested that small shareholders typically benefitted from block trades, encouraging the assumption that block trades are in fact efficient. However, according to Burkhart, Gromb, and Panunzi (2000), this theory is incomplete and thus the implications of the empirical evidence tainted. (Burkhart, Gromb, and Panunzi 2000, 647-648)

Burkhart, Gromb, and Panunzi (2000) demonstrate that distinctive final ownership concentrations result from different transfer modes. These various ownership concentrations in turn impact the motives of the new controlling management team. Furthermore, they note that the transfer mode selected may not maximize firm value, demonstrating that the "choice of transfer mode itself can be subject to agency problems" (649). Thus, regardless of whether the transfer results in an improvement in firm value, it does not necessarily imply that the firm value is maximized nor that this is the best possible result. (Burkhart, Gromb, and Panunzi 2000, 648-649)

Specifically, Burkhart, Gromb, and Panunzi (2000) consider a firm with a minority blockholder (with α shares, exogenously given) referred to as the incumbent, and otherwise dispersed shareholders (1-α dispersed shareholders). The incumbent realizes private benefits of control, extracted at a dead weight loss, with equal impact on each share's value. A potential acquirer, referred to as the rival, with no prior shares, enters, such that by becoming the firm's largest shareholder, she can take control and augment the block's total value (the security benefits associated with the block and the extracted private benefits). In order to achieve such a controlling block, she is faced with alternative methods of transfer; she can either trade privately with the incumbent, make a public tender offer, or both. Note that complete information, no discounting, no transaction costs, and risk-neutral agents are all assumed in this model. (Burkhart, Gromb, and Panunzi 2000, 651)

Burkhart, Gromb, and Panunzi (2000) assume a dynamic game consisting of 4 stages, solved by backward induction. The sequence of actions are as follows. Initially, the incumbent and rival have the option to trade privately, modeled as Nash bargaining,

in which they negotiate on the portion of shares transferred and the associated price. Additionally, they can discuss a "standstill agreement" in which the incumbent agrees not to purchase any more shares (651). However, in the case where this agreement is not reached or does not stand, a takeover contest occurs, whereby the rival makes an unrestricted tender offer and the incumbent has the option to counterbid. Note that these offers only stand given a sufficient fraction of dispersed shares are tendered. The conditional nature of this offer guarantees the existence of an equilibrium. Subsequently, the incumbent and rival each decide whether to tender, themselves, and if so how many shares to tender. Having witnessed these decisions, the dispersed, atomistic shareholders non cooperatively choose whether to tender and if so to which team. In order to choose among numerous equilibrium outcomes in this stage, Burkhart, Gromb, and Panunzi (2000) use the Pareto dominance criterion. Finally, the firm's largest shareholder distributes the firm's resources to produce private benefits, or security benefits- which accumulate to all shareholders. This allocation decision is modeled as the choice of her level of private benefit extraction. (Burkhart, Gromb, and Panunzi 2000, 651-652)

Utilizing this model, Burkhart, Gromb, and Panunzi (2000) develop and prove their main contributions. Initially, they demonstrate that the level of private benefit extraction, selected by the controlling shareholder, is dependent on her stake. Specifically, they prove that this level of extraction decreases strictly with her stake. This follows intuitively, since a larger stake requires her to incur more of the dead weight loss associated with her extraction and thus internalize fewer of the gains. Consistent with Shleifer and Vishny (1986) and Edmans and Manso (2011), this indicates a positive relationship between share value and the controlling shareholder's

stake. This result is crucial in demonstrating the importance of the mode of transference, as discussed later. (Burkhart, Gromb, and Panunzi 2000, 655)

Subsequently, given the incumbent and rival enter a standstill agreement, Burkhart, Gromb, and Panunzi (2000, 658) deduce that the entire block will be privately traded resulting in a "coalition-efficient outcome".[6] Recall that the level of private benefit extraction depends on the rival's final stake. Thus, they demonstrate that the benefits from such a sale are maximized when the rival acquires the entire block and incurs all the inefficiencies of extracting private benefits imposed on the value of the block. Consequently, privately negotiated block trades "preserve the low ownership concentration, the corresponding high level of inefficient private benefit extraction," and the relatively low firm value (658). (Burkhart, Gromb, and Panunzi 2000, 658)

Conversely, Burkhart, Gromb, and Panunzi (2000) prove that takeover contests, under effective competition, result in more concentrated ownership (a larger stake being held by the new controlling shareholder), than private block trades, and thus, in a lower level of private benefit extraction. Recall that there exists a positive relationship between share value and block size, thus, the above result implies that public acquisitions result in higher firm value, as compared to private block trades. However, due to the free rider problem, the bid price must equal the post-takeover value. As a result, the new controlling shareholder realizes no profit on the tendered shares and thus is not compensated for her forgone private benefits resulting from her increased stake. Thus, acquiring these shares in a takeover is considered disadvantageous. Consequently,

[6] When negotiating private trades an incumbent-buyer coalition is considered. The conditions under which the block is traded must satisfy both the incumbent and the rival, giving rise to a coalition-efficient outcome.

the incumbent and rival prefer to privately trade the entire block and enter a standstill agreement, despite the forgone efficiency gains. Thus, demonstrating how the transfer mode can itself be "subject to agency problems" (649). (Burkhart, Gromb, and Panunzi 2000, 658-659)

One solution to this agency problem discussed by Burkhart, Gromb, and Panunzi (2000) is the EOR, Equal Opportunity Rule. The EOR prohibits private block trades, thus pushing the incumbent and rival straight into the public acquisition stage. Consequently, the rival becomes the controlling shareholder by securing more shares (compared to a privately negotiated block trade), which in turn decreases the level of inefficient private benefit extraction and improves the firm value, thus eliminating the agency problem. (Burkhart, Gromb, and Panunzi 2000, 661)

Lastly, Burkhart, Gromb, and Panunzi (2000) discuss the privately negotiated block transfer price and its determinants. They show that the block is traded at a premium in terms of the post-transfer share value, which is consistent with empirical findings. This premium is comprised of two terms: a negotiated fraction of the coalition's (joint incumbent and acquirer's) surplus from avoiding the takeover contest and the product of the block size and the difference between the higher post-takeover value (alternative option) and the post-transfer value. Consequently, they demonstrate that the premium decreases with the initial block size. This follows intuitively, since an increase in the initial block size, decreases the surplus realized from avoiding a takeover contest, and increases the post-transfer value due to the positive relationship between share value and block size. Furthermore, Burkhart, Gromb, and Panunzi (2000) deduce that increasing the small shareholders' payoffs in a takeover contest increases the block

premium. For example, as the tender offer price increases, more small shareholders are willing to tender their shares, which results in a more concentrated ownership structure. This increases the small shareholders' payoffs while simultaneously reducing the rival's level of private benefit extraction. Thus, the surplus from avoiding the takeover increases as well as the post takeover value, resulting in a higher block premium. Consequently, it is important to note that factors which influence alternative transfer modes (specifically, takeover contests) impact block trades and premia. (Burkhart, Gromb, and Panunzi 2000, 662-664)

Similarly, Marquez and Yilmaz (2008) examine takeover contests as a means of acquiring/transferring control, while pinpointing some of the associated agency problems and inefficiencies. Specifically, they are concerned with the part that private shareholder information plays in takeovers.

Marquez and Yilmaz (2008) commence with a symmetric information benchmark, in which n>2 risk neutral shareholders, each possessing a single share of the firm, and a risk-neutral raider are each fully informed about the true post-takeover firm value. From this benchmark, a component of private information is incorporated, such that, shareholders are assumed to have private information regarding the post-takeover firm value. Particularly, with positive probability either the post-takeover added value is zero or negative, referred to as the "bad" state, and with complementary probability, the added value is positive, referred to as the "good" state. Each shareholder receives a noisy private signal ($s_i \in [0,1]$) regarding the post-acquisition value, indicating asymmetric information across shareholders. Based on this signal, each shareholder updates his belief of the state of the world, by Bayesian updating. Prior to the

shareholders observing their private signals, the raider presents an unconditional tender offer, p (per share price), for the equity shares of the firm. Upon observing their private signals and the tender offer, the shareholders simultaneously decide whether to tender or reject the offer. Shareholders' tendering decisions depend on their private information. Marquez and Yilmaz (2008) concentrate on the symmetric Nash equilibria of the dynamic game, and demonstrate the uniqueness of the symmetric Nash equilibrium of the tendering subgame. (Marquez and Yilmaz 2008, 1078, 1081-1082)

From this model, Marquez and Yilmaz (2008) primarily demonstrate that the raider suffers from a "lemons problem" due to the classic free-rider problem in takeovers resulting from the dispersed ownership structure. Specifically, they show that for any per-share price offered by the raider, privately informed shareholders who expect a higher value for their shares post-acquisition (based on their signals) will be reluctant to tender, while the shareholders who observe signals that indicate a relatively low post-acquisition firm value will be prepared to tender. Thus, the costs the raider faces to encourage shareholders, whose signals indicate the "good" state, to tender their shares is too steep, since, in the case of the "good" state, the raider makes no profits, and conversely, in the "bad" state he pays a premium for the shares. Intuitively, as the number of shareholders increases, the firm structure becomes more dispersed and the probability that any single shareholder is pivotal decreases, exacerbating the free-rider problem, and therefore, the lemons problem. Due to these difficulties faced by the raider, the likelihood of successful value-improving acquisitions decreases. (Marquez and Yilmaz 2008, 1082-1083)

Furthermore, Marquez and Yilmaz (2008) extend the model to account for some other motive the raider may have, perhaps, the ability to extract a private benefit from the acquisition. In such cases, this private benefit encourages the raider to make a tender offer, even in situations where he may be unable to positively affect firm value, therefore altering his bidding behavior and consequently the outcome. From this extension, they derive two well defined results, dependent on the magnitude of the value of the private benefit. Specifically, in the case of a low valued private benefit, the raider is aware that if his offer price is relatively low, the takeover will only succeed if the expected post-acquisition share value is also relatively low, due to the majority of shareholders observing a low signal. In such a situation the optimal offer price is such that it is marginally higher than the per-share value, ensuring a successful takeover. Although the raider faces a loss on each share, by decreasing the offer price this loss can be "made arbitrarily small, taking it in the limit to 0," the post-takeover value in the bad state (1087). The raider's low valued private benefit is sufficient to cover his small loss. It is important to note that, this small benefit encourages him to bid in such a manner that the takeover is successful if and only if the post-acquisition added value is zero, or even negative, preventing the efficient allocation of the firm. In such cases, value destroying acquisitions are rendered more likely to be successful than value-increasing ones. (Marquez and Yilmaz 2008, 1085-1087)

Conversely, given a high valued private benefit, Marquez and Yilmaz (2008) demonstrate that it is optimal for the raider to propose a higher tender offer price and encourage tendering more frequently, since the prospective reward of the private benefit is adequately large that it is no longer as important to minimize the per-share loss.

Specifically, they illustrate that the equilibrium tender offer price tends to the lowest price required to always ensure a successful takeover, particularly, a value greater than that expected of the tendered shares. Due to these constantly successful tender offers, under the assumption of "no value destroying acquisitions" (non-negative added value from takeovers), allocative efficiency is achieved (1087). Furthermore, it is important to note that although the equilibrium price exceeds the expected value of the tendered shares, indicating that the raider pays a premium for the shares acquired, this price is strictly less than the post-acquisition value in the good state. This indicates that shareholders fall short of realizing the entire profit from the raiders who increase the most value. Nevertheless, shareholders benefit as a result of their private information when the raider's private benefit is adequately large. (Marquez and Yilmaz 2008, 1086-1087)

From this model we observe that private information influences the efficiency of acquisitions and impacts the distribution of profits amongst shareholders and the raider. (Marquez and Yilmaz 2008)

2.4 Interaction between Internal and External Corporate Governance

Of the papers discussed above, each has assumed that given a sufficiently large stake and adequate incentive, a blockholder is able to directly affect firm value either via takeovers, proxy fights or directly negotiating with the manager himself. "Optimal Corporate Governance in the Presence of an Activist Investor" is the first theoretical paper to examine the interaction of internal and external corporate governance; specifically, when a corporate manager is dually concerned with maximizing firm value and his own reputation (Cohn and Rajan 2010). External governance is illustrated by an

outsider who gathers firm-specific information and becomes an activist shareholder; while, the board, representing internal governance, is responsible for mediating between the activist investor and the manager. All agents are assumed to be risk-neutral. (Cohn and Rajan 2010)

Given managers and shareholders share the same concerns, that is, maximizing firm value, Cohn and Rajan (2010) intuitively state that the manager will factor in all additional information attained by the activist in order to achieve this common goal/interest. However, in their paper, maximizing firm value is not the manager's sole concern, he is also focused on his reputation, which in turn motivates inflexibility and hinders him from reversing or changing prior decisions, potentially leading to a decrease in firm value. Thus, internal governance mechanisms are required to implement changes where deemed favorable. (Cohn and Rajan 2010, 1)

In Cohn and Rajan's (2010) model, the manager selects one of two mutually exclusive projects (project A and project B) with equally ambiguous payoffs. Note that the game described below is symmetric in projects A and B. At time 0, the manager privately observes an imperfectly informative signal regarding the project payoffs, with accuracy based on his ability, specifically high or low ability, with the high type manager receiving a more precise signal. The manager makes his decision based on this signal; by assumption, he is rational, thus he commences with the project for which he receives the signal depicting the higher payoff. Subsequently, at time 1, an outside investor decides whether to partake in the costly gathering of information regarding the project payoffs, by generating a noisy signal. If acquired, the accuracy of the outsider's publicly observed signal falls below that of the high-ability manager, and above that of

the low-ability manager. If she can influence the firm to make a value-improving change, she realizes a return on her activism. (Cohn and Rajan 2010, 6-8)

Given disagreement of the signals received by the manager and the activist, at time 2 the manager is faced with two options; he can change to the other project, that is, concede, or, he can continue with his initial project, that is, fight. Clearly, the efficient decision to maximize firm value is to concede if he is a low-type manager, and otherwise fight. However, as mentioned earlier, the manager is also concerned with his reputation, which is dependent on investors' posterior beliefs over his type, which are updated at time 3, before the project payoff is realized (at time 4). Thus, providing adequate incentive for the low-type manager to imitate the high-type by fighting. (Cohn and Rajan 2010, 7-9)

In this model, the board has two responsibilities. Primarily, it selects a level of screening over the manager, at time 0, which later (at time 2) provides information regarding the manager's type, in the form of an imperfectly informative signal. Note that the higher the level of screening, and thus the higher the cost, the more accurate the signal received at time 2. And secondly, after observing the signal, given that the activist's and manager's signals conflict and the manager fights, the board has adequate authority to uphold or intervene and overrule his decision. This also occurs in period 2 of the game, prior to investors updating their beliefs. Furthermore, under the same assumption of conflicting signals, given the manager concedes, the board upholds his decision. On the other hand, given the signals received by the manager and activist agree, the manager continues with the project initially selected and shareholder value is maximized. In this case the board has no reason to overturn the manager's decision and

so remains passive. Similarly, the board remains passive if the outside investor decides not to enter. Cohn and Rajan (2010) focus on the more complicated case in which the outside investor enters and receives a signal that is inconsistent with the manager's. (Cohn and Rajan 2010, 9-10)

Cohn and Rajan (2010) consider a perfect Bayesian equilibrium of the dynamic game described above. Consequently, the board's intervention decision is a best response conditional on its level of screening selected at time 0 and the manager's strategy at time 2. Thus, the board is unable to commit to an intervention strategy. Additionally, the beliefs updated by the board and investors at times 2 and 3 respectively, regarding the manager type, are congruous with Bayes' rule whenever feasible. (Cohn and Rajan 2010, 9)

Cohn and Rajan (2010) consider three cases with respect to the manager's level of concern for his reputation. In the case where a low-ability manager and an activist receive conflicting signals, and the manager has little concern for his reputation, the low ability manager concedes, giving rise to a separating equilibrium. This equilibrium is efficient as the firm-value is maximized. On the contrary, in the case where a low-type manager is highly concerned with his reputation, he fights, giving rise to a pooling equilibrium, which is clearly inefficient. Furthermore, in the case where the low-type manager is only moderately concerned with his reputation, his response is a combination of fighting and conceding, giving rise to a hybrid equilibrium, which is inefficient due to the continued implementation of the less profitable project at least a portion of the time. This case is further considered below. (Cohn and Rajan 2010, 3)

Based on the assumptions of the model, a manager who fights and whose decision is not overturned is more likely to be viewed as a high-type manager by other investors. This leads us to Cohn and Rajan's (2010) first contribution that better governance can encourage the manager to fight. Specifically, they determine that when low-type managers are somewhat reputation conscious, more rigorous governance by the board can exacerbate the agency problem it is intended to remedy. Recall, when the low type manager is only moderately concerned with his reputation, his response is a mix between fighting and conceding (given conflicting signals). Additionally, under these conditions it is assumed that the board only overrides the manager when it receives the low-ability signal. Thus, fighting and not being overruled suggests to the investors that the manager is the high-type. Furthermore, the more precise the board's signal, the stronger this effect. Subsequently, the low-ability manager has greater motivation to fight as the board increases its investment in the signal. As a result, in this situation, the board's optimal strategy is to remain completely passive. (Cohn and Rajan 2010, 3, 15-16)

Cohn and Rajan (2010) show that when the manager's reputational concern increases to a certain point, there is a discontinuous shift in the level of governance. At this point, the board optimally chooses informed governance, where it invests a determinate amount in the screening technology, and overrules the manager when it believes him to have pursued the wrong project. More specifically, if the "activist's information is noisy" and thus "external governance is weak, the board over-invests in internal governance" to motivate the activist to increase her level of participation and therefore the accuracy of her information (26). As the accuracy of the activist's

information increases, less of an investment by the board is required, thus the degree of internal governance decreases, while the level of external governance increases. In this case, Cohn and Rajan (2010) refer to internal and external governance as substitutes. Beyond a threshold however, the two forms of governance become complements. As the accuracy of the activist's information increases, recognizing a low-type manager and overturning his decision becomes increasingly valuable. Consequently, the board increases its level of internal governance by increasing its investment in screening technology. Finally, once the level of external governance is considered high, the board completely depends on the activist's publicly observed signal and avoids screening the manager at all. In this case, external governance is an absolute substitute for internal governance. (Cohn and Rajan 2010, 25-27)

3.0 INTERVENTION THROUGH "EXIT"

Edmans (2014) poses the following question with regard to blockholders: "in the context of voice theories … if they cannot intervene, why do they exist, given that holding an undiversified stake is costly from a risk perspective?" (29). It is no secret that many of the mechanisms previously discussed are challenging to implement, some of which require specialists in the field. And even with expertise, successful implementation of these mechanisms may still be difficult to achieve. Furthermore, Edmans (2009) reports that intervention through voice in the U.S. is infrequent due to the blockholders' characteristically small size and the substantial legal and institutional barriers with which they are faced.[7] As discussed in the previous section of this report, a small stake, α, decreases intervention incentives, by reducing blockholders' direct returns, αG, and the probability of a successful proxy fight and consequently effective jawboning (Edmans 2014).[8]

Over the past decade, an alternative form of activism has emerged in the literature, commonly termed "exit", of which Admati and Pfleiderer (2009) and Edmans (2009) are the primary advocators. They demonstrate that although a blockholder may be unable to exert governance in the form of "voice", she can still exercise control

[7] Edmans (2014) noted that in 2009 Holderness found that 96% of US firms consisted of a shareholder with at least a 5% stake; however, in 1999, La Porta, Lopez-de-Silanes, & Shleifer reported that only 10% (20%) of medium (large) US firms consisted of a blockholder with at least a 20% stake- the threshold necessary to exercise control. Additionally, according to Roe (1990), the US has both legal and political restrictions on large block formations.

[8] According to Edmans (2014), the blockholder's influence over managerial decisions may be related to the threat posed by a proxy fight if managers refuse to comply.

through “exit”. Following Edmans (2014), henceforth assume V* represents the firm’s long-run fundamental value after the manager has taken an action (effort or investment), and P denotes the interim (short-run) stock price. As will be discussed below, it is common for the manager of a firm to be concerned with both the long-run fundamental value and the short-term stock price, which can lead to managerial inefficiencies from the perspective of shareholders.

Specifically, Edmans (2009) considers a single firm whose shares are owned by a risk-neutral blockholder (α shares) and the remaining shares (1- α) by a group of risk-neutral, atomistic small shareholders. Additionally, he considers a 3 period model. At time 1, a short term earnings announcement in the form of a signal ($s \in \{s_g, s_b\}$) is made, where s_g and s_b represent high earnings and low earnings, respectively. With regard to the fundamental firm value, V*, this signal is imperfectly informative. Particularly, if short term earnings are high, $s = s_g$, this implies V* is high with certainty, however if short term earnings are low ($s = s_b$), this implies V* is high or low, with equal probability. Subsequently, at time 2, the blockholder decides on a costly level of monitoring intensity, which provides her with a private signal regarding V*. Specifically, the accuracy of her private signal depends on her level of monitoring intensity, such that, as her monitoring intensity increases, likewise the precision of her signal. Given low short-term earnings, this private signal helps the blockholder determine whether the low earnings are due to low firm quality or a favourable investment. Following this, a round of trading occurs. Particularly, the blockholder either demands no shares, or sells a portion of her stake ($\beta \leq \alpha$), while liquidity traders submit an order demand, u, which is exponentially distributed. Note that liquidity trades

often originate from current investors, specifically, small shareholders in this case. The competitive market maker then observes the total order demand. Based on this total order demand and the publicly observed signal at time 1, the competitive market maker forms a conditional expectation of the fundamental firm value, V*, and sets the short term stock price, P, equal to this expectation. Finally, at time 3, the fundamental value of the firm is publicly realized. Edmans (2009) solves for the Nash Equilibrium of this game. In such equilibrium, the "blockholder's monitoring and trading decisions are optimal, given the competitive market maker's pricing strategy; and given these decisions, the market maker's pricing function yields him zero profit" (2489). (Edmans 2009, 2487-2489)

Based on the above model, Edmans (2009) evaluates how outside blockholders, who are unable to directly affect the firm's value through voice, can encourage management to adopt efficient real investment via informed trading; that is, by monitoring and collecting private information regarding the firm's fundamental value, V*, and impounding it into market prices, such that they reflect fundamental value rather than current earnings. In other words, informed trading provides incentives for managers to select investment options that are more aligned with increasing the long-run fundamental firm value rather than short term profits. He demonstrates that outside blockholders can mitigate managerial myopia, and in doing so, he shows that although outside shareholders are not directly involved in a firm's managerial operations, they can still exert governance via "exit" and improve firm value notably. (Edmans 2009, 2481)

Managerial myopia can arise if managers are primarily concerned with the firm's short-term stock price, P, and thus avoid investing. This may occur since the profits associated with investments are only publicly realized in the long run (at time 3) while the instant effect is a reduction in short-term earnings. It is important to note that small-shareholders make their decisions based on publicly available short-term earnings. In contrast, a blockholder's comparably sizeable stake encourages her to collect information regarding V* in order to determine whether the reduced short term earnings are attributable to low firm quality or reflect favourable long-term investment. Given they reflect low firm quality, Edmans (2009) demonstrates that it is most beneficial for the blockholder to sell her stake, impounding this negative information into the stock price, driving it down and likewise the manager's equity return, punishing him. In contrast, given the low earnings reflect favourable long-term investment, Edmans (2009) shows that the blockholder retains her stake. By retaining her stake, her positive information is reflected in the market price, such that it weakens the decline due to low short term earnings, rewarding the manager. Thus, by trading on her information, she influences prices to more closely mirror the true fundamental value as opposed to short-term earnings; which demonstrates an improvement in market efficiency and therefore, in real efficiency. This follows since the manager is prepared to assume investments that increase fundamental value even in the case where they reduce short-term earnings. This disciplining act not only addresses managerial myopia but also punishes managers who are underperforming, making unproductive ("bad") investments, or extracting private benefits, while rewarding those who are taking actions so as to maximize the fundamental value of the firm. (Edmans 2009, 2482)

This beneficial effect of liquid trading on investment was in great contrast with the mainstream way of thinking at the time. Popular belief in the 1980s and 1990s suggested that short-term trading encouraged managers to concentrate on short-term earnings, and thus it was argued that by decreasing liquidity, blockholders who learnt the firm was performing badly would find it more challenging to "exit", and would be forced to display "loyalty" to the firm. Edmans' (2009, 2496) model however assumes that "loyalty and exit are mutually exclusive", and demonstrates "complementarities between them." Specifically, given a liquid market and low short-term earnings, if upon receiving private information a blockholder retains her stake, this is an indication of high firm quality. In contrast, in an illiquid market, upon receiving private information, whether reflecting low firm quality or a favourable investment, she is unable to exit; thus retaining her shares is uninformative. Consequently, as reported by Edmans (2009, 2496), "the power of loyalty relies on the threat of exit." From this it follows that long-term investment is encouraged by "conditional loyalty" and the "threat of exit" (2485). Additionally, Edmans (2009) specifies that liquidity results in blockholders: trading more aggressively, other things equal; collecting more private information, as they can capture more trading profits, and securing larger initial stakes, as liquidity permits them to sell more upon receiving unfavourable information; all of which result in prices that more closely reflect the fundamental value. Thus, similar to voice theories, liquidity can be desirable, resulting in greater price efficiency. (Edmans 2009, 2484-2485, 2496-2497)

Akin to direct intervention (voice), block size also plays an important role in determining the effectiveness of exit. Edmans (2009) addresses the concern of block

size, whereby he expresses that not only are large stakes unnecessary for exercising governance, but they may also be unfavourable. In this model, trading profits in part reflect the amount of shares sold upon receiving bad news regarding firm value. However, in the case where blocks grow too big, market liquidity decreases to the point at which it is no longer feasible for her entire stake to be sold, as the price impact would be too great. As a result of reduced trading profits, blockholders procure less costly information, causing prices to become less efficient. However, Edmans (2009) demonstrates that, up to this turning point, there exists a positive relationship between block size and trading profits, the amount of private information gathered by the blockholder, and price efficiency. It is therefore correct to assume that "block size has a non-monotonic effect on firm value," as determined by Edmans (2009, 2484). (Edmans 2009, 2484-2485, 2490-2493)

Edmans and Manso (2011) extend this study to consider multiple small blockholders, as similarly discussed in the context of voice. To their knowledge, this model is the first to consider blockholders who engage in corporate governance through both voice and exit, and analyzes the trade-off between them. Further, unlike some of the previous models discussed, Edmans and Manso (2011) assume the risk neutral manager owns a stake in the firm. Specifically, they assume the manager owns α shares, each risk-neutral blockholder owns $\frac{\beta}{N}$ shares, where N represents the number of blockholders, and the remaining $(1 - \alpha - \beta)$ shares make up the free float. Edmans and Manso (2011) consider a two stage game with 3 types of players: the manager, blockholders and a competitive market maker; where each stage is solved independently. In stage 1, the manager takes a personally costly action. This action

includes any decision that improves firm value, and is privately known by the manager. Additionally, the N blockholders each take individually costly, publicly observed actions that impact firm value. These actions include: providing the manager with recommendations, preventing the manager from extracting private benefits, or personally extracting benefits. Note that in the central model, Edmans and Manso (2011) assume perfect substitutability of the manager's and blockholders' actions. In stage 2, trading occurs between blockholders, liquidity traders, and a competitive market maker. Specifically, blockholders are perfectly informed with regard to the firm's fundamental value, V*, at no cost, whereas the liquidity traders are uninformed in this respect. Upon observing V*, each blockholder submits their order flow, along with the uninformed liquidity traders. The market maker then observes the total order flow and forms an expectation of the firm value. Subsequently, he sets the price, P, equal to this expectation. (Edmans and Manso, 2402-2405)

Edmans and Manso (2011) note that the rational manager seeks to maximize his profits (the value of his shares minus the cost of his effort, exerted in stage 1), while similarly, each blockholder seeks to maximize their profits (fundamental value of their shares and their trading profits minus the cost associated with their effort, exerted in stage 1). They use backward induction to solve for the equilibrium of the game. Specifically, taking the decisions of the manager and blockholders from stage 1 as given, they demonstrate that the equilibrium of the trading stage is unique and symmetric. Additionally, they demonstrate a unique symmetric equilibrium when solving for the optimal actions of the manager and blockholders in stage one. (Edmans and Manso, 2405-2407)

Recall, from the previous section of this report, that more concentrated blocks maximize the efficiency of governance through direct intervention, since larger (more concentrated) stakes help overcome the free-rider problem and maximize intervention incentives. As explained below, Edmans and Manso (2011) come to a very different conclusion when considering exit.

They explain that although dividing up a block weakens direct intervention and gives rise to a free rider problem, it also strengthens exit, since multiple blockholders trade aggressively, feeding more information into prices such that they move closer to the true fundamental value of the firm and in turn reflect the manager's efforts (prices are more informative). Recall that in doing so blockholders discipline the manager for his actions.[9] (Edmans and Manso, 2396)

It is important to note however that the threat of exit to punish the manager for underperforming is only plausible given it is dynamically consistent. Edmans and Manso (2011) explain that blockholders are primarily concerned with maximizing their trading profits at the expense of liquidity investors. According to Edmans and Manso's (2011) analysis, a single blockholder, upon receiving bad news regarding firm value, will restrict her order so as to lessen the information impounded and reduce the price

[9] According to Edmans & Manso (2011), given the manager is underperforming or extracting private benefits, typically the stock price is not immediately affected since this information is not publicly available. However, blockholders who are either automatically informed or monitor the firm closely can observe such behaviour. Thus, given the manager is depleting firm value, the blockholders will sell their shares which decreases the stock price and likewise the manager's equity return, punishing him. On the other hand, given a high quality firm with well performing management, even in the face of low short-run earnings, the blockholders will retain their shares, displaying loyalty to the firm, causing stock prices to better reflect this high fundamental value, rewarding the manager. (Edmans and Manso 2011)

impact. The single blockholder tactically selects this small order because in the event she attempts to sell too many shares, other investors will suspect that she has negative information regarding firm performance and will only pay an incredibly low price in return for her shares. This has a negative impact on governance since the manager avoids punishment and the threat of exit becomes implausible. On the other hand, Edmans and Manso (2011, 2396) demonstrate that "multiple blockholders trade aggressively, in order to compete for profits." Each blockholder is aware that the other blockholders have also observed the manager's unfavourable actions and will be selling, causing the stock price to fall. Since other blockholders will be selling and driving the stock price down regardless, she has no incentive to limit the amount she sells in an attempt to avoid forcing the price down too much. Thus, she reckons she may as well sell a large portion of her shares. Since each blockholder reasons this way, they all "sell aggressively as they compete for profits, as in a Cournot oligopoly" (2406). Thus, the quantity of shares sold exceeds that under a monopoly, and prices better reflect the true fundamental value. Consequently, the stock price falls dramatically, effectively punishing the manager, providing sufficient incentive for the manager to avoid engaging in unproductive actions in the first place. Thus, they show that a greater quantity of smaller blocks maximizes the efficiency of governance via informed trading, since a larger number of blockholders results in increased price informativeness and likewise market efficiency. (Edmans and Manso, 2396, 2406, 2408)

Admati and Pfleiderer (2009) add to the discussion on the credible threat of exit by analyzing two pertinent questions. Primarily, given a credible threat of exit, does it "always aid in better aligning managerial incentives with shareholders' preferences?"

(2). And secondly, given a disciplinary impact resulting from the threat of exit on the foundation of asymmetric information (whereby the large shareholder is privately informed), would supplementary information further improve the circumstance? (Admati and Pfleiderer 2009, 2)

In order to address these questions, Admati and Pfleiderer (2009) consider a firm consisting of a privately informed blockholder, a group of small, passive shareholders, and a manager, whose preferences conflict with those of the shareholders'; where all agents are risk neutral. They model two separate agency problems; one in which the manager has the option to take an action from which he receives a private benefit but is considered unfavorable from the shareholders' perspective; and the other in which he can take an action from which he incurs a private cost, but is deemed attractive from the shareholders' viewpoint. Admati and Pfleiderer (2009) refer to these models as model B and model G, respectively, whereby the action in model B is denoted as the "bad" action and that in model G, the "good" action. Specifically, the "bad" action decreases the firm value by some $\delta \geq 0$, while the action associated with model G increases the firm value by the same amount. Although each model renders unique results, they follow a similar sequence of events, thus without loss of generality, consider the 3-period model B. In period 0, upon observing $\delta \geq 0$, the manager decides whether to take the "bad" action. Thus, his strategy is dependent on the realization of δ. Subsequently, in period 1, the large shareholder becomes informed and decides whether to trade her stake. Specifically, she either observes some private information regarding the manager's decision from the previous period, the resulting firm value based on the choice of action, or both. On the other hand, the other investors have incomplete information regarding

either the action, value outcome or both. It is important to note that the large shareholder makes her trading decisions based on both public and her private information. Further, prices are set by a risk neutral competitive market maker, incorporating all public information, which includes the blockholder's informed trading decisions. Thus, her trading decision has the potential to influence the firm's short run price in period 1, and consequently the manager's decision. However, they also assume that with some publicly known, positive probability ($0 \leq \theta \leq 1$) the large shareholder is faced with a liquidity shock and forced to sell her stake, independent of her private information. Although this probability is publicly observed, when the blockholder trades, her true intentions are not obvious to the less informed small shareholders. Finally, in period 2, all investors observe the realizations of the manager's decision and the value outcome. (Admati and Pfleiderer 2009, 6-8)

Admati and Pfleiderer (2009) solve for the Bayesian Nash equilibria of models B and G under different information structures. That is, under different assumptions regarding the information observed by the blockholder and small shareholders in period 1. Both the manager and blockholder seek to maximize their profits. In equilibria, incorporating his private information and taking the blockholder's trading strategy into consideration, the manager makes the optimal decision regarding whether to take the action. Likewise, given the blockholder is not faced with a liquidity shock, she uses her publicly and privately observed information to decide whether to sell her stock. Additionally, both the manager and blockholder take into consideration the fact that the period 1 share price reflects all publicly accessible information (including the large shareholder's informed trading decision). (Admati and Pfleiderer 2009, 8-9)

Utilizing this model, Admati and Pfleiderer (2009) demonstrate that the possibility for informed large shareholders to exit based on their private information frequently assists in decreasing agency costs and aligning managerial decisions with shareholders' preferences, that is, they show that the threat of exit can be credible (even if the actual act of exit does not often occur). They also illustrate that the effectiveness of exit in disciplining management is vitally dependent on the information structure and the type of agency problem faced. Specifically, they find that in the case of dissuading the manager from taking the "bad" (undesirable from the shareholders' perspective) action, the presence of the large shareholder and threat of exit, while often having a disciplinary impact on the manager, also never exacerbates the agency problem. Furthermore, they deduce that more private information is not necessarily favourable in this case; particularly, they find that "the lowest agency costs are faced when shareholders publicly observe whether or not the "bad" action is taken and the large shareholder privately observes the consequences (firm value outcome) of the action" (33). On the contrary, in the case of encouraging the "good" (favourable from the shareholders' perspective) action, Admati and Pfleiderer (2009) find that under certain circumstances, the presence of the large shareholder and the threat of exit may not improve the agency problem (reduce agency costs), but may in fact worsen it such that the blockholder's absence is preferred. From this we observe that private information can actually be detrimental to the firm. Specifically, they determine that under no circumstance will private information regarding the consequences of the manager's decision (firm value outcome) make the large shareholder more effective, but rather "could make her entirely ineffective in disciplining the manager" (33). Particularly, they

show that, given the manager's decision is publicly observed, and the large shareholder privately observes the consequences of this decision (firm value outcome), the large shareholder's trading decision, and therefore her presence will consistently augment the agency costs. (Admati and Pfleiderer 2009, 3-4, 20-21, 33)

In contrast to Edmans (2009), Admati and Pfleiderer (2009) do not assume the presence of liquidity traders, however, they demonstrate that governance through exit becomes less effective in the face of transaction costs, as these costs affect the credibility of the threat. Edmans (2014) points out that if we suppose illiquidity proxies for transaction costs, Admati and Pfleiderer's (2009) model predicts that liquidity improves governance, similarly to Edmans (2009).

4.0 MODEL ANALYSIS

This section analyzes sections II, III(A) and III(B) of Maug's (1998) paper: "Large Shareholders as Monitors: Is there a trade-off between liquidity and control?". This particular paper was chosen for further analysis due to Maug's ground breaking results regarding the relationship between liquidity and corporate control. As mentioned earlier in this report, Maug (1998) was the first to demonstrate that liquidity could in fact have a positive impact on corporate governance. Additionally, of all the papers discussed, Maug's (1998) is the only one that solves for the social optimum. It is interesting to compare the blockholder's optimum with the social optimum. Particularly, blockholders seek to maximize their own payoffs and a favourable consequence of this may be improving firm value and benefiting small shareholders, to some extent. Although blockholders may positively affect firm value, they may still fail to maximize social welfare, as their motives may not be perfectly aligned with those of small shareholders. By comparing the blockholder's optimum with the social optimum, in the case where they differ, one can try to provide incentives for the blockholder, or impose regulations to close this gap.

4.1 Model Setup

Maug (1998) considers a single firm economy with assets whose current value, $\tilde{v} = L$, is public knowledge and could be increased to $\tilde{v} = H$, where $H > L$, given restructuring. This single firm consists of a manager, who is assumed reluctant to induce these value increasing changes; a large outside shareholder, F, with the potential to acquire a sufficient fraction of shares to partake in costly monitoring, improve management, and implement restructuring; and a continuum of small shareholders, henceforth referred to

as households. All investors are assumed to be risk neutral. The number of shares in this single firm is normalized to 1 and initially all assumed to belong to the continuum of households. It is further assumed that all shares are equally divided amongst households, with the total measure of households as 1. Additionally, both households and F can invest in a zero return, risk-free asset. The stages of the game are described below.

Period 1: *F trades with households*. Particularly, by exchanging the company's shares against the risk-free asset, at a price P_0, F acquires an initial holding α, such that the households altogether hold the remaining $1 - \alpha$ shares.

Period 2: *F makes his monitoring and trading decisions.* Particularly, F has the ability to purchase more shares anonymously, engage in the costly monitoring of the manager, improve the firm's management, and consequently increase the firm value such that $\tilde{v} = H$. Monitoring costs, denoted c_M, are assumed to satisfy the following equation: $c_M < H - L$.

Period 3: *Households are faced with a liquidity shock and forced to sell their assets (including their holdings of the risk-free asset).* Specifically, with probability ½, ϕ households, $0 < \phi < 1$, face this shock; implying that the "ex-ante probability for any household to suffer a liquidity shock is $\frac{\phi}{2}$" (Maug 1998, 71).

Period 4: *Order flows submitted and final stock price formed.* F and the households submit their order flows. This total net order flow, *y*, is observed by the competitive market maker, and a price, P_1, reflecting his expectation of the firm value, conditional on y, is set. $P_1 = E(\tilde{v}|y)$.

Period 5: *Profits are realized and participants receive their payoffs.*

4.2 Analysis

Maug (1998) solves for the subgame perfect equilibrium of the game.

4.2.1 Exogenously given initial stake, α.

Further Assumptions:

- Assume F's initial stake, α, is taken exogenously. Thus, we are concerned with stages 2 to 5 of the game.
- Without loss of generality assume F plays the following mixed strategy:
  a) F purchases $X_B > 0$ shares, intervenes, and improves management with probability q.
  b) F sells $|X_S| > 0$ (equivalent to buying $X_S < 0$) shares and avoids intervention with complementary probability $1-q$.

  For simplicity, assume F selects X_B and X_S such that $X_B = -X_S$.
- F requires $\mu \in [0,1]$ (not necessarily equal to 0.5) shares to exert control. Thus, F is only able to monitor and intervene if $\alpha + X_B \geq \mu$, where $\mu \in [0,1]$ is given exogenously.

To make trading profits, F must disguise her intentions, such that the competitive market maker is unable to distinguish between:

a) F buying and households selling, and
b) F selling and households not facing a liquidity shock

From this follows condition (1):

$$X_B - \phi(1-\alpha) = X_S + 0 \Leftrightarrow X_B - X_S = \phi(1-\alpha) \quad (1)$$

Recall that F selects symmetric trading quantities $X_B = -X_S$

$$\Rightarrow 2X_B = \phi(1-\alpha) \Leftrightarrow X_B = \frac{\phi}{2}(1-\alpha) = -X_S$$

For convenience, let $u \equiv \frac{\phi}{2}(1-\alpha)$.

There are 3 possible order flows: u, -u, and -3u. Particularly:

a) If order flow is u: The marker maker is certain that F buys $X_B = $ u shares, thus, he sets $P_1 = H$. Recall the probability of F buying X_B is q, and the probability of households not facing a liquidity shock and selling is ½; thus the probability of F buying X_B and households not getting hit by a liquidity shock is q/2.

b) If order flow is -3u: The market maker knows with certainty that F sells $-X_S = u$ shares and households sell $\phi(1-\alpha) = 2u$ shares. Thus he sets $P_1 = L$. The probability of this occurring is (1-q)/2.

c) If order flow is –u: No information is revealed to the market maker. Either households sell $(1-\alpha) = 2u$ shares and F buys $X_B = u$ shares with probability q/2; or F sells $-X_S = u$ shares and households aren't faced with a liquidity shock, with probability (1-q)/2. Due to the market maker's uncertainty he sets $P_1 = qH + (1-q)L$ in both cases.

All possible order flows and the market prices set conditional on these total order flows are demonstrated in table 1 below taken directly from Maug (1998, 74).

Table 1. All possible order flows and market prices set by the competitive market maker conditional on total order flows.

Order Flow	Transactions	Probability	Value	Price
u	F buys u	$q/2$	H	H
	HH sell 0			
$-u$	(i) F buys u	(i) $q/2$	H	$qH + (1-q)L$
	HH sell $2u$			
$-u$	(ii) F sells u	(ii) $(1-q)/2$	L	$qH + (1-q)L$
	HH sell 0			
$-3u$	F sells u	$(1-q)/2$	L	L
	HH sell $2u$			

HH represents Households.

Define: E[P|B] ≡ Expected price per share at which F buys. As seen in table 1, given F buys X_B, the total order flow will either be u or –u, with equal probability and associated prices H and $qH + (1-q)L$, respectively. Thus,

$$E[P|B] = \frac{1}{2}H + \frac{1}{2}(qH + (1-q)L) \tag{2}$$

From (2) follows F's expected payoff from buying and monitoring:

$$Trading\ profits\ +\ return\ to\ initial\ \alpha\ shares - monitoring\ costs$$

$$= X_B\left[H - E[P|B]\right] + \alpha H - c_M$$

$$= \frac{\phi}{2}(1-\alpha)\left[H - \left[\frac{H}{2} - \frac{1}{2}(qH + (1-q)l)\right]\right] + \alpha H - c_M$$

$$= \frac{\phi}{2}(1-\alpha)[\frac{[H - qH - (1-q)L]}{2}] + \alpha H - c_M$$

$$= \frac{\phi}{2}(1-\alpha)\frac{1-q}{2}(H-L) + \alpha H - c_M \tag{3}$$

Similarly, define: E[P|S] ≡ Expected price per share at which F sells. As seen in table 1, given F sells $-X_S$, the total order flow will either be -u or –3u, with equal probability and associated prices $qH + (1-q)L$ and L, respectively. Thus,

$$E[P|S] = \frac{1}{2}L + \frac{1}{2}(qH + (1-q)L) \quad (4)$$

From (4) follows F's expected payoff from selling and avoiding monitoring and intervention:

$$Trading\ profits\ +\ return\ to\ initial\ \alpha\ shares$$

$$= -X_S[E[P|S] - L] + \alpha L = \frac{\phi}{2}(1-\alpha)\left[\left[\frac{L}{2} + \frac{1}{2}(qH + (1-q)L)\right] - L\right] + \alpha L$$

$$= \frac{\phi}{2}(1-\alpha)\frac{q}{2}(H-L) + \alpha L \quad (5)$$

In equilibrium, q perfectly reflects the market maker's beliefs about the distribution of $\tilde{v} \in \{L, H\}$. In order to make F indifferent between buying and selling, the market maker sets prices such that F's payoff from buying (3) equals her payoff from selling (5). In equilibrium q is as follows:

$$Expected\ payoff\ from\ buying\ \&\ monitoring = Expected\ payoff\ from\ selling$$

$$\Rightarrow \frac{\phi}{2}(1-\alpha)\frac{1-q}{2}(H-L) + \alpha H - c_M = \frac{\phi}{2}(1-\alpha)\frac{q}{2}(H-L) + \alpha L$$

$$\Rightarrow q = \frac{1}{2} - \frac{2(c_M - \alpha(H-L))}{\phi(1-\alpha)(H-L)} \quad (6)$$

Notice $\frac{\partial E[P|B]}{\delta q} > 0$ and $\frac{\partial E[P|S]}{\delta q} > 0$. Thus, for some $q' > q$, F's expected trading profits from buying and monitoring would decrease while her trading profits from selling would increase. In this case, F would never buy shares and intervene, and vice versa for the case where $q' < q$. Further, if expression (6) exceeds one, "F monitors and buys X_B shares with certainty (q=1)" (74).

Subsequently, total expected trading profits can be calculated as:

$$q[trading\ profits\ from\ buying] + (1-q)[trading\ profits\ from\ selling]$$

$$= q[X_B[H - E[P|B]]] + (1-q)[-X_S[E[P|S] - L]]$$

$$= q[\frac{\phi}{2}(1-\alpha)\frac{1-q}{2}(H-L)] + (1-q)[\frac{\phi}{2}(1-\alpha)\frac{q}{2}(H-L)]$$

$$= (1-\alpha)\left[\frac{\phi}{2}q(1-q)(H-L)\right] \equiv (1-\alpha)G \quad (7)$$

Further, net trading profits are denoted:

$$(1-\alpha)G - qc_M \quad (8)$$

Notice the dependence of these trading profits on the liquidity of the market, ϕ. Further, notice the factor $(1-\alpha)$ multiplies this liquidity parameter.

Propositions 1 and 2 follow below:

Proposition 1: (Equilibrium): *Assume the large shareholder has an initial stake α, and her total stake after purchasing u additional shares in the market is sufficient to exercise voting control ($\alpha + u \geq \mu$). Then there is a unique equilibrium where the large shareholder monitors the firm with probability q (q is given by (6)). The probability of monitoring increases in F's initial stake α and decreases in the monitoring costs c_M.*

From equation (6) it is clear that $\frac{\partial q}{\delta \alpha} > 0$, while $\frac{\partial q}{\delta c_M} < 0$.

Proposition 2 (Liquidity): *The probability that the large shareholder monitors decreases in the liquidity of the market iff she can recover the costs of monitoring through a capital gain on her initial stake α.*

Maug (1998) does not provide a proof for this proposition. The proof that follows is my own work.

Proof:

(i) Suppose $\frac{\partial q}{\delta \phi} < 0$

$$\Rightarrow \frac{\partial q}{\delta \phi} = \frac{2(1-\alpha)(H-L)\left(c_M - \alpha(H-L)\right)}{(\phi(1-\alpha)(H-L))^2} < 0$$

$$\Rightarrow c_M - \alpha(H-L) < 0$$

$$\Rightarrow c_M < \alpha(H-L)$$

(ii) Conversely, suppose $c_M < \alpha(H-L)$

$$\Rightarrow c_M - \alpha(H-L) < 0$$

$$\Rightarrow \frac{\partial q}{\delta \phi} = \frac{2(1-\alpha)(H-L)\left(c_M - \alpha(H-L)\right)}{(\phi(1-\alpha)(H-L))^2} < 0$$ QED

On the contrary, notice, if α is sufficiently small, such that $\alpha < \frac{c_M}{H-L}$, the probability that the large shareholder monitors increases in the liquidity of the market, ϕ.

Following this, Maug (1998) proposes the social optimum. In this model, the social optimum maximizes the expected value of social gains, where social gains equal the change in firm value net monitoring costs.

Proposition 3 (Social Optimum): *The social optimum is achieved only if the initial stake of the large shareholder exceeds a threshold α*. In this case F monitors with probability one and her trading gains are zero. The threshold α* strictly exceeds the value* $\frac{c_M}{H-L}$ *where F recovers her costs, and the difference between α* and* $\frac{c_M}{H-L}$ *is strictly increasing in the liquidity of the market,* ϕ.

Maug's Proof:

Because $(H - L) > c_M$, the social optimum is achieved whenever $q = 1$. From (6) this requires that: $\frac{1}{2} + \frac{2(\alpha(H-L)-c_M)}{\phi(1-\alpha)(H-L)} \Leftrightarrow \alpha \geq \alpha^*$, where $\alpha^* = \frac{\left[\frac{c_M}{(H-L)}+\frac{\phi}{4}\right]}{1+\frac{\phi}{4}}$. QED

Below I clarify how he may have achieved this result.

Claim: The social optimum is achieved whenever $q = 1$, since total social benefits associated with monitoring and intervention exceed total costs, $(H - L) > c_M$.

Proof of claim:

The social optimum maximizes the expected value of social gains, E[SG].

If F buys and intervenes:

$Firm\ value = \tilde{v} = H$,

$monitoring\ costs = c_M$

$\Rightarrow social\ gain = (H - L) - c_M > 0$ since $(H - L) > c_M$ by assumption.

On the contrary, if F sells and avoids intervention

$Firm\ value = \tilde{v} = L$,

$monitoring\ costs = 0$

$\Rightarrow social\ gain = 0$

Thus, $E[SG] = q \cdot [(H - L) - c_M] + (1 - q) \cdot 0 = q \cdot [(H - L) - c_M]$

$\frac{\partial E[SG]}{\delta q} = (H - L) - c_M > 0 \Rightarrow$ Expected social gains are maximized when the highest possible q is chosen $\Rightarrow q = 1$ achieves the social optimum. QED

Continuation of the proof of proposition 3:

The social optimum is achieved whenever $q = 1$, thus, α^* will satisfy:

$$q = 1 = \frac{1}{2} - \frac{2\left(c_M - \alpha(H-L)\right)}{\phi(1-\alpha)(H-L)}$$

$$\Leftrightarrow \frac{1}{2} = \frac{2(\alpha(H-L) - c_M)}{\phi(1-\alpha)(H-L)}$$

$$\Leftrightarrow \frac{\phi(1-\alpha)(H-L)}{4} = \alpha(H-L) - c_M$$

$$\Leftrightarrow \alpha^* = \frac{\left[\frac{c_M}{(H-L)} + \frac{\phi}{4}\right]}{1+\frac{\phi}{4}} \quad (9)$$

Recall from proposition 1, the probability of monitoring (q, as given by (6)) increases in F's initial stake, α. Further, recall, if expression (6) exceeds one, then F monitors and buys X_B with certainty (*q=1*). Following this, all $\alpha \geq \alpha^*$ satisfy expression (9). Further, notice the threshold α^* strictly exceeds the value $\frac{c_M}{H-L}$, where F recovers her costs.

$$\alpha^* = \frac{\left[\frac{c_M}{(H-L)} + \frac{\phi}{4}\right]}{1+\frac{\phi}{4}} > \frac{c_M}{H-L}$$

$$\Leftrightarrow 1 + \frac{\phi(H-L)}{4c_M} > 1 + \frac{\phi}{4}$$

$$\Leftrightarrow \frac{\phi}{4}\frac{(H-L)}{c_M} > \frac{\phi}{4} \quad (10)$$

(10) holds by assumption, since $H - L > c_M$.

Additionally,

$\frac{\partial \alpha^*}{\delta \phi} = \frac{\frac{1}{4}\left[\left(1+\frac{\phi}{4}\right) - \left(\frac{c_M}{H-L} + \frac{\phi}{4}\right)\right]}{(1+\frac{\phi}{4})^2} > 0$, since $H - L > c_M$ by assumption. Thus, the difference between α* and $\frac{c_M}{H-L}$ is strictly increasing in the liquidity of the market, ϕ. QED

In terms of maximizing total social welfare, F must hold an initial stake $\alpha \geq \alpha^*$. The endogenous determination of α, however, yields contradicting results.

4.2.2 Endogenously determined initial stake, α

Assume F's initial stake is now determined endogenously in stage 1 of the game.

Determining the initial share price:

Recall:

Case 1: If a proportion ϕ of households face a liquidity shock and F sells, the market maker sets $P_1 = L$.

Case 2: If a proportion ϕ of households face a liquidity shock and F buys, the market maker sets $P_1 = qH + (1-q)L$.

In case 2, the households forced to sell their shares lose $H - (qH + (1-q)L)$. This loss for households occurs with probability $\frac{q\phi}{2}$. This household loss is incorporated into the initial share price, P_0, as a discount, since P_0 is determined based on the valuation of households. The initial share price follows:

$$P_0 = qH + (1-q)L - \frac{q\phi}{2}(H - (qH + (1-q)L))$$

$$= qH + (1-q)L - \frac{\phi}{2}q(1-q)(H-L) = qH + (1-q)L - G \quad (11)$$

Subsequently, F's expected total benefits from her initial purchase of α shares can be calculated as:

$\alpha\,[expected\ value\ of\ her\ shares - price\ paid\ for\ her\ shares]$

$$= \alpha\,[qH + (1-q)L - P_0] = \alpha\,[qH + (1-q)L - qH + (1-q)L - G] = \alpha G \quad (12)$$

Recall, from *4.2.1*, F's expected net trading profits are $(1-\alpha)G - qc_M$. Incorporating these trading profits into (12) yields F's total expected profits:

$net\ trading\ profits\ +\ profit\ on\ initial\ stake$

$$\Rightarrow (1-\alpha)G - qc_M + \alpha G = G - qc_M \quad (13)$$

This brings us to Proposition 4, the "commitment-effect".

Proposition 4 (Commitment-effect): *Assume the large shareholder chooses her initial stake α so that she maximizes her payoff from this investment. Then she invests in a positive initial stake $\hat{\alpha}$ that is strictly smaller than the stake $\frac{c_M}{H-L}$ where she recovers her costs. Also, her equilibrium probability of monitoring the firm, $\hat{q}$ increases strictly in the liquidity of the stock market. The expressions for $\hat{\alpha}$ and $\hat{q}$ are:*

$\hat{\alpha} = \frac{c_M}{2(H-L)-c_M}$, $\hat{q} = \frac{1}{2} - \frac{c_M}{\phi(H-L)}$.

Maug's Proof:

F chooses α to pick the randomizing probability q that maximizes

$\frac{\phi}{2} q(1-q)(H-L) - qc_M$, which gives immediately $\hat{q}$.

Then from (6) and (13) α needs to satisfy:

$\frac{1}{2} - \frac{2(c_M - \alpha(H-L))}{\phi(1-\alpha)(H-L)} = \frac{1}{2} - \frac{c_M}{\phi(H-L)}$. QED

Below I clarify how he may have achieved this result.

Maximizing F's total profit: $\pi = \frac{\phi}{2} q(1-q)(H-L) - qc_M$ with respect to q yields:

$\frac{\partial \pi}{\delta q} = 0$

$\Rightarrow \frac{\phi}{2}(H-L) - q\phi(H-L) - c_M = 0$

$\Rightarrow q\phi(H-L) = \frac{\phi}{2}(H-L) - c_M$

$\Rightarrow \hat{q} = \frac{1}{2} - \frac{c_M}{\phi(H-L)}$

Recall, from expression (6), q is a function of α. Thus, α must satisfy $q = \hat{q}$.

$\Rightarrow \frac{1}{2} - \frac{2(c_M - \alpha(H-L))}{\phi(1-\alpha)(H-L)} = \frac{1}{2} - \frac{c_M}{\phi(H-L)}$

$\Leftrightarrow 2\big(c_M - \alpha(H-L)\big) = c_M(1-\alpha)$

$\Leftrightarrow c_M = 2\alpha(H-L) - \alpha c_M$

$\Leftrightarrow c_M = 2\alpha(H-L) - \alpha c_M$

$\Leftrightarrow \alpha = \frac{c_M}{2(H-L)-c_M} = \hat{\alpha}$

Recall, by assumption $H - L > \mathrm{c_M}$

$\Rightarrow 2(H-L) - c_M > H - L$

$\Rightarrow \hat{\alpha} = \frac{c_M}{2(H-L)-c_M} < \frac{c_M}{(H-L)}$

$\Rightarrow$ F invests in a positive initial stake $\hat{\alpha}$ that is strictly smaller than the stake $\frac{c_M}{H-L}$ where she recovers her costs.

Further,

$\frac{\partial \hat{q}}{\delta \phi} = \frac{(H-L)c_M}{(\phi(H-L))^2} = \frac{c_M}{\phi^2(H-L)} > 0$

$\Rightarrow \hat{q}$ increases strictly in the liquidity of the stock market, ϕ. QED

5.0 CONCLUSION

This report has reviewed the theoretical literature on the role that blockholders play in internal and external corporate governance. Based on this review we observe that blockholders can both positively and negatively impact managerial performance and consequently, fundamental firm value. We see that although blockholders can potentially improve firm value and functioning by aligning managerial and shareholder incentives, under certain conditions, they may exacerbate agency costs causing value destruction. Further, we see how blockholders may positively affect firm value, however, still fail to achieve the social optimum, as their motives may not be perfectly aligned with those of small shareholders. Additionally, we observe the important role that market liquidity plays in shareholder intervention and how ownership and information structures likewise impact shareholder activism.

Based on the papers reviewed, I believe there are a couple policies that could be implemented to help improve firm performance and overcome the agency problems faced. I believe the implementation of stricter monitoring regulations could aid in achieving this goal. Particularly, firms could hire government agencies or other private firms to monitor the manager and report to the board of directors. In such a case, the manager is aware he is being monitored and so this provides him with an incentive to perform at his best. In cases where he is underperforming, extracting private benefits, or his best is simply insufficient, the board of directors is able to replace him with a more efficient manager. Although hiring a private firm or government agency is costly, each shareholder could be required to pay a portion relative to the size of their stake. In this regard, the blockholder does not solely incur all associated monitoring costs, yet still has

the potential to reap a portion of the benefits. Another option may be to implement a regulation that requires the manager's payoff/ compensation to be directly tied to the fundamental firm value, as opposed to current earnings. This should help to better align managerial interests with those of the small shareholders.

Majority of the papers discussed focus on voice as the only channel through which blockholders can intervene and consider a single blockholder. To my knowledge, due to the relatively new emergence of the channel of exit, there is little theoretical work surrounding this mechanism. It would be interesting, and perhaps more realistic, to extend the voice models I have reviewed by incorporating (1) multiple blockholders, (2) the channel of exit, and (3) both. Of the papers reviewed, Edmans and Manso's (2011) model is the only one to consider multiple blockholders and both channels of intervention.

Due to my particular interest in Maug's (1998) paper I think it would also be interesting to extend his model to incorporate a finite number of blockholders $n \geq 2$, such that F's initial stake, α is divided equally amongst the n blockholders, similarly to Edmans and Manso's (2011) model. It would be interesting to see if the results obtained are consistent with Edmans and Manso's (2011). Particularly, it would be interesting to note whether splitting the block decreases the probability of monitoring and encourages the blockholders to sell their stakes and compete for trading profits. Alternatively, these small blockholders may cooperate in order to influence management, such that they combine their monitoring activities and split the cost.

Additionally, each paper reviewed in this report has assumed risk neutral participants. In my opinion, this may not be the case for every participant. It would be

interesting to alter some of the models studied by assuming risk-averse investors (or managers) and compare the results obtained. Particularly, shareholders' risk preferences may depend on the diversification of their portfolio holdings. Specifically, large blockholders with a significant portion of their wealth tied up in a single firm may be more risk averse than other investors. The behaviour of risk averse shareholders with arbitrarily small stakes in a firm, however, may approximate that of risk-neutral shareholders. In this case, assuming risk-neutral small shareholders is plausible in my opinion. However, provided some of the shareholders are risk averse and their stakes are not arbitrarily small (blockholders), how can it be reasonable to assume a risk-neutral representative shareholder? Perhaps, there should be a distinction between large and small shareholders' risk preferences. Managers on the other hand, tend to be risk averse, even in the case where they do not own a large stake in the firm. Particularly, managers may avoid high-risk/ high-return investments if their compensation/ salary is tied to the firm. Managers who are also concerned with preserving their reputations may play it safe.

Furthermore, some of the papers reviewed that focus on voice theories fail to specify which voice mechanism is being considered. Kahn and Winton's (1998) paper is one example of this. Results may vary based on the different mechanisms employed. As pointed out by Shleifer and Vishny (1986), some forms of activism are more expensive, require larger stakes, and/or are more effective than others. Future research should include specifying and potentially comparing different voice mechanisms.

It is also important to note that many of the papers studied do not clearly define what constitutes a blockholder. Kahn and Winton's (1998), Maug's (1998), and Fraure-

Grimaud and Gromb's (2004) papers are examples of this. As stated earlier in this report, although there exists no strict classification of a blockholder, "empirical literature typically defines a blockholder as a 5% shareholder" (Edmans 2014, 25). Nevertheless, as discussed in this report, the size of a stake plays a very important role in shareholder activism and thus, in future work should be explicitly defined.

6.0 REFERENCES

Admati, Anat, and Paul Pfleiderer. 2009. "The "Wall Street Walk" and Shareholder Activism: Exit as a Form of Voice." *Review of Financial Studies* 22 (7): 2645-685. doi:10.1093/rfs/hhp037.

Admati, Anat, Paul Pfleiderer, and Josef Zechner. 1994. "Large Shareholder Activism, Risk Sharing, and Financial Market Equilibrium." *Journal of Political Economy* 102 (6): 1097-130. doi:10.1086/261965.

Bhide, Amar. 1993. "The Hidden Costs of Stock Market Liquidity." *Journal of Financial Economics* 34 (1): 31-51. doi:10.1016/0304-405x(93)90039-e.

Bolton, Patrick, and Ernst-Ludwig Von Thadden. 1998. "Blocks, Liquidity, and Corporate Control." *The Journal of Finance* 53 (1): 1-25. doi:10.1111/0022-1082.15240.

Burkart, Mike, Denis Gromb, and Fausto Panunzi. 2000. "Agency Conflicts in Public and Negotiated Transfers of Corporate Control." *The Journal of Finance* 55 (2): 647-77. doi:10.1111/0022-1082.00222.

Canadian Investor Relations Institute. 2017. *Brief to The House of Commons Standing Committee on Industry, Science and Technology*. http://www.parl.gc.ca/Content/HOC/Committee/421/INDU/Brief/BR8802921/br-external/CanadianInvestorRelationsInstitute-e.pdf

Canadian Securities Administrators. 2016. *CSA notice of Amendments to Early Warning System*. https://www.bcsc.bc.ca/Securities_Law/Policies/Policy6/PDF/CSA_Notice__February_25___2016/

Coffee, John C. 1991. "Liquidity versus Control: The Institutional Investor as Corporate Monitor." *Columbia Law Review* 91 (6): 1277-1368. doi:10.2307/1123064.

Cohn, Jonathan, and Uday Rajan. 2013. "Optimal Corporate Governance in the Presence of an Activist Investor." *Review of Financial Studies* 26 (4): 985-1020. doi:10.2139/ssrn.1364763.

Eaton, Buford Curtis, Diane F. Eaton, and Douglas W. Allen. 2012. *Microeconomics: Theory with Applications*. Toronto: Pearson Canada.

Edmans, Alex. 2009. "Blockholder Trading, Market Efficiency, and Managerial Myopia." *The Journal of Finance* 64 (6): 2481-513. doi:10.1111/j.1540-6261.2009.01508.x.

———. 2014. "Blockholders and Corporate Governance." *Annual Review of Financial Economics* 6 (1): 23-50. doi:10.1146/annurev-financial-110613-034455.

Edmans, Alex, and Gustavo Manso. 2010 "Governance Through Trading and Intervention: A Theory of Multiple Blockholders." *Review of Financial Studies* 24 (7): 2395-428. doi:10.1093/rfs/hhq145.

Edmans, Alex, Vivian W. Fang, and Katharina Lewellen. 2013 "Equity Vesting and Managerial Myopia." Working paper.

Faure-Grimaud, Antoine, and Denis Gromb. 2004. "Public Trading and Private Incentives:." *Review of Financial Studies* 17 (4): 985-1014. doi:10.1093/rfs/hhh002.

Grossman, Sanford J., and Oliver D. 1980. Hart. "Takeover Bids, The Free-Rider Problem, and the Theory of the Corporation." *The Bell Journal of Economics* 11 (1): 42-64. doi:10.2307/3003400.

Kahn, Charles, and Andrew Winton. 1998. "Ownership Structure, Speculation, and Shareholder Intervention." *The Journal of Finance* 53 (1): 99-129. doi:10.1111/0022-1082.45483.

Marquez, Robert, and Bilge Yilmaz. 2008. "Information and Efficiency in Tender Offers." *Econometrica* 76 (5): 1075-101. doi:10.3982/ecta6178.

Maug, Ernst. 1998. "Large Shareholders as Monitors: Is There a Trade-Off between Liquidity and Control?" *The Journal of Finance* 53 (1): 65-98. doi:10.1111/0022-1082.35053.

Mishkin, Frederic S. 2016. *The Economics of Money, Banking and Financial Markets*. Boston, MA: Pearson.

Osborne, Martin J. 2014. *An Introduction to Game Theory*. New Delhi: Oxford University Press.

Osborne, Martin J., and Ariel Rubinstein. 2007. *A course in game theory*. Cambridge, Mass: MIT Press.

Porta, Rafael La, Florencio Lopez-De-Silane, and Andrei Shleifer. 1999. "Corporate Ownership Around the World." *Journal of Finance* 54 (2): 471-517. doi:10.3386/w6625.

Roe, Mark J. 1990. "Political and Legal Restraints on Ownership and Control of Public Companies." *Journal of Financial Economics* 27 (1): 7-41. doi:10.1016/0304-405x(90)90019-v.

Shleifer, Andrei, and Robert W. Vishny. 1986. "Large Shareholders and Corporate Control." *Journal of Political Economy* 94 (3): 461-88. doi:10.1086/261385.

Watson, Joel. 2013. *Strategy: an introduction to game theory*. New York: W.W. Norton.

APPENDIX A: *Canadian Regulations*

According to Canada's "early warning" rules, shareholders who acquire a 10% or greater ownership position in a public company are required to publicly disclose their acquisition, along with their intentions, immediately. This threshold is consistent with that found in less developed jurisdictions, such as Pakistan, Chile, and Latvia. Conversely, the United States, France, Germany, India, Japan, and Australia have adopted a 5% threshold, and the United Kingdom, a 3% threshold. Canada's higher threshold potentially provides more opportunity for activist investors in Canada, as they are able to acquire larger stakes, without their position or intentions becoming public knowledge. (Canadian Investor Relations Institute 2017)

In 2013, Canadian Investor Relations Institute (CIRI) "advocated for increased disclosure of share ownership" (3). Particularly, CIRI (3) proposed reducing "the early warning reporting threshold from 10% ownership of issued and outstanding shares to 5% ownership in order to achieve greater shareholder transparency." However, the Canadian Securities Administrators (CSA) decided against this proposal. The more restrictive regulations in the United States with regard to ownership disclosure is one of the fundamental differences between reporting regimes in the US and Canada. (Canadian Investor Relations Institute 2017)

Over the past year, however, less extensive amendments to the Canadian early warning rules have been made. Particularly, disclosure of 2% or more decreases in ownership and when ownership positions fall below the 10% reporting threshold were required as of May 9, 2016. Although Canadian regulations are still less stringent than

those in the United States, these changes have better aligned disclosure regulations in Canada with those in the United States. (CSA 2016)

APPENDIX B: *Definitions*

This section provides formal definitions of terminology used throughout this report.

Asymmetric information*:* "The unequal knowledge that each party to a transaction has about the other party" (Mishkin 2016, 651).

Atomistic shareholders: Shareholders "are atomistic in that each of them perceives himself as not affecting the outcome of the tender offer" (Burkhart, Gromb, and Panunzi 2000, 652).

Backward induction procedure**: "**This is the process of analyzing a game from the end to the beginning. At each decision node, one strikes from consideration any actions that are dominated, given the terminal nodes that can be reached through the play of the actions identified at successor nodes" (Watson 2013, 186-187).

Bayesian Game: "A strategic game with imperfect information is called a *Bayesian game*" (Osborne 2014, 276).

"A *Bayesian game* consists of:

- a set of players
- a set of states

and for each player

- a set of actions
- a set of signals that she may receive, and a signal function that associates a signal with each state
- for each signal that she may receive, a belief about the states consistent with the signal (a probability distribution over the set of states with which the signal is associated)

- a payoff function over pairs (a, ω), where a is an action profile and ω is a state, the expected value of which represents the player's preferences over the set of such pairs" (277-278).

Free rider problem: "The problem that occurs when people who do not pay for information take advantage of the information that other people have paid for" (Mishkin 2016, 656).

Jawboning: Where "informal negotiations with incumbent management are used to institute changes". Similar to proxy fights, "jawboning does not involve the purchase of more shares by the blockholder" (Shleifer and Vishny 1986, 472).

Liquidity*: "*The relative ease and speed with which an asset can be converted into a medium of exchange" (Mishkin 2016, 49). "An asset is liquid if the market in which it is traded has depth and breadth; that is, if the market has many buyers and sellers" (86).

Managerial myopia: This occurs when *"*managers fail to invest due to concerns with the firm's short-term stock price" (Edmans, Fang, and Lewellen 2013, 2). In other words, it is an action that boosts current earnings at the expense of long-term value.

Mixed strategy: A player's "probability distribution over her set of actions" (Osborne 2014, 105). Let "α denote a profile of mixed strategies; where $\alpha_i(a_i)$ is the probability assigned by player i's mixed strategy α_i to her action a_i " (105).

***Mixed strategy Nash equilibrium*:** "The mixed strategy profile α^* in a strategic game with *(mixed strategy) Nash equilibrium* if, for each player i and every mixed strategy α_i of player i, the expected payoff to player i of α^* is at least as large as the expected payoff to player i of $(\alpha_i, \alpha^*_{-i})$ according to a payoff function whose expected value

represents player *i*'s preferences. Equivalently, for each player *i*, $U_i(\alpha^*) \geq U_i(\alpha_i, \alpha^*_{-i})$) for every mixed strategy α_i of player *i*, where $U_i(\alpha)$ is player *i*'s expected payoff to the mixed strategy profile α" (Osborne 2014, 105-106).

***Nash equilibrium*:** *"*A *Nash equilibrium* is an action profile a^* with the property that no player *i* can do better by choosing an action different from a_i^* , given that every other player *j* adheres to a_j^*" (Osborne 2014, 20). More technically put, "the action profile a^* in a strategic game is a *Nash equilibrium* if, for every player *i* and every action a_i of player *i*, a^* is at least as good according to player *i*'s preferences as the action profile (a_i, a^*_{-i}) in which player *i* chooses a_i while every other player *j* chooses a_j^*.

Equivalently, for every player *i*, $u_i(a^*) \geq u_i(a_i, a^*_{-i})$ for every action a_i of player *i*, where u_i is a payoff function that represents player *i*'s preferences" (20).

***Nash equilibrium of a Bayesian Game*:** "In a Nash equilibrium of a Bayesian game each player chooses the best action available to him given the signal that he receives and his belief about the state and the other players' actions that he deduces from this signal" (Osborne and Rubinstein 2007, 27).

Pareto Criterion: "If one person is better off in social state A compared to social state B, and no one is worse off, then by the *Pareto Criterion*, we would state A is better" (Eaton, Eaton, and Douglas 2012, 726).

***Perfect Bayesian equilibrium*:** "Consider a strategy profile for the players, as well as beliefs over the nodes at all information sets. These are called a *perfect Bayesian equilibrium (PBE)* if: (1) each player's strategy specifies optimal actions, given his

beliefs and the strategies of the other players, and (2) the beliefs are consistent with Bayes' rule wherever possible" (Watson 2013, 382-383).

***Pooling Equilibrium*:** "We call an equilibrium *pooling* if the types of a player behave the same" (Watson 2013, 383).

Proxy contest: "A voting mechanism by which shareholders can change the firm's board of directors. Since the board of directors has the legal authority to replace the officers of the firm, gaining a majority of seats on the board is tantamount to gaining control of the operating decisions of the corporation" (Shleifer and Vishny 1986, 472).

Risk Neutral: "An individual who is indifferent to risk" (Eaton, Eaton, and Douglas 2012, 728).

Secondary Market: "A financial market in which securities that have been previously issued can be resold." Secondary markets "make it easier to sell financial instruments to raise cash; that is, they make the financial instruments more liquid." (Mishkin 2016, 24).

***Separating Equilibrium*:** "We call an equilibrium *separating* if the types of a player behave differently" (Watson 2013, 383).

Shareholder activism: "Proactive efforts to change firm behavior or governance rules" with the ultimate purpose of maximizing shareholder wealth through alleviating agency problems that arise on account of the separation of ownership and control in public firms (Berle and Means 1932; Black 1998; Fama 1980).

***Subgame perfect equilibrium*:** "Each possible sequence of actions in an extensive game with perfect information can be referred to as a *terminal history.* Let h be a history and s a strategy profile. Let $O_h(s)$ denote the terminal history consisting of h followed by the outcome generated in the subgame following h by the strategy profile induced by s in

the subgame" (Osborne 2014, 164-165). "The strategy profile s^* in an extensive game with perfect information is a *subgame perfect equilibrium* if, for every player *i*, every history *h* after which it is player *i*'s turn to move and every strategy r_i of player *i*, the terminal history $O_h(s^*)$ generated by s^* after the history *h* is at least as good according to player *i*'s preferences as the terminal history $O_h(r_i, s^*_{-i})$ generated by the strategy profile (r_i, s^*_{-i}) in which player *i* chooses r_i while every other player *j* chooses s^*_j. Equivalently, for every player *i* and every history *h* after which it is player *i*'s turn to move, $u_i(O_h(s^*)) \geq u_i(O_h(r_i, s^*_{-i}))$ for every strategy r_i of player *i*, where u_i is a payoff function that represents player *i*'s preferences and $O_h(s)$ is the terminal history consisting of *h* followed by the sequence of actions generated by *s* after *h*" (164-165). In other words, "A strategy profile s^* with the property that in no subgame can any player *i* do better by choosing a strategy different from s^*_i, given that every other player *j* adheres to s^*_j" (163).

***Symmetric Nash equilibrium*:** "An action profile a^* in a strategic game in which each player has the same set of actions is a *symmetric Nash equilibrium* if it is a Nash equilibrium and a^*_i is the same for every player *i*" (Osborne 2014, 50).

Takeovers: "Where cash tender offers are made by large minority shareholders to replace inefficient management" (Shleifer and Vishny 1986, 465).

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