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Shareholders and Managers**

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Abstract

This paper formally investigates the optimal allocation of power for shareholders recognizing that they may be heterogeneous, and that agency problems exist with managers. In the model, I treat shareholders as economic actors who choose decision rules (or the degree of shareholder power) under a veil of ignorance with the goal of maximizing their utility. Managers choose their consumption of private benefits based on the power allocation chosen by shareholders. I demonstrate that heterogeneous shareholders face a trade-off in deciding on the allocation of shareholder power. In the event they are in favor of an investment, shareholders would like to minimize their ability to veto a project. In the event they are against an investment, shareholders would like to maximize their veto power. The optimal voting rule balances these two considerations. Unhappy shareholders who can easily sell their shares do not face this trade-off, in which case they will grant more power to managers. I also demonstrate that in all circumstances shareholders will allocate more power to themselves as a way of controlling managerial agency costs.

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1 Introduction

The traditional characterization of shareholders of a corporation as a like-minded group of profit-maximizing individuals has come under recent scrutiny. Shareholders can vary on a number of dimensions. For example, shareholders may have different information and beliefs about the future, different investing horizons, different investment preferences, different investment portfolios and different political beliefs. The recognition that shareholders may not be a monolithic group with the same set of interests has important implications for theories of corporate governance and organizational form. How might shareholders structure corporate governance rules if they want specialized management and minimal managerial agency costs, as well as protection from one another? What organizational mechanisms can be utilized to deal with shareholder disputes over firm decisions?

In this paper, I provide a formal model to explain how the existence of shareholder heterogeneity and managerial agency costs impacts the optimal allocation of power among shareholders, and between shareholders and managers of a corporation. In approaching the shareholders' problem, I assume an explicitly contractarian view of the firm. According to this view, corporate charters and default rules should be a reflection of an agreement freely reached by shareholders designed to maximize each shareholder's welfare. To make this tractable, I assume that shareholders reach agreements about corporate governance rules under a veil of ignorance (Benz and Frey 2007; Aghion, Alesina and Trebbi 2004). Shareholders operating under a veil of ignorance either don't know their preferences at the time of entering the corporate contract, or know that their current preferences might change in the future. This

approach has two advantages. Because all shareholders under a veil of ignorance have the same expected type, there will be unanimity of agreement about optimal rules. In addition, rules can be crafted that take the interests of all shareholders into account rather than prioritizing one set of shareholders over another.

I model power within a corporation as the shareholder voteshare necessary to gain approval of a managerial investment proposal. I demonstrate how shareholders design rules to protect themselves from each other. Specifically, heterogeneous shareholders face a trade-off in deciding on voting rules to constrain shareholder behavior. In the event they are in favor of an investment, shareholders would like to minimize their ability to veto a project. In the event they are against an investment, shareholders would like to maximize their veto power. The optimal voting rule balances these two considerations.

An analysis which takes shareholder heterogeneity into account thus provides an alternative explanation as to why private corporations may need to go public. As a corporation grows, so do the number of shareholders as well as the potential for shareholder conflict. As the number of shareholders grows, the ability of shareholders to resolve conflict becomes increasingly infeasible due to rising costs of negotiations, and the corporation is stymied from making investments. Shareholder conflict gives rise to investment gridlock. It is still better though from an *ex-ante* perspective, for shareholders who cannot sell their shares to face the possibility of gridlock than welfare-decreasing investments. As a result shareholders will choose to maintain a reasonable amount of power for themselves.

In these circumstances, introducing a mechanism which allows unhappy share-

holders to exit from their investment in the corporation is unequivocally better for all shareholders. I show that heterogeneous shareholders take into account their ability to sell in designing corporate governance rules; specifically they will act to limit shareholder power. When shareholders who disagree with management investment proposals can easily and relatively costlessly sell their shares to others who would benefit from such investments, they no longer have to face the risk of other shareholders approving a welfare-decreasing investment. Shareholders who agree with managers are better off because they no longer face a potential veto from unhappy shareholders. In essence, shareholders can sort among themselves to invest in corporations in which they agree with managerial decisions. Overall, corporations will be able to make more investments, and aggregate shareholder welfare goes up.

Even when shareholders have access to a liquid market however, they will maintain some power for themselves. In addition to intra-shareholder conflict, shareholders must also recognize the possibility that managers will behave opportunistically, consuming private benefits that decreases the welfare of every shareholder. The design of power-sharing rules is important because the extent of opportunistic behavior (or agency costs) depends directly on how much power shareholders grant to managers. The more power shareholders give to managers, the higher agency costs will be. Again, shareholders face a trade-off. To control agency costs, shareholders would like to give as little power as possible to managers. However, maintaining power for themselves increases the likelihood of shareholder veto of management proposals. I show that shareholders choose power-sharing rules to balance these two considerations. Shareholders will allocate less power to managers when agency costs are

positive. This result holds regardless of whether shareholders are able to easily sell their shares or not.

Before proceeding further, it is worth noting that some readers may object that the model presented below does not fully capture the actual governance of corporations. Corporate decisions are generally not made by shareholders. Instead, power to manage the corporation is vested in the board of directors. Nor do shareholders always vote on an informed basis. Instead, shareholders frequently delegate their voting power to investment managers and proxy advisors.

Aside from the fact that in many private corporations, shareholders do vote in their capacity as shareholders and serve on the board of directors, I would argue that institutional features of corporate decision-making and investing are not central to the fundamental question of shareholder power. Rather, they are solutions to problems such as shareholder collection action and the existence of informational asymmetries between managers and shareholders, that prevent shareholders from properly exercising their power (Clark 1986). Once we understand the power-sharing arrangement shareholders would like to implement, then we can ask whether the design of institutional mechanisms such as boards or the delegation of shareholder voting to third party representatives is effective in achieving shareholders wishes.

The remainder of the paper proceeds as follows. In Section 2, I discuss the existing debate over power-sharing arrangements in corporations. Section 3 lays out the basic model of shareholder power when shareholders can't sell their shares. In Section 4, I demonstrate how the results change once we assume that shareholders have access to liquid markets. Section 5 provides an illustrative example and Section 6 concludes.

2 The Shareholder Power Debate

The optimal allocation of power between shareholders and managers of corporations is a hotly debated topic among scholars and policy makers. The recent regulatory trend has drifted in favor of enhanced shareholder rights and correspondingly, diminished managerial power. For example, the Dodd-Frank Act of 2010 gives shareholders the right to a non-binding vote on executive compensation ("say on pay").¹ The Securities and Exchange Commission is in the midst of adopting rules giving certain shareholders the right to nominate directors on the company's proxy.² In addition, over the past five years, many companies have switched from a plurality voting standard for the election of directors, to one requiring that a majority of shareholders vote in favor of a nominee before that nominee can be elected to the board. For example, between 2005 and 2007 the number of S&P 100 companies with majority voting rules increased from nine to eighty-one.³

In spite of these significant advances towards greater shareholder involvement in corporate affairs, the benefits of such activism remains unclear. Corporate governance arrangements are set in response to exogenous, often unobservable variables, making it difficult to empirically assess whether particular governance characteristics positively or negatively impact corporate performance. More concerning still is the fact that there continues to be intense theoretical disagreements as to the desir-

¹Section 951, Dodd-Frank Act.

²See *New Exchange Act* Rule 14a-11. Under the rules, shareholders will be eligible to have their nominees included in the proxy materials if they own at least 3 percent of the company's shares continuously for at least the prior three years. Authorization for the SEC to draft such rules is contained in Section 971, Dodd-Frank Act.

³Kahan and Rock (2010).

ability of enhanced shareholder rights, with proponents and opponents emphasizing different aspects of corporate governance.

The main advocate in favor of enhanced shareholder rights is Professor Lucian Bebchuk, who has argued in an influential series of papers that managers will have greater incentives to act in the best interests of shareholders if shareholders can proactively and cost-effectively act to limit agency costs. He argues that boards of directors do not have the incentive to properly act on behalf of shareholders by virtue of the way they are nominated and elected. Shareholders can only credibly assert more power if they have the legal means and economic incentives to do so, and thus advocates for changes in state and federal laws enabling shareholders to change the charter and bylaws of the corporation to introduce rules more favorable to the exercise of shareholder power (Bebchuk 1989; 2005; 2006), and that give shareholders the right to nominate directors to the board in the company's proxy materials (Bebchuk 2007; Bebchuk and Hirst 2010).

A sticking point for Bebchuk's arguments in favor of enhancing shareholder power is the issue of shareholder heterogeneity. If shareholders do not all share the same goals, then increasing shareholder rights may harm some shareholders if activist shareholders with other interests are in a position to influence corporate decision-making processes. This possibility or likelihood has led critics of Bebchuk's proposals (Lipton and Savitt 2007; Lipton and Rosenblum 1991; Lipton and Rosenblum 2003; Bainbridge 2005; Strine 2005; Romano 2001; Stout 2007; Anabtawi and Stout 2008) to make a normative case in favor of empowering the board of directors and disem-

powering shareholders. The basic argument⁴ is that minimizing shareholder input reduces the likelihood and extent of intra-shareholder conflict and opportunistic behavior. Centralizing power with the board and minimizing shareholder input is desirable because directors can sort through competing interests of shareholders to reach an optimal decision about corporate strategy that maximizes the welfare of (at least some) shareholders. This is the case even where agency costs are higher as a result. Opponents of increased shareholder power believe that separation between ownership and control is necessary because the value of efficient decision-making through a system of centralized power outweighs the reduction in corporate value from the consumption of private benefits and perquisites by managers. Agency costs are just an unfortunate but inevitable byproduct of this superior institutional arrangement.

Proponents and opponents of increasing shareholder power focus on different issues. For Bebchuk, the need to control agency costs outweighs concerns about efficiency of decision-making. For others, such as Bainbridge (2006), the importance of centralized decisionmaking as a means to overcome shareholder conflict outweighs the higher incidence of agency costs. Bebchuk argues that shareholder conflict is not

⁴It is important to note that there is disagreement amongst opponents of increased shareholder power. Several commentators (Blair and Stout 1999; Lipton and Rosenblum 1991) justify their stance on the basis that the purpose of corporations is not to maximize shareholder welfare, but rather to maximize the welfare of all corporate constituents (Blair and Stout 1991), or the economic viability of the firm (Lipton and Rosenblum 1991). In this paper, I engage mainly with arguments of those who prioritize shareholder interests over other interest groups because this is the dominant paradigm in corporate law today. The model presented below however can be reinterpreted to consider how to design corporate governance rules for the benefit of a more diverse set of constituents. Although my focus is on shareholder heterogeneity, the same type of analysis would apply as soon as one takes into account the interests of other groups. The key difference in the analysis will be the issue of whether it is possible for other constituents to exit their corporate investments. It is much easier for example, for a shareholder to simply sell her shares, than it is for an employee to change jobs, or for a community to attain geographical distance from a corporation. Concerns about gridlock in corporate decision-making then, will be especially salient.

very large while Bainbridge in turn argues that the market will take care of agency costs (shareholders will sell, managers will get fired). In this paper, I take seriously both positions and investigate how shareholders would deal with conflict and agency costs in deciding on power allocation in circumstances where there is an accessible market for shares and where there is not.

While there has been a vast literature beginning with Jensen and Meckling (1976) on agency costs within firms, it is only recently that scholars have begun to discuss the ways in which shareholders in public corporations might differ from one another. There are several potential sources of shareholder heterogeneity. Much discussed is the fact that in general, shareholders will not all share the same time preferences or the same discount rate (Lipton and Savitt 2007; Lipton and Rosenblum 2003; Anabtawi and Stout 2008; Strine 2006; Hayden and Bodie 2008; Bratton and Wachter 2010; Anabtawi 2006; Fairfax 2008). Differences in time preferences can lead to different payoffs depending on the how the corporation is managed. For example, an R&D investment might result in a higher payoff for a long-term shareholder since up-front costs reduce the immediate value of the firm, while future benefits are uncertain. Short-term investors might prefer a strategy where the firm is broken up and liquidated realizing an immediate return, while long-term investors are harmed if the return from continued operations is high enough. It may be beneficial for short-term investors that a firm engages in accounting fraud, while detrimental for those long-term investors who are left to deal with the negative fallout once the fraud is discovered.

Another source of heterogeneity lies in different underlying characteristics of

shareholders that affect their preferences. Employee shareholders might be opposed to a recommendation to break up the firm where they will lose their jobs, while non-employee shareholders will be in favor (Hayden and Bodie 2008; Bainbridge 2006; Anabtawi 2006). Shareholders who have purchased put options giving them the right to sell their stock at a certain price, will have different preferences to shareholders who own call options entitling them to buy stock at a given price. Shareholders with cross-holdings in both companies involved in a merger or takeover will experience a different payoff to shareholders who own stock in the target or bidding company only (Harford et al 2007; Hayden and Bodie 2008; Lipton and Rosenblum 2003; Anabtawi and Stout 2008; Anabtawi 2006).

Shareholders may disagree with one another on political grounds. For example, shareholders of different political persuasions will be unlikely to agree on the value of corporate political spending on behalf of a candidate for political office (Bebchuk and Jackson 2010). Shareholders also have different views on the value of corporate social responsibility efforts. We can see this by virtue of the fact that shareholder proposals are frequently brought by shareholders onto the company proxy that deal with human rights and environmental issues, and that some shareholders seem to care about social issues other than corporate profits (Hawley and Williams 2000).

Finally, shareholders can differ because they have different information and beliefs about future events. Inevitably shareholders will vary in their level of knowledge and confidence about how a particular investment will affect them, so while all shareholders may ultimately receive the same return, at the time of approval, shareholders can legitimately disagree about what that return will be (Bainbridge 2006; Bebchuk

2006). In fact, the theory of market efficiency is based on the notion that the aggregation of unbiased investor perspectives will lead to accurate market pricing of shares (Gilson and Kraakman 1984).

Bebchuk uses two main arguments to overcome criticisms about the dangers of expanding shareholder rights when not all shareholders share the same goals. First, regarding time preferences, he argues first that market efficiency should eradicate any differences between shareholders, since efficiency requires that current stock prices reflect the long-run value of any corporate strategy. Second, even if markets aren't completely efficient (a notion that must be taken seriously given evidence that stock prices fall victim to bubbles, that asset prices do not always reflect underlying fundamental values and that investors are not always purely rational in their trading strategies⁵), he asserts that in actual fact the majority of shareholders do share the same preferences. Because under his proposals a majority of shareholders are needed to approve any changes or elect directors, he argues that motivated minority shareholders won't be able to garner adequate support from other shareholders to enact their preferred course of action in the event it is not in the best interests of majority investors. Unfortunately, we have very little empirical data on the degree of similarity or differences among shareholders. In the absence of this data, it is unclear why Bebchuk chooses a majority voting threshold, rather than a supermajority one or otherwise.

While most of the debate about shareholder power has focused on public corpo-

⁵The recent financial crisis is a case in point: short-run investors in investment banks benefited greatly from these banks investing in sub prime mortgage securites, while long-run investors experienced either a significant drop in the value of their equity or a complete wipe-out. See Shiller and Akerlof (2009), Bratton and Wachter (2010).

rations, there has been recognition of the possibility of shareholder conflict in private corporations. Easterbrook and Fischel (1991) consider how potential conflicts among shareholders will alter the governance arrangements in closely held corporations. For them, it is the very fact that shareholders are locked into an investment that leads them to disagree over such policies such as dividend distribution and employee compensation. Once shareholders have access to a liquid market, all differences are smoothed away, and shareholders no longer need to be concerned with issues of minority oppression. The traditional view is that it is the absence of a liquid market which creates conflict in the first place.

Shareholders in close corporations protect themselves from wealth-reducing outcomes by instituting high voting and quorum requirements and using employment contracts that ensure minority consent to corporate actions, even though these mechanisms give rise to the potential for shareholder deadlock. (Easterbrook and Fischel 1991; Clark 1986; Bennedsen and Wolfenzon 2000; Pagano and Röell 1998). In this paper, I extend the analysis further to acknowledge the possibility of shareholder heterogeneity in public corporations, unmitigated by the mere fact of a liquid market for shares. I demonstrate that liquidity can be a solution to shareholder conflict, not because conflict is caused by the lack of liquidity, but simply because selling is a less expensive mechanism of overcoming shareholder disagreements than other alternatives such as arbitration, voting trusts, voting agreements and supermajority requirements.

Acknowledging that shareholders may be heterogeneous, and treating those het-

erogeneous preferences as legitimate⁶, requires us to shift from examining the optimal voting rules for an *individual* (representative) shareholder to optimization for the entire *group* of shareholders. Political economists have long considered the problem of how to design voting rules when individual constituents do not all share the same policy preferences. Buchanan and Tullock's (1962) groundbreaking analysis on voting rules explicitly took individual conflict as a given, and placed the individual, free to make choices, at the center of decision making about the kinds of voting rules to implement. These authors recognized that individuals will weigh up the benefits and costs of a particular voting rule (for example, requiring supermajorities makes it easier to block disfavored policies, but less likely that favored policies will be implemented), and will agree to implementation of a rule only when the benefits outweigh the costs, even in circumstances where that individual is sometimes disadvantaged under the rule.⁷

Once we move away from the idea that all shareholders share the same preferences, then taking seriously the criteria of shareholder primacy and equality requires us to take the interests of all shareholders into account, not prioritizing one shareholder over another (other than through the mechanism of disproportional ownership). With differing preferences, in order to make the goal of equality tractable, we have to consider the preferences and utility of the *average* shareholder. As Curtis

⁶Note that I abstract here from agency problems that exist between some institutional investors and their members. It may well be that members (the principals) want the corporation to maximize its value, but their investment manager (the agent) has other goals. On the other hand, it is also conceivable that members share the same goals of the institutional investor. I do not deal with these kinds of agency problems in this paper.

⁷See also Niemi and Weisberg (ed. 1972), for discussions about possible normative criterion for decision rules and voting standards.

(1972) points out, as soon as we drop the assumption that everyone is the same, we must start prioritizing optimization of aggregate group utility over individual utility. Thus we can maintain the familiar norm of prioritizing shareholders as the residual claimants on a corporation, while allowing them to vary in their preferences.

The model I present below builds on a paper by Aghion, Alesina and Trebbi (2004) who focus on the trade-offs faced by citizen-voters in a polity who do not know their own preferences *ex ante*. Specifically, these voters must design a rule that maximizes their well-being while understanding the benefits of entrenching rulers, as well as the risks of expropriation from such entrenchment. The probability of desirable reforms being enacted, as well as the risk of expropriation depends on the level of leader insulation chosen by voters. I extend Aghion, Alesina and Trebbi's model in two key ways. First, I adapt it to a corporate setting and endogenize the the leader's (CEO) benefit: that is, I demonstrate how the level of private benefit consumed by managers will depend directly on the rules chosen by shareholders. In this way, my model can capture dynamics associated with both shareholder conflict and with agency costs. Second, I recognize that unlike citizens in a state, shareholders of a public corporation can easily exit from their investment. The difficulty of dealing with shareholder conflict merely through voting rules and other mechanisms provides an impetus to change key features of the organization (ie, introducing an ability to leave). Therefore it is the case that the design of optimal power-sharing rules both depends on the existing institutional characteristics as well as being a determinant of them.

3 Shareholder Power in an Illiquid Market

Consider an economy consisting of risk-neutral shareholders⁸, each of whom hold an equal fraction of a corporation. Shareholders are not able to easily or costlessly exit from their investment. Shareholders delegate management of the corporation to a CEO, who is charged with running the day to day operations, and making investment recommendations in order to grow the company. Examples of such investments include launching a new product line, opening in a new geographic market, liquidating the firm, spinning-off a sub-division, taking over another firm, buying back shares, and compensating and incentivizing employees. Each time an investment takes place, the CEO is able to consume private benefits at the expense of shareholders. I assume that it is not possible to contract over this consumption. Examples of such non-contractible private benefits include corporate acquisitions made for the purpose of empire building, enjoyment of company perks such as the personal use of the corporate jet, and the making of corporate charitable donations which increase the CEO's own status and power without increasing firm value. The CEO has utility from consumption of his private benefit b . If no investment is made, then the CEO's wealth remains unchanged (normalized to 0).

Before an investment can be made, shareholders must signal their approval. The ease with which CEOs will have their proposals approved depends on the power-sharing arrangements between shareholders and the CEO. The more power shareholders enjoy (or the less entrenched is the CEO), the easier it is for shareholders

⁸Risk-neutrality in investor preferences is a reasonable assumption when investors are fully diversified.

to block investments proposals. A high degree of shareholder power means super-majorities are required to approve a proposal (or a minority of shareholders have veto power). A low degree of shareholder power means that a relatively small proportion of shareholders are needed for approval (or alternatively, a large proportion of shareholders are needed to block the proposal). Let V denote the shareholder vote-share necessary to approve a project. In the limit, when $V = 1$, shareholders enjoy maximal power. The CEO has no protection from shareholder opinion and every single shareholder has veto power. When $V = 0$, shareholders have minimal power. The CEO enjoys complete insulation and the entire body of shareholders is needed to block an investment. When $V = \frac{1}{2}$, a simple majority of shareholders is needed to approve any proposed investment.

I assume that shareholders can vote directly on all proposals. Even though corporations are not usually run through a system of direct democracy, the results from the model can contribute to the debate on shareholder rights by shedding light on how vital it is for shareholder preferences to be represented at all. For example, if I show that it is optimal for shareholders to have limited power, then this would suggest that we should not be nearly as concerned with providing mechanisms allowing for shareholder representation on boards.

3.1 Homogeneous Shareholders

For simplicity and exposition, first consider an environment where shareholders all share the same preferences. Each shareholder has a type λ . In the event the invest-

ment is approved, each shareholder receives a payoff $\lambda - b$, and 0 otherwise.⁹ The timing of the game is:

1. Shareholders determine the degree of shareholder power V .
2. The CEO makes an investment proposal, and decides on the extent of her consumption of the private benefit b .
3. Shareholders approve or block the investment proposal. Shareholders and CEO receive their payoffs.

Since shareholders have complete information at the time of voting, and since shareholders share the same preferences, the question of the optimal degree of shareholder power becomes largely trivial. Shareholder power could be set at a very low level, but investments will never be approved if all shareholders don't benefit. Likewise, shareholder power could be very high, yet still the same proposals will be blocked. So long as a quorum of shareholders is able to vote, shareholders will be indifferent as to the rules about voting because the choice of V has no impact on shareholder welfare.

Shareholder homogeneity does place constraints on the size of the private benefit able to be consumed by the CEO - in this simple model, b cannot be larger than λ or else all shareholders will oppose the investment - but the degree of shareholder power will have no bearing on the size of private benefit consumed by the CEO.

⁹Since we can always solve the model using a representative shareholder (as all shareholders have the same ex ante preferences and wealth), we can treat the CEO's benefit as being the same as the loss to that representative shareholder.

Proposition 1 *When shareholders are homogenous, 1) the private benefit b is invariant to the degree of shareholder power V ; and 2) regardless of the size of b , shareholders are indifferent as to voting rules, that is, the optimal degree of shareholder power is $V^* \in [0, 1]$.*

Proposition 1 suggests that when shareholders all have identical payoff structures, any focus on changing the rules of the game at the level of the corporation is misguided. Instead, a better place to focus one's efforts would be to understand whether voting patterns accurately reflect the actual preferences of shareholders.

3.2 Heterogeneous Shareholders

We now turn to the more interesting case of shareholder heterogeneity. In order to understand optimal power-sharing arrangements when shareholders are heterogeneous, it is necessary to introduce more features into the model. Assume each shareholder i has a type λ_i which is uniformly distributed on $[0, \bar{\lambda}]$. Shareholders all enjoy the same initial wealth, and their payoff is:

$$\begin{cases} (\lambda_i + a)\gamma - b & \text{if investment is made} \\ 0 & \text{if no investment is made} \end{cases}$$

The parameter a represents an exogenous shock that is realized only after the CEO makes the investment proposal. The shock a is public information and can be positive or negative. Assume a is uniformly distributed on $[-A, A]$: hence the size of the shock won't affect the ordering of shareholder types. This shock can be thought

of as information that becomes commonly known to shareholders about the aggregate impact of the investment, not known by the CEO in advance of the investment announcement. For example, the shock could be the enthusiasm of investment analysts about the potential investment, the resolution of regulatory or judicial uncertainty (such as the possibility of antitrust action), or could relate to the availability and cost of financing (such as the announcement of an interest rate increase).

The variable $\gamma > 0$ represents the size of the investment. Investments that yield large expected returns will have a high γ , while investments with a relatively small expected return will have a low γ . Both the CEO and shareholders are aware of the size of γ at the time the CEO makes the investment proposal, before shareholders have the opportunity to approve or block.

The timing of the game is as follows:

1. Shareholders determine the degree of shareholder power V .
2. Shareholder preferences $\lambda_i \in [0, \bar{\lambda}]$ are revealed.
3. The CEO makes an investment proposal, and decides on the extent of her consumption of the private benefit b .
4. The exogenous shock $a \in [-A, A]$ is realized.
5. Shareholders approve or block the investment proposal. Shareholders and CEO receive their payoffs.

This game assumes that shareholders decide on shareholder power levels under a veil of ignorance. This assumption can be justified by appealing to the following

facts. If time preferences are a source of differentiation, then shareholders know that uncertain liquidity shocks can alter their time preferences suddenly. In addition, shareholder time preferences naturally evolve (become shorter), the longer a shareholder holds onto a stock. For example, a shareholder who is young and saving for retirement will have long-term preferences. As the shareholder approaches retirement age, their time preferences will become more short-term. Therefore, even though a shareholder may have long-term (or short-term) preferences at the time of incorporation, he knows that he may not have those same preferences at a later date. If shareholder characteristics are the source of differentiation, it is clear that shareholders will not necessarily know in advance all the positions they will hold in other corporations, or the types of securities they will buy. With an information asymmetry interpretation of heterogeneity, prior to deciding on voting rules, shareholders will not yet have access to or knowledge of the nature of the information or beliefs they will later. Shareholders tasked with making an entrenchment decision must do so knowing their current preferences may and probably will change.

3.2.1 Optimal Shareholder Power with no Agency Costs

First consider what happens when shareholders will not suffer a loss from the CEO's opportunistic behavior, that is, when $b = 0$. Shareholders will want to approve the investment when the payoff from approval is greater than the payoff with no investment.

$$\lambda_i + a > 0$$

The investment will be approved when the fraction of shareholders in favor is at least as great as V (or when the fraction opposed is less than $1 - V$). All shareholders with types $\lambda_i < -a$ will be better off if the investment does not take place, and will therefore vote against it. For approval, it must be the case that,

$$\frac{-a}{\bar{\lambda}} < 1 - V \quad (1)$$

The LHS of equation (1) is just the cumulative distribution function for a uniform distribution, and is thus the proportion of total shareholders who will be disadvantaged if the investment is made. Rearranging, we have a necessary condition on the size of the exogenous shock a for shareholder approval: $a > -\bar{\lambda}(1 - V)$.

We can now set up the shareholders optimization problem. The shareholder chooses the level of shareholder power V , to maximize her expected payoff.

$$\max_V \int_{-\bar{\lambda}(1-V)}^A \left(\frac{\bar{\lambda}}{2} + a \right) \frac{1}{2A} da \quad (2)$$

Equation (2) can be understood as follows. If the exogenous shock is too negative (that is, when $-A \leq a < -\bar{\lambda}(1 - V)$), the investment will not be approved, and the shareholder receives 0. For $-\bar{\lambda}(1 - V) \leq a \leq A$, the investment will be approved, and the shareholder will receive an expected payoff of $\frac{\bar{\lambda}}{2} + a$ where $\frac{\bar{\lambda}}{2}$ is the average shareholder type. It is necessary for shareholders to use expected type since they solve for V before knowing their actual type. Solving equation (2), we get,

$$V^* = \frac{1}{2} \quad (3)$$

Thus we can now state the following Proposition.

Proposition 2 *When contracts are complete (no agency costs) and shareholders are heterogeneous, the optimal level of shareholder power calls for a majority voting rule, with $V^* = \frac{1}{2}$.*

The optimal power-sharing rule does not depend on the degree of aggregate uncertainty, the size of the investment, or on the extent of shareholder conflict. Rather, the allocation is a function of the distribution of shareholder types. Shareholders who are unsure of their type optimize for the average shareholder type. Since the distribution here is assumed to be symmetric, the average voter is identical to the median voter. In choosing a majority rule, shareholders grant an effective power of veto to the median voter: in order for any investment recommendation to be implemented, it must pass muster with the median shareholder. Shareholders will agree to a majority voting rule even if *ex post* they are worse off. What is important is that this rule maximizes the shareholders payoff *ex ante*.

Majority voting is a intuitive solution, and one very familiar to political economists.¹⁰ This result also resonates with prevailing practice in corporate law. Default voting rules generally require a majority of shareholders to vote in favor of a proposal before it will be approved.¹¹ As mentioned earlier, corporations are also adopting

¹⁰See Buchanan and Tullock (1962), Rae (1969), Neimi and Weisberg (ed. 1972), and Barbera and Jackson (2004) for discussions about why majority voting rules assume special importance in constitutions.

¹¹For example, section 7.25 of the Model Business Corporations Act states that so long as a quorum exists, an action (other than the election of directors) is approved if the votes cast in favor of the action exceed the votes cast against. Section 216 of the Delaware General Corporations Law also specifies that a majority vote of shareholders present will suffice for approval of corporate proposals other than the election of directors.

majority voting rules for elections of individual directors, overriding the default plurality standards.¹²

3.2.2 Optimal Insulation with Agency Costs

So far I have demonstrated that shareholders are indifferent to voting rules when they all share the same type, and prefer majority rule when they differ from one another and agency costs are zero or negligible. What happens to optimal power-sharing rules once we account for the presence of agency costs? Understanding this case is important because advocates in favor of increasing shareholder power (and reducing management power) justify their positions on the basis that doing so is an effective way of controlling agency costs. Note however that this question is only interesting if we assume shareholders are heterogeneous.

The CEO decides on her consumption of private benefits b knowing what the level of shareholder power V is, and shareholders take the CEO's optimization decision into account in determining the optimal voting rule. The shareholders cannot however change V once they observe b because the voting rule is part of the corporate charter and bylaws, and therefore not easy to alter.¹³ The ability of shareholders to pre-commit to an action, and the fact that the CEO's action will at least partly be in response to the shareholders' choice means that the equilibrium of this game will be a Stackelberg equilibrium. The CEO's strategy will be a function of the shareholders'

¹²See section 7.28 of the Model Business Corporations Act and section 216(3) Delaware General Corporations Law specifying plurality voting standards for the election of directors.

¹³This paper does not deal with the interesting question of choosing how to choose, that is, what voting rules shareholders use to decide on voting rules and how easy it should be to voting rules once agreed upon. See Barbera and Jackson (2004) and Koray (2000) for an examination of the stability and endurance of constitutions.

choice of V ; shareholders choose V to maximize their total payoff, knowing the CEO's choice of b across all possible values of V .

Therefore shareholders need to determine the optimal voting rule V^* , not knowing their own type, but knowing the probability distribution over all types. The CEO needs to decide on the optimal amount of private benefit to consume b^* , knowing that her choice will impact the level of shareholder power V . We solve the problem by backward induction.

An individual shareholder will not want to block an investment proposal if the expected return from the investment is higher than the return from not investing. Therefore, a necessary condition for individual support is:

$$(\lambda_i + a) \gamma - b \geq 0 \tag{4}$$

Thus the only shareholders who would support the investment have types λ_i such that,

$$\lambda_i \geq \frac{b}{\gamma} - a \tag{5}$$

Let $\hat{\lambda} = \frac{b}{\gamma} - a$ represent the cut-off or marginal shareholder: all shareholders with preferences $\lambda_i < \hat{\lambda}$ would reject the investment.

Lemma 1 *The marginal shareholder type is increasing in the CEO's benefit b , and is decreasing in both the size of the investment γ and the size of the exogenous shock a .*

Lemma 1 describes how the proportion of shareholders who are in favor of an investment will depend on factors both within the CEO's control and outside it. As

the CEO's private benefit grows, fewer shareholders will be in favor of the investment, and so the marginal shareholder (that is, the shareholder who is indifferent between voting for the investment or against) must be higher. On the other hand, when the CEO chooses investments with greater returns, more shareholders will benefit if the investment is passed, and we therefore have the marginal shareholder type declining. Finally, the larger and more positive the exogenous shock a , the more shareholders who will benefit from the investment, and the lower is the type of the marginal shareholder.

In order to successfully block a proposal, a fraction of shareholders greater than $1 - V$ must reject the investment. Therefore, the investment will only be made if the total fraction of shareholders with types λ_i below $\hat{\lambda}$ is less than $1 - V$. That is,

$$\frac{\frac{b}{\gamma} - a}{\bar{\lambda}} < 1 - V$$

Rearranging, we can see that in order for the investment to be made, the following condition must be satisfied.

$$a \geq \frac{b}{\gamma} - \bar{\lambda}(1 - V) \tag{6}$$

From this condition, we can derive the likelihood that any investment will be approved. Using the fact that a is uniformly distributed, we can describe the probability of approval as follows,

$$\begin{aligned} \Pr(\text{approval}) &= \Pr\left(a > \frac{b}{\gamma} - \bar{\lambda}(1 - V)\right) \\ &= \frac{1}{2} + \frac{\bar{\lambda}(1 - V) - \frac{b}{\gamma}}{2A} \end{aligned} \tag{7}$$

Lemma 2 *The probability that an investment will be approved is decreasing in the level of shareholder power V .*

From Lemma 2 we can see that entrenching managers leads to more corporate investments. The probability of approval is maximized when managers are fully insulated and shareholders have minimal power as occurs when $V = 0$.

The CEO's Optimization Problem The CEO solves for the private benefit b that maximizes her expected payoff, taking as given the level of shareholder power V . Her optimization problem can thus be written:

$$\max_b \int_{\frac{b}{\gamma} - \bar{\lambda}(1-V)}^A b \frac{1}{2A} da \quad (8)$$

To understand equation (8), note that the CEO will receive a payoff of 0 if $-A < a < \frac{b}{\gamma} - \bar{\lambda}(1 - V)$: that is, when the realization of a is small enough such that the investment will not be approved by the necessary threshold. For $\frac{b}{\gamma} - \bar{\lambda}(1 - V) \leq a \leq A$, the CEO will receive a payoff of b . In these circumstances, a is large enough so that enough shareholders are in a position of preferring that the investment is made. The CEO chooses b to maximize her payoff, knowing that her choice of b will also influence the proportion of shareholders voting in favor of the investment. Solving, we have,

$$b^* = \frac{\gamma}{2} (A + \bar{\lambda}(1 - V)) \quad (9)$$

Proposition 3 *The CEO's optimal private benefit b^* is decreasing in the level of shareholder power V , and increasing in the size of the investment γ , the amount of*

aggregate uncertainty A , and the upper bound of shareholder types $\bar{\lambda}$.

Proposition 3 demonstrates that as shareholders increase management entrenchment levels, CEO private benefits increase. The intuition behind the negative relationship between b^* and V is straightforward. The more likely it is an investment will be approved (or the harder it is to block an investment) - as happens the lower V is - the safer it is for the CEO to consume benefits at the expense of shareholders. By having to keep a smaller number of shareholders happy, it is possible for the CEO to consume more without endangering the prospects of approval. In particular, it is shareholders with higher types whose approval the CEO needs. The CEO can consume greater benefits and still keep these shareholders in a position of being better off with the investment than without. As the proportion of shareholder types the CEO needs to satisfy grows (that is, as V increases), by Lemma 1 the marginal shareholder $\hat{\lambda}$ declines. This means that b must be lower in order to gain shareholder approval. The CEO will consume benefits right up to the point at which the size of the benefit jeopardizes the investment's approval prospects. A smaller benefit is preferable to the CEO than no benefit at all, as is the case if shareholders block the proposal.

A similar intuition applies to the positive relationships between the private benefit and the size of the investment, the degree of uncertainty and shareholder type. The optimal benefit b^* is increasing in the size of the investment γ because the greater is γ , the more likely shareholders will be better off with the investment made (since the greater is their payoff, even with higher agency costs). CEOs can consume more yet shareholders will still approve investment proposals. Uncertainty about

the size of the exogenous shock a increases b^* because a bigger a - more likely when A grows - results in more shareholders with positive payoffs, and therefore greater scope to safely consume private benefits without shareholders objecting. Finally, b^* is increasing in the upper bound of shareholder type because the greater is $\bar{\lambda}$, with a uniform distribution, the higher is the likelihood that shareholders will benefit from a given investment.

The Shareholders' Optimization Problem In the model, even though they are unable to contract over it, the size of the private benefit b^* is known to shareholders. At the time of making the decision about power-sharing arrangements, shareholders can calculate the CEO's optimal benefit function, and therefore take the CEO's actions into account in their own optimization decision. Note that because shareholders precommit to a voting regime, their decision about the extent of shareholder power will not be a direct function of the benefit b . On the other hand, because they precommit, the CEO's decision will be a function of shareholders' choice. For this reason we can write $b^* = b(V)$.

Each shareholder operating behind a veil of ignorance (with the same *ex-ante* preferences) chooses the degree of shareholder power V to maximize their expected payoff $\left(\frac{\bar{\lambda}}{2} + a\right) \gamma - b(V)$. Shareholders must solve the following optimization problem:

$$\begin{aligned} & \max_V \int_{\frac{b(V)}{\gamma} - \bar{\lambda}(1-V)}^A \left(\frac{\bar{\lambda}}{2} + a\right) \gamma - b(V) \frac{1}{2A} da \\ &= \max_V \frac{\gamma}{2A} \int_{\frac{1}{2}(A - \bar{\lambda}(1-V))}^A \frac{\bar{\lambda}}{2} V + a - \frac{A}{2} da \end{aligned} \quad (10)$$

Investments do not take place when $-A < a < \frac{b(V)}{\gamma} - \bar{\lambda}(1 - V) = \frac{1}{2}(A - \bar{\lambda}(1 - V))$, and so shareholders receive a payoff of 0. For $\frac{1}{2}(A - \bar{\lambda}(1 - V)) \leq a \leq A$, shareholders receive a payoff depending on their type and the exogenous shock net of agency costs, a function of shareholder choice of V .

From equation (10) we can immediately see that shareholders face a tension in determining how much power to maintain for themselves. The size of the average payoff is increasing in V : this is because more shareholder power leads to a smaller private benefit for the CEO (see Proposition 3 above). On the other hand, from the bounds of the integral, we see that the likelihood of receiving any payoff at all is decreasing in V since the bigger is V , the less likely the investment will be approved. Shareholders thus face a trade-off. Greater shareholder power results in lower agency costs (and therefore higher expected payoff in the event the investment takes place), but also a lower likelihood of the investment being approved. Lower levels of shareholder power means that the company will make more investments, but also that the CEO will consume larger private benefits at the expense of the shareholder.

Solving the shareholder's optimization problem, we have,

$$V^* = \frac{2}{3} + \frac{A}{3\lambda} \tag{11}$$

Proposition 4 *The optimal level of shareholder power when shareholders are heterogeneous, can't costlessly exit from their investment, and can't contract over the CEO's consumption of private benefits is a supermajority voting regime, $V^* = \frac{2}{3} + \frac{A}{3\lambda}$. V^* is increasing in aggregate uncertainty A , and decreasing in the upper bound on*

shareholder type $\bar{\lambda}$.

Higher levels of aggregate uncertainty result in higher levels of shareholder power. Two reinforcing mechanisms are at work here. When A is bigger, more shareholders are likely to approve an investment, and therefore shareholder power can safely be higher since a greater number of shareholders will have preferences that exceed the marginal shareholder type. It is further desirable to increase shareholder power levels when A is higher because the CEO's optimal benefit b is increasing in A . Since b decreases with V , shareholders prefer to increase V as much as possible - they can do this while still protecting the chances that beneficial investments are approved.

In contrast, as the upper bound on shareholder type $\bar{\lambda}$ grows, the optimal level of shareholder power shrinks. Two competing forces are at work here. On the one hand, as $\bar{\lambda}$ grows, shareholder types are more likely to exceed the marginal shareholder type. This leads to higher shareholder power for the same reasons discussed above - greater power is preferable because it provides a way to control agency costs in circumstances where investments are likely to pass. On the other hand, as $\bar{\lambda}$ grows, so does shareholder heterogeneity and therefore potential conflict. In deciding rules *ex ante*, shareholders are concerned to protect themselves in the event that they have high preferences *ex post* (more likely the higher is $\bar{\lambda}$) from shareholders with types below the marginal shareholder type. Shareholder concerns to not give other shareholders too much ability to block investment proposals push optimal shareholder power levels lower. Shareholders would prefer to make it harder for other shareholders to block CEO proposals (but only up to a point), even if it means that agency costs are higher as a result. Ultimately, it is this second effect which dominates: as

shareholder heterogeneity grows, all else equal shareholders will choose to have more insulated managers, giving themselves less power to block proposals.

The overall effect however, occurs within a context where shareholders choose high levels of shareholder power to insure that they are protected in the event they have low types *ex post*. Thus, supermajorities are required in order for any proposal to be approved. It seems that shareholders operating under a veil of ignorance are willing to limit investments in order to reduce both agency costs, and harm that might result from investments that are not beneficial *ex post*. The results from Proposition 4 are consistent with prevailing practices in closely held corporations, where minority shareholders are given significant veto power (Clark 1986; Easterbrook and Fischel 1991; Bai, Tao and Wu 2004; Nagar, Petroni and Wolfenzon 2010).

4 Shareholder Power in Liquid Markets

The model outlined above is particularly relevant in circumstances when shareholders can't or won't sell their shares. It is clear that shareholders in private corporations face illiquid markets. Shareholders in public corporations also may be reluctant to sell in each and every circumstance they find themselves disadvantaged under a particular decision. They may be reluctant to sell at a loss knowing that they might recoup their investment in the future, or they may be reluctant to sell because of the transaction costs involved. We see many cases where shareholders unhappy with management decisions, do not choose to liquidate their investment.¹⁴ However,

¹⁴For example, the California Public Employees' Retirement System (CalPERS) routinely holds shares in companies it believes are poorly governed in the hope that performance will improve in the future. See CalPERS Reform Focus List Companies.

when faced with a corporate decision that is welfare-reducing, many shareholders will simply follow the Wall Street Rule and sell their shares. This ability to exit shareholdings into a thick market has led some scholars to argue that shareholder power should be lower in public companies than in private companies (Bainbridge 2006).

In this section, I investigate such claims by allowing shareholders to sell their shares in circumstances where they will be worse off if the vote is approved. The timing of the game is unchanged except that the shareholder can choose to sell her shares after the exogenous shock a is realized (so she knows her payoff) or she can hold on to her shares and vote. Shareholder payoffs change slightly:

$$\left\{ \begin{array}{l} (\lambda_i + a)\gamma - b \text{ if investment is made} \\ 0 \text{ if no investment is made} \\ 0 \text{ if shareholders sell} \end{array} \right.$$

I make the assumption that the wealth of the shareholder is the same when she sells and when the investment is not approved. That is, the shareholder can exit at a price that leaves her indifferent between selling and holding on if no investment is made. In essence then, if the shareholder's payoff $(\lambda_i + a)\gamma - b < 0$, then she automatically sells. Simplifying prices in this way is justified because if a shareholder were worse off selling than retaining her shares, she would essentially be in the world described above with illiquid markets (although perhaps with slightly different payoffs). On the other hand, if she is better off selling even when she benefits from the investment, she can always make that choice without having to be concerned at all with the degree of

power management has. As before, we can distinguish between cases where agency costs are positive and where agency costs are zero.

4.1 No Agency Costs

Assume $b = 0$. The analysis is basically unchanged except that now only shareholders with types $\lambda_i > -a$ will hold onto their shares. All other shareholders will sell. This means that the average shareholder who votes has type $\frac{\bar{\lambda}-a}{2}$. The shareholders's maximization problem becomes:

$$\max_V \int_{-\bar{\lambda}(1-V)}^A \left(\frac{\bar{\lambda}-a}{2} + a \right) \gamma \frac{1}{2A} da$$

Solving for optimal insulation, we have $V^* = 0$.

Proposition 5 *The optimal level of shareholder power when shareholders are heterogeneous, are able to sell their shares, and agency costs are zero is $V^* = 0$.*

The ability of shareholders to sell their shares leads to a dramatically different result: shareholders will institute a system of limited shareholder power to protect themselves in the event the investment is wealth-enhancing. Shareholders no longer need be concerned with maintaining some veto power over management proposals because they are able to easily exit unprofitable investments. When shareholder power is minimal and agency costs are zero, there is a sorting among shareholders leading to reduced levels of heterogeneity and hence of conflict. All investments are approved.

4.2 Positive Agency Costs

In public companies, the separation of ownership and control gives rise to well-known agency problems. Therefore, it is necessary to take agency costs into account in the design of power sharing rules. Assume $b > 0$. The CEO's benefit function is unchanged: $b(V) = \frac{\gamma}{2} (A + \bar{\lambda}(1 - V))$ (see Proposition 3). However the shareholders optimization problem changes. Since all shareholders who are worse off if the investment take place will sell - that is, those shareholders with types $\lambda_i < \frac{b}{\gamma} - a$ - it must be the case that the remaining voting shareholder has an expected type $\frac{\bar{\lambda} + \frac{b}{\gamma} - a}{2}$. The optimization problem becomes:

$$\max_V \int_{\frac{b(V)}{\gamma} - \bar{\lambda}(1-V)}^A \left(\frac{\bar{\lambda} + \frac{b}{\gamma} - a}{2} + a \right) \gamma - b(V) \frac{1}{2A} da$$

Solving, we have

$$V^* = \frac{1}{3} + \frac{A}{3\bar{\lambda}} \tag{12}$$

Proposition 6 *The optimal level of shareholder power when shareholders are heterogeneous, are able to sell their shares but can't contract over the CEO's consumption of private benefits is $V^* = \frac{1}{3} + \frac{A}{3\bar{\lambda}}$. V^* is increasing in aggregate uncertainty A , and decreasing in the upper bound on shareholder type $\bar{\lambda}$.*

As before, the optimal level of shareholder power is higher as soon as one takes into account the fact that agency costs may be endogenous - that is, the private benefits consumed by the CEO will depend on how much veto power shareholders are granted. Proposition 6 demonstrates that it is not the case that shareholders prefer

to ignore agency costs altogether, and instead will tailor the level of shareholder power to control agency costs.

5 An Illustrative Example

The results above illustrate how shareholders' inability to sell leads them to allocate more power to themselves in an effort to manage shareholder conflict. I show that it is not at all necessary to assume that once shareholders gain access to a liquid market for their shares, that all conflict disappears. Rather, liquidity is an effective way to manage shareholder conflict while ensuring that corporations can continue to make worthwhile investments. Liquidity however, does not solve conflicts between shareholders and managers.

When investments are liquid more management proposals will be approved because unhappy shareholders will sell before voting. When markets are illiquid, it will be the case that either many more proposals will be voted down by unhappy shareholders, or there will be high costs of negotiation among shareholders to reach a satisfactory agreement. As the capital needs of corporations increase, and the shareholder base diversifies, the costs of minority veto power and shareholder negotiation become prohibitive. Liquid markets are thus a mechanism to overcome shareholder conflict.

For firms with shareholders that are relatively homogeneous with no capital constraints, under this theory there is not much rationale for going public. In these firms, there is little need for costly mechanisms to deal with shareholder conflict

such as supermajority provisions (giving minority shareholders veto power and limiting management's power to make firm investments), voting agreements and trusts and arbitration. For firms however, where either the existing shareholder base has strong disagreements about the best course of action, or where the need to raise more capital for future operations will have the effect of bringing in shareholders with divergent interests, going public can ensure that management proposals are likely to be embraced. Going public presents a much less costly alternative to shareholder conflict resolution than others available, and one under which all shareholders, regardless of their type, will be better off.

To illustrate how these functions work, assume that shareholder types λ_i are uniformly distributed on $[0, 2]$, that aggregate uncertainty $a \in [-1, 1]$, and that the size of the investment $\gamma = 1$. Let us first consider the case when unhappy shareholders cannot or will not sell because it is too costly. In this case, $V^* = \frac{5}{6}$, which means that in order for an investment to be approved, at least $\frac{5}{6}$ of shareholders must be in favor. The CEO's benefit is $b^* = \frac{2}{3}$, the probability of the investment taking place is $\frac{1}{3}$, and the shareholders' expected payoff is $\frac{1}{3}$.

Several points can be gleaned from this simple numerical example. First, granting little protection for the CEO does not mean that no investments will be made, although note that the number of investments will be much lower than if shareholder power were lower. Second, very high levels of shareholder power do not completely eliminate agency costs, although giving more power to shareholders to block management proposals significantly reduces them.

For example, consider what happens when shareholder power is increased to

$V = 1$. Both shareholder and CEO expected payoffs decline (relative to the optimum) to $\frac{5}{16}$ and $\frac{1}{8}$ respectively. Increasing shareholder power above the optimum leaves both shareholders and managers worse off. Even though the CEO's private benefit is lower in the event an investment is approved, far fewer investments are made (the probability of approval drops to $\frac{1}{4}$). This reduced likelihood of investment harms not only the CEO, but also the shareholders themselves.

By contrast, consider what happens if shareholder power is decreased, say to $V = \frac{1}{3}$. The probability the investment is approved increases to $\frac{5}{12}$. Shareholder and CEO expected payoffs are now $\frac{47}{144}$ and $\frac{5}{18}$: shareholders are strictly worse off and the CEO is strictly better off. Lower levels of shareholder power result in a wealth transfer from shareholders to the CEO due to the reduced need to keep shareholders happy. The expected payoff for the CEO is higher because of the greater likelihood of the measure being passed. In particular, note that the increased benefit to the CEO is greater than the loss to shareholders.

Compare this with the situation where unhappy shareholders are able to sell their shares. Plugging the parameter values into equation (12), we have the optimal voting rule of $V^* = \frac{1}{2}$. The CEO consumes a private benefit of 1, the probability of the investment taking place is $\frac{1}{2}$ and the expected benefit for shareholders is $\frac{3}{8}$.

This simple example highlights two salient points. First, we can see that a majority voting rule is preferable to one where the CEO enjoys full power. When $V = 0$ the CEO takes a greater private benefit of $\frac{3}{2}$, the probability of the investment being approved is $\frac{3}{4}$, and the expected shareholder payoff declines to $\frac{9}{32}$. Agency costs provide a justification of maintaining some shareholder veto power, even while this

veto power diminishes the probability of investments occurring.

Second, compare the welfare of shareholders when they have access to liquid markets to when they cannot exit from their investment in the corporation. Both the expected payoff for shareholders *as well as* the CEO's private benefit are higher. This increase in shareholder welfare is a function of the fact that unhappy shareholders can costlessly sell, so will be no worse off when the investment takes place. Shareholders accordingly do not need to protect themselves from each other to the same degree so shareholder power will be lower. Lower shareholder power increases both the likelihood of the investment being approved and the amount of private benefit consumed. However, even though agency costs are higher in a liquid market, shareholders are still better off. Liquidity provides an outlet for shareholder conflict leading shareholders to better outcomes.

6 Conclusion

In this paper, I present a number of different results regarding the optimality of power-sharing arrangements between shareholders and managers, summarized in the table below. These results demonstrate how one can reach very different conclusions depending on the assumptions one makes. Shareholders will take each of these considerations into account in crafting power-sharing arrangements.

Table 1: Summary of Results

Ability to sell shares	Distribution of SH types	Agency Costs	Optimal Voting Threshold
No	Homogeneous	$b \geq 0$	Any V
No	Heterogeneous	$b = 0$	$V = \frac{1}{2}$
No	Heterogeneous	$b > 0$	$V > \frac{1}{2}$
Yes	Homogeneous	$b \geq 0$	Any V
Yes	Heterogeneous	$b = 0$	$V = 0$
Yes	Heterogeneous	$b > 0$	$V > 0$

In deciding on the optimal allocation of power in a firm, shareholders face two major trade-offs. The first trade-off is concerned with minority veto power and is completely resolved when shareholders are able to easily exit from their investment in a firm. When shareholders cannot liquidate their investment, increasing shareholder power is beneficial in that it makes it easier for shareholders to block corporate investments that do not benefit them. On the other hand, greater shareholder power can be costly in that those investments that would benefit a majority of shareholders could be blocked by the minority of shareholders who would be harmed. Since shareholders don't know their actual type at the time of determining the optimal level of shareholder power, they need to balance each of these considerations.

It is precisely this trade-off which leads to the result that shareholders choose majority voting requirements. However, as soon as one takes into consideration the fact that in many cases unhappy shareholders can simply liquidate their shareholding at a negligible cost, concerns about minority veto power disappear. Shareholders no

longer face the trade-off described above and hence will allocate more power to managers.

The second trade-off involves agency costs, and thus is present regardless of shareholders ability to sell their shares. Managers will condition their consumption of private benefits on how much power shareholders have to block managerial recommendations. Shareholders in deciding how much power to allocate to themselves will take the manager's optimization decision into account. The fact that agency costs are endogenous in this way, leads shareholders to allocate more power to themselves. Concerns about minority veto however place a lower bound on how much power shareholders are willing to assume.

Finally, this paper stakes out a middle ground between proponents and opponents of increasing shareholder power. In choosing rules of power allocation, shareholders wish to tie their own hands, possibly maintain some veto power, and control managerial agency costs. I demonstrate that it is not necessary to assume that shareholders are homogeneous to justify an increase in shareholder power. In support of Bebchuk, I show that shareholders will choose corporate governance rules in an effort to limit agency costs even at the expense of the corporation making fewer investments. In support of those who argue that all decision making should be centralized within the firm, I show that when shareholders are able to easily sell their shares, they are prepared to grant significantly more power to managers.

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