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AGENCY PROBLEM AND OWNERSHIP STRUCTURE: OUTSIDE BLOCKHOLDER AS A SIGNAL

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We propose a model in which an entrepreneur, seeking outside financing, sells a large equity share to an outside blockholder in order to signal his low propensity to extract private benefits. A conventional theoretical rationale for the presence of an outside block holder is mitigation of the agency problem via some type of monitoring or intervention. Our model provides a novel insight: outside blockholders may be attracted by firms with low, rather than high, agency problems. Our result yields a new implication for the interpretation of an often documented positive relationship between outside ownership concentration in a firm and its market valuation: such relationship may be driven by "sorting" rather than by a direct effect of blockholder monitoring. In fact, we show that the positive correlation may arise even if the blockholder derives private benefits and has no positive impact on the value of small shares. Finally, we argue that our analysis may help explain why the market reacts more favorably to private placements of equity as opposed to public issues.

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1 Introduction

It is well documented that firms with blockholders are widespread.[1] The holders of large stakes are often a firm's insiders, i.e., those who control the firm's operations and assets (e.g., managers or family owners closely involved in management). Yet, it is not uncommon for a firm to have *outside* blockholders among its owners.[2]

Why does an outside blockholder emerge in a firm? What determines her share? In the traditional agency theory paradigm, an outside blockholder is an active monitor who restricts managerial (entrepreneurial) private benefit extraction and corrects inefficiencies of the incumbent management. Thus, if ownership structures are chosen so as to mitigate inefficiencies/agency costs within firms, one would expect emergence of an outside blockholder when the agency problem is severe enough or the incumbent management is not sufficiently efficient. This is indeed a feature of many existing theoretical studies in which a blockholder actively intervenes in the governance of the firm.[3] This logic is also in line with the argument in Holmström and Tirole (1997) or Tirole (2006, Ch. 9.2.1), who show that the severity of the agency problem increases the likelihood that the entrepreneur will attract outside monitor in order to be able to raise finance.

There is also more recent literature that examines the role of blockholders as speculative monitors affecting a firm's governance through trading their shares ("exit") rather than intervention ("voice")[4], but such "passive" monitoring in these models is again a response to one or another type of the agency problem. Edmans (2014) provides an extensive survey of blockholder theories.

Our paper takes the more traditional view of blockholders as active monitors of managers. However, in contrast to the earlier literature, we propose a signaling theory, according to which an entrepreneur chooses to attract an outside blockholder in order to signal his low "propensity to expropriate", that is, low willingness or ability to extract private benefits at the expense of outside shareholders. Thus, relative to the traditional agency theory framework, our theory provides the opposite prediction about the choice of the ownership structure with a blockholder: firms with a *lower*, rather than higher, agency cost are more likely to attract an outside blockholder. Our theory provides a new insight into the determinants of ownership structure and delivers new explanations to some empirical regularities.

[1] See Holderness (2009) for evidence on the U.S., Faccio and Lang (2002) and Barca and Becht (2001) on Europe, Claessens et al. (2000) on East Asia. See also La Porta et al. (1999) for evidence in a cross section of developed economies.

[2] For example, in Holderness (2009)'s representative sample of U.S. companies outside blockholders hold 11% of the stock on average. In Lins (2003)'s large sample of companies from 18 emerging markets outside blockholders hold on average 19% of the stock (voting rights).

[3] See, e.g., Shleifer and Vishny (1986), Burkart et al. (1997), Pagano and Röell (1998), Bolton and Von Thadden (1998), Maug (1998), Aghion et al. (2004), Stepanov (2010), Stepanov (2013).

[4] See, e.g., Edmans (2009), Edmans and Manso (2011), Admati and Pfleiderer (2009).

We examine the problem of an entrepreneur who wants to raise outside funds by selling equity in order to finance an investment opportunity. The crucial ingredient of our setup is the asymmetry of information between the entrepreneur and the market about the propensity (or ability) of the former to extract private benefits. Under symmetric information, "good" entrepreneurs (i.e. those with a low expropriation propensity) choose not to attract an outside blockholder because they are able to raise finance anyway, and blockholder monitoring is costly (this cost is ultimately born by the entrepreneur though the prices of the offered shares). "Bad" entrepreneurs can raise finance by selling just dispersed equity only when the investment opportunity is good enough. Otherwise, they need to resort to attracting an outside blockholder, because blockholder monitoring becomes necessary for convincing the investors that they will get their money back.

Thus, under symmetric information, in line with the traditional agency theory framework, entrepreneurs with a low agency problem can raise necessary funds without attracting an outside monitor, while firms with a high agency problem need a monitor in order to be able to raise finance.

The asymmetry of information changes the solution radically. When the investment opportunity is good enough, attracting an outside blockholder helps a good entrepreneur to credibly signal his type to the market, because, in this case, a bad entrepreneur prefers being priced fairly and not monitored to pretending to be good but being monitored. When the investment opportunity is not good enough, the separation becomes unfeasible in equilibrium but attracting an outside blockholder may still be necessary for a good entrepreneur in order not to be perceived a bad type (pooling equilibrium). As a result, under asymmetric information, the outside ownership concentration chosen by the good type is never below the level chosen by the bad type and, what is especially remarkable, is even higher for a range of parameters, which stands in stark contrast to the symmetric information outcome.

What is especially interesting, our result holds even when we allow the outside blockholder to participate in the expropriation of small shareholders instead of reducing it. In such a case, monitoring does not increase the value for minority shareholders, but simply helps the blockholder to transfer a part of the private benefits into her pocket. In this setup, the described type of separating equilibrium still exists in a range of parameters, while separating equilibria of other types do not appear.

Our model has implications for two types of empirical regularities: (1) the relationship between outside ownership concentration and a firm's market valuation, and (2) the stock price reaction to private placements of equity.

Several empirical studies find that the presence or a greater equity share of a large outside shareholder is positively related to a firm's market valuation or its operating performance. Lins

(2003) finds that large non-management blockholders increase firm value in emerging markets. Mitton (2002) documents that stakes held by non-management blockholders were positively associated with stock price performance of East Asian companies during the financial crisis of 1997-1998. Becker et al. (2011), examining U.S. data, find that individual (i.e., not institutional) nonmanagerial blockholders positively affect operating performance.

To the extent that the largest firm's shareholder can be considered as an insider/entrepreneur (which is often the case in family firms), empirical studies on the effect of the second largest shareholder are also relevant to us. Lehmann and Weigand (2000) using German data conclude that the presence of the second large shareholder improves profitability. In a sample of Finnish firms, Maury and Pajuste (2004) find that a more equal distribution of votes among large blockholders has a positive effect on firm value. They also find that the identity of large shareholders matters: family firms where other large blockholders are not families have greater valuations compared to firms where other large blockholders are families, suggesting that non-family blockholders restrict private benefit extraction by families. Laeven and Levine (2008), in a large sample of firms from 13 Western European countries, find that, controlling for the size of the largest shareholder, higher cash-flow rights of second largest shareholder boost corporate valuation.[5]

A standard explanation for these findings is that outside blockholders restrain insiders from self-dealing and, hence, raise the firm's market value. This seemingly logical argument misses the fact that ownership structures are endogenous. Both the ownership structure and performance may be determined to a large extent by unobserved factors.[6] In our model, the entrepreneur's expropriation propensity is precisely such an unobserved factor. Our results thus suggest a novel interpretation of the empirical findings: the magnitude of the positive relationship between an outside blockholder's share and firm value should not be attributed to a direct monitoring effect only: part of the effect, or *even the whole* effect (as our model with collusion demonstrates), may be a result of signaling.

The second implication of our results deals with the interpretation of a more favorable stock market reaction to private placements of equity (by listed companies) in which a large block is

[5] There are several papers that obtain different results. Demsetz and Villalonga (2001) find no statistically significant relationship between the outside ownership concentration and Tobin's Q in a sample of U.S. firms. Anderson and Reeb (2003) studying S&P 500 firms find that the combined share of all large outside (non-family) blockholders has a negative effect on market and operating performance. Miller et al. (2007) find a negative or insignificant relationship between the share of outside blockholders and firm value in U.S. family firms. Earle et al. (2003) use panel data on listed Hungarian firms. They find that, while the size of the largest blockholder positively affects operating performance, adding other large shareholders does not add value (controlling for the largest shareholder's share).

[6] Empirical scholars, of course, recognize the ownership endogeneity problem. Himmelberg et al. (1999) find that a large part of the cross-sectional variation in ownership structures of US companies is explained by unobserved firm heterogeneity. Demsetz and Villalonga (2001), extending in their work numerous previous studies on the ownership-performance relationship conclude the following: "the results from our study and from some of the studies preceding it yield unequivocal evidence for the endogeneity of ownership structure".

placed with a new active investor compared to both public equity issues (Wruck, 1989; Hertzel and Smith, 1993) and private placements without a new large and/or active investor (Barclay, Holderness, and Sheenan, 2007; Wruck and Wu, 2009). A private placement with a large active investor corresponds to creating a blockholder in our framework, whereas public issues or private placements to small shareholders correspond to selling dispersed equity.

The two currently most accepted explanations for a more favorable stock price response to private equity placements compared to public issues are monitoring (Wruck, 1989) and certification (Hertzel and Smith, 1993). The "monitoring hypothesis" argues that positive returns reflect the market expectation that investors participating in private placements will be actively involved in the governance of a company. This story, however, does not explain why certain issuers choose private placements while others – public issues. After all, if investors can perfectly foresee the future private placement, its announcement should not be a news for them. Our model provides a more complete picture, in which firms endogenously choose their ownership structures when issuing equity. We show that the difference in the stock price reactions to different types of stock issuances to can be explained by the *combination* of the monitoring *and* the signaling effect: investors react not only to the expected future monitoring, but also to the news about the entrepreneur's expropriation propensity that they infer from his choice of the ownership structure.

The "certification hypothesis" suggests that, in the presence of asymmetric information, a private placement is an instrument to certify the true value of the assets (for an otherwise undervalued firm) through its assessment by private investors. In our model, the blockholder does not do any certification of the assets' value: she is just a pure costly signaling device, similar to, e.g., costly collateral pledging (see Tirole, 2006, Ch. 6.3, and references therein).

We would like to emphasize that, though the theoretical literature on signaling in financial markets is extensive[7] our idea of an outside blockholder as a signal is novel – there are no such papers to our knowledge.[8] Leland and Pyle (1977) consider signaling via the ownership structure: a "good" risk-averse entrepreneur prefers to retain a large block of his firm's equity, since selling too much will be interpreted unfavorably by the market ("bad" entrepreneurs sell out their stakes in equilibrium). The cost of such signaling is underdiversification. Hence, their signaling device is very different and implications are orthogonal to ours.

Our paper is organized as follows. Section 2 sets up the basic model. Section 3 analyzes the symmetric information benchmark. In section 4 we present the solution under asymmetric

[7] Myers and Majluf (1984), Ross (1977), Leland and Pyle (1977), to mention a few well known papers; see also the survey by Harris and Raviv (1991) and the book by Tirole (2006), ch. 6.

[8] The closest paper is, probably, Dessein (2005), which considers allocation of control rights between an entrepreneur and an investor. However, Dessein focuses on the control rights and abstracts from the size of the investor's share and her incentives for monitoring determined by it. Also, the idea that it is the "good" firm that may attract an active monitor for signaling reasons is briefly mentioned, without elaboration, in Tirole (2006, Ch. 6.3).

information and discuss the results. In section 5 we analyze a modified model, in which we allow the outside blockholder to participate in the private benefit extraction by colluding with the entrepreneur. Section 6 concludes the paper.

2 The Basic Model

Consider an entrepreneur who has an investment opportunity but does not have own funds. He may be a start-up entrepreneur or the sole owner of an already large company that lacks funds to finance its further growth. The entrepreneur is key to the investment opportunity, so that selling it to someone else is meaningless due a too large destruction of value. The investment requires an outlay $I < 1$ and generates value 1. The entrepreneur can divert up to a fraction d of this value into his own pocket at no cost.[9] We interpret d as the entrepreneur's ability/propensity/willingness to extract private benefits. The entrepreneur can be either of the two types: "good" or "bad". The two types differ by the magnitude of d: a good entrepreneur can divert up to $\underline{d}$, while a bad one can divert up to $\overline{d} > \underline{d}$, where $\overline{d}$ and $\underline{d}$ are exogenous. The type is the entrepreneur's private information. You can think of it as of a moral restraint on misbehaving or privately known diversion skills or technology (e.g., having corrupt relationship with the auditor). The market has a prior that the entrepreneur is good with probability ν; this prior is common knowledge.

The entrepreneur raises funds by selling equity shares[10]: he sells $1 - \alpha$ and retains α. Diversion can be reduced via monitoring by outside shareholders. At cost cy the maximum amount that can be diverted is reduced by $y \in [0,\, d]$, where y is the level of monitoring and is a choice variable.[11] There is, however, a collective action problem among outside shareholders so that only a non-atomistic shareholder (blockholder) may want to choose a positive level of monitoring. Thus, we assume that if the entrepreneur wants to be monitored ex-post, he must sell a non-atomistic share β as a block, while the rest, $1-\alpha-\beta$ is sold as dispersed equity.[12] The capital market is competitive and the interest rate is normalized to 0. All agents are assumed to be risk-neutral.

[9] Our qualitative results remain intact if we assume that diversion is costly, provided that this cost is not too large – see the discussion at the end of this section.

[10] We abstract from the issue of seciruty design, see the discussion at the end of this section.

[11] Thus, the marginal cost of reducing self-dealing is constant. We have tried another specification, in which y was limited by $\underline{y_{\max}} < \underline{d}$ and $\overline{y_{\max}} < \overline{d}$ in the good and the bad firm respectively (with $\overline{y_{\max}} \geq \underline{y_{\max}}$) Thus, such specification represented an extreme case of a convex monitoring cost, such that the marginal cost of monitoring rose to infinity for any $y > y_{\max}$. The qualitative results of our model remained intact for this specification. However, the mechanics of the solution turned out to be significantly more complicated. Thus, for the sake of simplicity of exposition we have decided to use the present version of the monitoring technology in the text. One could also argue that the marginal cost of monitoring should be lower in a "bad" firm because it is easier to detect diversion there. Again, such a modification would just complicate the model without any qualitative effect.

[12] We do not consider the possibility of selling several separate blocks. Several monitors would either coordinate their monitoring efforts or partially free-ride on each other's efforts, but that would not change the essence of our main points while introducing unnecessary complications.

The timing is as follows:

At $t = 0$ the entrepreneur chooses a pair (α, β); the investors update their beliefs and price the shares accordingly. The shares are then sold and the funds are raised, given that the aggregate price of all offered shares is at least I. (If the aggregate price of the offered shares is below I, the investors will refuse to finance, since no project can then be implemented.) Finally, I is invested in the project. The entrepreneur is free to raise more than I by selling extra shares: in such a case he simply pockets the extra funds.[13]

At $t = 1$ the blockholder learns the type of the entrepreneur[14] and chooses y. The entrepreneur observes y (hence the maximum amount he can divert) and chooses the level of diversion, $x \leq d - y$.[15]

At $t = 2$ the returns to the shareholders and the entrepreneur's private benefit are realized.

We set two restrictions on the parameters:

Assumption 1. $1 - \underline{d} > I$

Assumption 2. $1 - c\overline{d} > I$

As we will see below, Assumption 1 implies that, given that the market knows the type of the entrepreneur, the good type is able to raise finance without attracting an outside blockholder (non-monitored finance). Assumption 2 implies that, given that the market knows the type of the entrepreneur, the bad type is able to raise finance by attracting an outside blockholder who will monitor him (monitored finance).

As we will see, the blockholder's program for determining the level of monitoring is linear. We set the following assumption on the blockholder's behavior in case of indifference.

Assumption 3. When indifferent, the blockholder chooses the maximum level of monitoring, i.e. $y = d$.[16]

[13] We assume that the entrepreneur simultaneously sells the block and the dispersed equity share. One way to implement such an outcome would be via a private placement to one large and a sufficiently high number of small investors. Alternatively, the entrepreneur could first make a private placement of the block and then sell $1 - \alpha - \beta$ through a public offering. Ignoring sequentiality of such trade is legitimate if the time distance between these events is short and no new information leaks to the market between the private placement and the IPO.

[14] Qualitatively, our results would still hold if the blockholder received a sufficiently informative, but not necessarily perfect signal about the scope for diversion d. Also, we could assume that d is learned in the course of monitoring after spending a certain amount of resources; that would not alter our results.

[15] The assumptions about the sequence of events and actions at $t = 1$ are not crucial and are made for convenience. Assuming that the entrepreneur first self-deals, and then the blockholder observes the amount of self-dealing and chooses how much of that to revert, would not change our results in any way.

[16] This assumption is made for simplicity. Alternatively we could impose any prespecified level of monitoring in case of indifference – that would not alter our results. We could also allow the blockholder to select any level of monitoring when she is indifferent. That would create a multiplicity of equilibria, but this problem could be eliminated by making c random and continuously distributed so that indifference would arise with probability zero. Again, such modification would not change our qualitative results.

Before we proceed, let us make a few remarks on the model. First, we abstract from the issue of security design, assuming that all funds are raised by selling equity. This is not crucial. What we really need is that diversion cannot be fully prevented via the capital structure design, so that a monitor is needed to further reduce it. The monitor would naturally be a large equity holder rather than a large debt holder, because an equity claim loses more value from diversion, thereby creating stronger monitoring incentives. If we were to be really rigorous, we could introduce, e.g., a random binary (gross) return from the project, $\{R^L,\ R^H\},\ R^L < R^H$, and assume that diversion reduces the probability of the good outcome so that any additional dollar of private benefits reduces the expected return by one dollar. In such a case, no incentive scheme could reduce diversion (under the common assumption of "monotonic reimbursement" to investors). For given claims of other investors, an equity claim would make the monitor's payoff most sensitive to diversion (ignoring option-like claims), so assuming the monitor an equity holder would be natural.[17]

Second, for simplicity, we have assumed that diversion is costless. Our results would not qualitatively change if we assumed that the entrepreneur incured cost s per unit of diverted value, provided that s in not too large. Namely, we would need that $s < I$ and $s\overline{d} < c\underline{d}$. The first inequality ensures that the entrepreneur cannot simultaneously commit to behaving by retaining a large enough equity share and raise funds.[18] If he could do both things, the agency problem would disappear and there would be no need for monitoring regardless of the entrepreneur's type. The second condition says that the cost of diversion is sufficiently small relative to the monitoring cost. It ensures that in a separating equilibrium, in which the good types is monitored, and the bad type is not, the bad type would not want to be monitored even if perceived as the good type.

Lastly, our qualitative results remain intact if we assume that, instead of reducing diversion directly, monitoring imposes a large enough cost of diversion, so that there exists share α such that the entrepreneur exposed to monitoring finds it optimal not to divert anything, and the investors are willing to provide at least I.

We will first study the symmetric information benchmark. Then we will look for the perfect Bayesian equilibria of this game satisfying the Cho-Kreps Intuitive criterion.[19]

[17] Although the linearity of the model would, of course, yield multiple equilibria, including those in which the monitor holds a combination of debt and equity.

[18] The entrepreneur's payoff after investment would be $\alpha(1-x)+x-sx$. Thus, he would abstain from diversion whenever $\alpha > 1-s$. Given this, the investors would invest whenever $1-\alpha \geq I$, or $\alpha \leq 1-I$. If $s > I$, there would exist α such that both conditions are satisfied.

[19] See Fudenberg and Tirole (1991), Cho and Kreps (1987).

3 Symmetric information benchmark

At $t = 1$, having observed y, the entrepreneur makes his diversion decision. Given that diversion is costless, he maximizes $\alpha(1 - x) + x$, and, hence, he will always divert everything he can: $x = d - y$.

The blockholder then solves the following problem:

$$\max_y \{\beta(1 - (d - y)) - cy\},$$

which yields the following solution:

$$\begin{cases} \text{if } \beta \geq c, \text{ then } y = d \\ \text{if } \beta < c, \text{ then } y = 0 \end{cases} \tag{1}$$

Now we turn to the entrepreneur's problem at $t = 0$. His payoff is:

$$U = \alpha(1 - d + y(\beta, d)) + (d - y(\beta, d)) + P_b(\beta, d) + P_d(\beta, d) - I, \tag{2}$$

where $y(\beta, d)$ is the solution of the above blockholder's problem, and P_b and P_d are the aggregate prices that the blockholder and dispersed shareholders pay for their shares respectively. Since the capital market is competitive and the investors perfectly predict the blockholder's action at $t = 1$, these prices are determined at $t = 0$ as follows:

$$\begin{aligned} P_b &= \beta(1 - d + y(\beta, d)) - cy(\beta, d) \\ P_d &= (1 - \alpha - \beta)(1 - d + y(\beta, d)) \end{aligned} \tag{3}$$

It is also necessary that

$$P_b(\beta, d) + P_d(\beta, d) \geq I \tag{4}$$

for the investors to be willing to provide finance.

The entrepreneur maximizes (2) subject to (1), (3) and (4). Plugging the expressions for the prices in the entrepreneur's utility function, we obtain that the entrepreneur simply minimizes y subject to (1) and (4). This is a rather standard result in the agency problem literature – ex-ante the entrepreneur bears all the costs and, hence, wants to create an arrangement that would minimize them. In our case, under symmetric information, the cost that the entrepreneur bears ex-ante (through price P_b) is the monitoring cost.

Let us write down the entrepreneur's symmetric information payoffs, provided that the funds are raised and taking into account (1):

$$\begin{cases} \text{If } \beta \geq c, U = 1 - cd - I \\ \text{If } \beta < c, U = 1 - I \end{cases} \tag{5}$$

Hence, the entrepreneur would prefer to raise funds and offer $\beta < c$ at the same time if feasible – in such a case he would avoid the monitoring cost. Due to Assumption 1 the good type can always do it. For example, he could sell $1 - \alpha = I/(1 - \underline{d}) < 1$ of the shares to dispersed investors and raise exactly I. Hence, *under symmetric information, the good type never chooses to attract an active outside blockholder*, where by "active" we mean a blockholder who will monitor.

The bad type can do the same only if $1 - \overline{d} > I$. If $1 - \overline{d} < I$ *the bad type needs to resort to attracting a blockholder* with $\beta \geq c$, as otherwise there will be no monitoring and even offering 100% of the shares to investors will not be enough to raise I. Since, by Assumption 2, $1 - c\overline{d} > I$, the solution with $\beta \geq c$ is feasible. For example, the bad type could raise exactly I by offering β and $1 - \alpha - \beta$, such that $\beta \geq c$ and $1 - \alpha - c\overline{d} = I$ (the prices would be: $P_b = \beta - c\overline{d}$ and $P_d = 1 - \alpha - \beta$).

The results of this section allow us to formulate the following proposition:

Proposition 1 *Under symmetric information, the good type never chooses to attract an active outside blockholder, while the bad type has to attract an active outside blockholder when the investment opportunity is not good enough ($1 - \overline{d} < I$). Hence, under symmetric information, firms with a greater potential for insider expropriation are more likely to have a large outside blockholder.*

This result is in line with the argument presented in Holmström and Tirole (1997) or, more generally, in the book by Tirole (2006): firms with a lower pledgeable income need to resort to monitored finance in order to be able to raise funds. In our model, the difference in the pledgeable income stems from the difference in the expropriation propensity – bad entrepreneurs have lower pledgeable income.

4 Solution under asymmetric information

Since the blockholder observes the type of the entrepreneur before taking her monitoring decision, her problem at $t = 1$ and its solution remain exactly the same as under symmetric information.

The entrepreneur's payoff as of $t = 0$ looks now as follows:

$$U = \alpha(1 - d + y(\beta, d)) + (d - y(\beta, d)) + \widetilde{P}_b + \widetilde{P}_d - I, \tag{6}$$

where $\widetilde{P}_b$ and $\widetilde{P}_d$ are the prices that the blockholder and dispersed shareholders pay for their shares.

The prices are now determined by the beliefs that investors form upon observing (α, β) and are equal to:

$$\begin{aligned} \widetilde{P}_b &= \beta(1 - \widetilde{d} + \widetilde{y}) - c\widetilde{y} \\ \widetilde{P}_d &= (1 - \alpha - \beta)(1 - \widetilde{d} + \widetilde{y}) \end{aligned} \tag{7}$$

where $\widetilde{d}$ is the expected diversion and $\widetilde{y}$ is the expected monitoring upon observing $(\alpha,\ \beta)$.

These prices must, of course, satisfy

$$\widetilde{P}_b + \widetilde{P}_d \geq I \tag{8}$$

Since the blockholder's monitoring decision is still determined by (1), we have that for $\beta \geq c$:

$$\widetilde{P}_b = \beta - c\widetilde{d},\ \ \widetilde{P}_d = 1 - \alpha - \beta,$$

and for $\beta < c$:

$$\widetilde{P}_b = \beta(1 - \widetilde{d}),\ \ \widetilde{P}_d = (1 - \alpha - \beta)(1 - \widetilde{d}).$$

Thus, the entrepreneur's payoff as of $t = 0$ can be rewritten as:

$$\begin{cases} \text{If } \beta \geq c,\ U = 1 - c\widetilde{d} - I \\ \text{If } \beta < c,\ U = 1 + (1 - \alpha)(d - \widetilde{d}) - I \end{cases} \tag{9}$$

These payoffs have a simple interpretation. When $\beta \geq c$, diversion is precluded by monitoring altogether, and the only route through which the market beliefs affect the entrepreneur's payoff is the expected blockholder monitoring, which enters price $\widetilde{P}_b$. As a result, the entrepreneur obtains the NPV of the project net of the expected monitoring cost. When $\beta < c$, there is no monitoring, but the entrepreneur gets a premium (discount) whenever the market overvalues (undervalues) the company. Hence, the entrepreneur's payoff is the NPV of the project plus the premium (discount) he obtains on the shares being sold.

We will consider separately two ranges of parameters: the one in which both types could raise non-monitored finance under symmetric information ($I < 1 - \overline{d}$) and the one in which only the good type could raise non-monitored finance under symmetric information ($1 - \overline{d} < I < 1 - \underline{d}$). The sets of equilibria will be very different in the these two zones.

Let $\underline{\alpha}$ and $\underline{\beta}$ denote the choice of the good type and $\overline{\alpha}$ and $\overline{\beta}$ – the choice of the bad type. In a pooling equilibrium, we will use notation α^P and β^P.

4.1 Case 1: good investment opportunities for both firms ($I < 1 - \overline{d}$)

First, note that an equilibrium in which $\overline{\beta} \geq c$ is impossible. In such equilibrium, the bad type would obtain $1 - c\widetilde{d} - I$. However, by deviating to some $\beta < c$, the bad type is able to get at least his symmetric information payoff, which is $1 - I > 1 - c\widetilde{d} - I$.

Let us proceed now by considering possible separating and pooling equilibria.

4.1.1 Separating equilibria

Given that $\overline{\beta}$ must be smaller than c in any equilibrium, there are only two cases to consider: both $\underline{\beta}$ and $\overline{\beta}$ are below c, and $\overline{\beta} < c$ but $\underline{\beta} \geq c$.

The first situation is impossible to have in equilibrium. From (9), in such separating equilibrium the bad type would get $1-I$, which is his symmetric information payoff. But by pretending to be the good type, he could obtain $1 + (1 - \underline{\alpha})(\overline{d} - \underline{d}) - I$, which is bigger.

Thus, the only remaining candidate for a separating equilibrium is $\overline{\beta} < c$, $\underline{\beta} \geq c$. In such equilibrium the bad type's payoff would be $\overline{U} = 1-I$ and the good type would get $\underline{U} = 1-c\underline{d}-I$. The following lemma establishes the conditions under which such equilibrium exists.

Lemma 1 *When $I < 1 - \overline{d}$, a separating equilibrium satisfying the Intuitive criterion exists iff*

$$c\underline{d} \leq \frac{I(\overline{d} - \underline{d})}{1 - \overline{d}} \tag{10}$$

The set of all such separating equilibria is characterized by all pairs $((\underline{a}, \underline{\beta}), (\overline{a}, \overline{\beta}))$, $(\underline{a}, \underline{\beta}) \neq (\overline{a}, \overline{\beta})$, such that $\underline{\beta} \geq c$, $\overline{\beta} < c$, $\underline{a} \leq \min\{1 - c\underline{d} - I,\ 1 - \underline{\beta}\}$, $\overline{a} \leq \min\{1 - \frac{I}{1-\overline{d}},\ 1 - \overline{\beta}\}$. In any separating equilibrium both types raise finance.

Proof. *See the appendix.* ■

Figure 1 below depicts the set of all separating equilibria. For the bad type deviation is not an issue. Pretending to be good by offering $\beta' = \underline{\beta} \geq c$ leads to a loss since it yields a payoff of $1-c\underline{d}-I < 1-I$. Deviating to another $\beta' < c$ does not gain him anything, given the pessimistic (worst) out-of-equilibrium beliefs upon observing such a deviation (these beliefs clearly satisfy the Cho-Kreps criterion as the bad type would definitely deviate to another $\beta' < c$ if he were believed to be good).

In contrast, it is unclear *a priory* whether the good type would want to deviate to some $\beta' < c$ or not (deviation to $\beta' \geq c$ does not gain anything to the good type even if he is still treated as good). On the one hand, he would suffer from the bad market beliefs, but, on the other hand, he would avoid costly monitoring. Condition $c\underline{d} \leq I(\overline{d}-\underline{d})/(1-\overline{d})$ of Lemma 1 tells when the good entrepreneur values fair pricing more than the absence of monitoring and, thus, does not want to deviate. This condition has a very intuitive meaning. The left-hand side is the loss from monitoring in equilibrium. The right-hand side is simply a discount that the good entrepreneur would incur on the sold shares after a deviation to $\beta < c$ under the pessimistic beliefs. Indeed, suppose the good type decides to deviate. Then, in order to reduce the effect of undervaluation as much as possible, he needs to sell as small a share as possible, provided that the investors still agree to finance. Given the pessimistic beliefs, this share is $I/(1-\overline{d})$, and the discount the good type incurs is $\overline{d}-\underline{d}$ per share. Hence, we obtain the right-hand side of the condition.

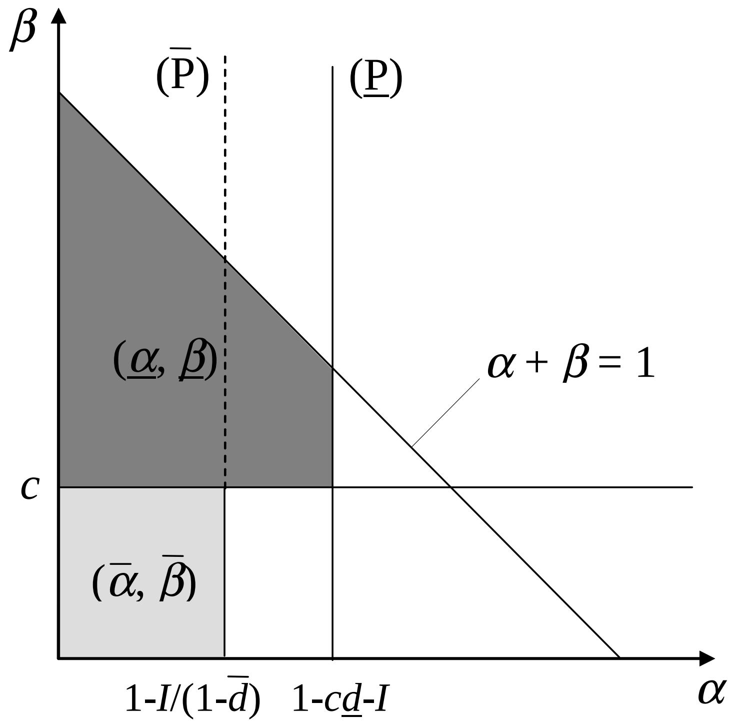

Figure 1: The set of separating equilibria in the basic model. $(\underline{P})$ and $(\overline{P})$ are the investors' participarion constraints in the "good" and "bad" firms respectively.

4.1.2 Pooling equilibria

Given that $\overline{\beta}$ must be smaller than c in any equilibrium the only possibility is $\underline{\beta} = \overline{\beta} = \beta^P < c$: there is no pooling equilibrium where the blockholder would have incentives to monitor. Let us denote $\widehat{d} \equiv \nu\underline{d} + (1-\nu)\overline{d}$.

Using (9) we obtain that in such an equilibrium the payoff of the bad type is $\overline{U} = 1 + (1-\alpha^P)(\overline{d}-\widehat{d}) - I$, and the payoff of the good type is $\underline{U} = 1 + (1-\alpha^P)(\underline{d}-\widehat{d}) - I$. That is, the good type suffers from underpricing and gets a lower payoff than under symmetric information. At the same time, the bad type enjoys a positive rent since his actual diversion level exceeds the expected one that is priced in.

The following lemma establishes the conditions under which such equilibrium exists.

Lemma 2 *When $I < 1 - \overline{d}$ a pooling equilibrium satisfying the Intuitive criterion exists iff*

$$c\underline{d} \geq \frac{I(\widehat{d} - \underline{d})}{1 - \widehat{d}} \tag{11}$$

The set of all pooling equilibria satisfying the Intuitive criterion is characterized by all pairs (α^P, β^P) such that $\alpha^P \in \left[\max\left\{1 - \dfrac{I}{(1-\overline{d})(1-\nu)}, 1 - \dfrac{c\underline{d}}{\widehat{d} - \underline{d}}\right\}, 1 - \dfrac{I}{1-\widehat{d}}\right]$, $\beta^P < \min\{c, 1 - \alpha^P\}$. In any pooling equilibrium both types raise finance.

Proof. *See the appendix.* ■

Similarly to the separating equilibrium case, the bad type would clearly not want to deviate. Indeed, given the pessimistic out-of-equilibrium belief after any deviation (α', β') such that $\beta' < c$, the bad type would get $1 - I$ from such a deviation, which is smaller than $\overline{U}$. If the bad type deviated to some $\beta' \geq c$, he would get $1 - c\underline{d} - I$ even if the market believed he were good, which again would be smaller than $\overline{U}$.

However, it is again unclear *a priory* whether the good type would want to deviate. First, he could deviate to some (α', β') such that $\beta' < c$. He would suffer from a more severe discount per share of the equity sold (under pessimistic beliefs). On the other hand, he could potentially sell less equity, i.e. choose $\alpha' > \alpha^P$, which would be possible if α^P is not large enough. Second, he could deviate to some (α', β') such that $\beta' \geq c$. Since the bad type would never want to deviate to $\beta' \geq c$ regardless of the beliefs, by Cho-Kreps Intuitive criterion the market must believe that the entrepreneur is definitely good when $\beta' \geq c$ is chosen. Thus, by such deviation, the good type would gain from fair pricing but lose from monitoring.

It turns out that there always exists α^P that satisfies the investors' participation constraint and makes the first type of deviation unprofitable. The same cannot be said about the second type of deviation, but when condition $c\underline{d} \geq I(\widehat{d} - \underline{d})/(1 - \widehat{d})$ holds (and only then) there exists α^P that makes such deviation unprofitable. The interpretation of this condition is again intuitive. The left-hand side is the loss from monitoring that the entrepreneur would incur from the deviation. The right-hand side is an aggregate discount that the good entrepreneur incurs in the best for him pooling equilibrium. Indeed, since the good entrepreneur's shares are discounted in pooling equilibria, his payoff increases when the number of outstanding shares decreases. Therefore, the best pooling equilibrium for him is the one in which the aggregate discount is the smallest, i.e. in which as few shares as possible are sold. In this equilibrium $1 - \alpha^P = I/(1 - \widehat{d})$, i.e. α^P is such that the investors agree to provide exactly I. The discount the good type incurs is $\widehat{d} - \underline{d}$ per share. Hence, we obtain the right-hand side of the condition.

When the parameters are such that both pooling and separating equilibria exist (both (10) and (11) are satisfied), the bad type always prefers a pooling equilibrium where he always enjoys a rent to a separating equilibrium where he receives the symmetric information payoff. Moreover, by (11) the good type also prefers the pooling equilibrium with the smallest number of outstanding shares to a separating equilibrium.[20]

4.2 Case 2: limited investment opportunities for the bad firm ($1 - \overline{d} < I < 1 - \underline{d}$)

When the parameters is such that only the good type can raise non-monitored finance under symmetric information, separating equilibria disappear. The reason is that the entrepreneur simply cannot raise finance without attracting a blockholder when he is believed to be bad. A separating equilibrium with $\overline{\beta} \geq c$ cannot exist either because the bad type would always want to mimic the good type (remember that for any $\beta \geq c$ the entrepreneur's payoff is $1 - c\widetilde{d} - I$)

As far as pooling equilibria are concerned, we will have two types of them now. First, under condition (11), it will be possible to sustain the familiar pooling equilibria without a blockholder, provided that the expected diversion $\widehat{d}$ is not too big so that the investors still agree to finance the firm, i.e. $1 - \widehat{d} \geq I$. Second, another type of pooling equilibria appears, with $\underline{\beta} = \overline{\beta} \geq c$. The reason why this latter type becomes possible is that now a deviation of the bad type to $\beta' < c$, which was profitable in Case 1, is simply unfeasible due to his inability to raise non-monitored finance under pessimistic beliefs. Other deviations are unprofitable, given the bad out-of-equilibrium beliefs (such beliefs clearly satisfy the Cho-Kreps criterion), since for any $\beta \geq c$ the entrepreneur's payoff is $1 - c\widetilde{d} - I$.

The above reasoning leads us to the following lemma.

Lemma 3 *When $1 - \overline{d} < I < 1 - \underline{d}$, the following is true:*

- no separating equilibria exist

- there always exists a pooling equilibrium with $\underline{\beta} = \overline{\beta} = \beta^P \geq c$, any such equilibrium satisfies the Intuitive criterion

- there exists a pooling equilibrium with $\underline{\beta} = \overline{\beta} = \beta^P < c$ satisfying the Intuitive criterion iff $1 - \widehat{d} \geq I$ and $c\underline{d} \geq \dfrac{I(\widehat{d} - \underline{d})}{1 - \widehat{d}}$

Proof. The proof follows directly from Lemma 2 and the reasoning preceding the lemma. ■

[20] By continuity, if (11) is satisfied as a strict inequality, he also prefers other pooling equilibria with sufficiently small number of outstanding shares to any separating equilibrium.

4.3 Equilibrium analysis: round-up

Figure 2 summarizes the analysis in the preceding sections. The dark grey area is the area where separating equilibria exist. The light grey area is the area where pooling equilibria with both types choosing to have a blockholder exist. The quadrangle bounded by the bold lines is the area where pooling equilibria with both types choosing *not* to have a blockholder exist.

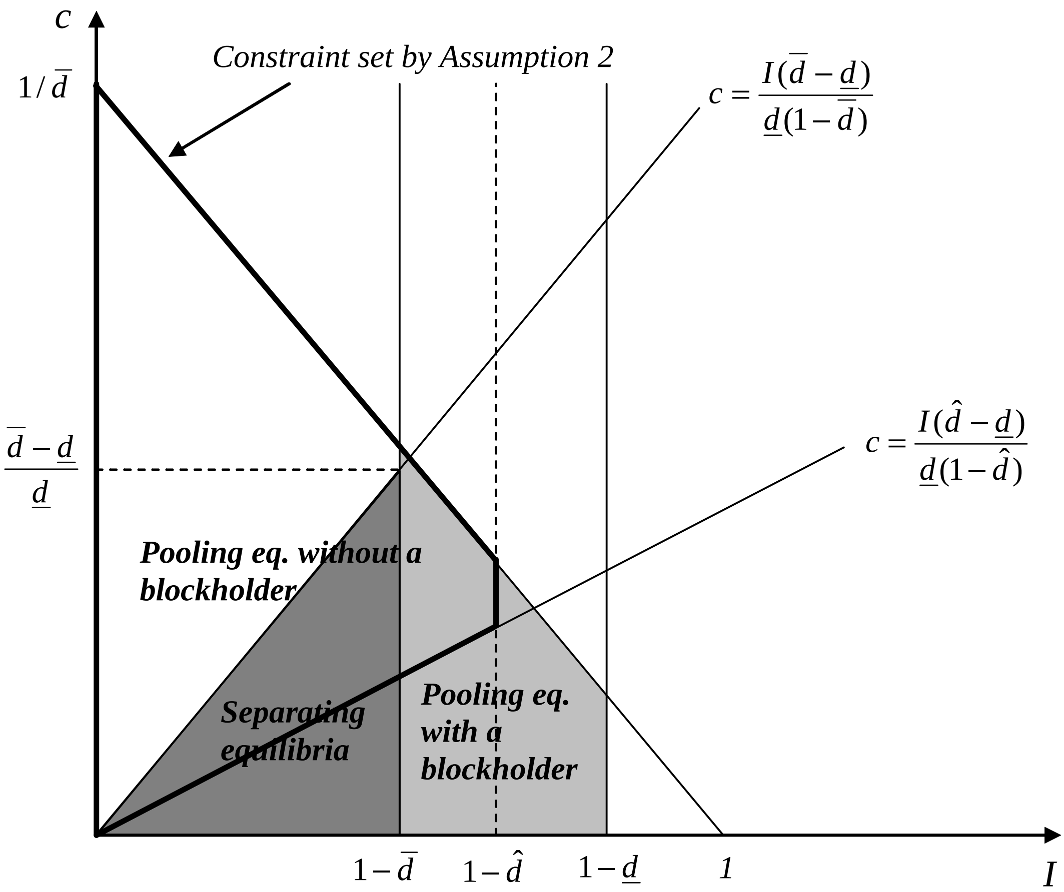

Figure 2: Zones of pure-strategy equilibria existence in the basic model.

The whole equilibrium analysis can now be summarized in the following key proposition.

Proposition 2 *1. If the cost of investment is low enough, $I < 1 - \overline{d}$, and the cost of monitoring is not too high, $c\underline{d} < I(\hat{d} - \underline{d})/(1 - \hat{d})$, the only pure- and mixed-strategy equilibria that satisfy the Intuitive criterion are separating, where the good entrepreneur attracts an active outside blockholder (offers $\underline{\beta} \geq c$) and the bad one does not ($\overline{\beta} < c$).*

2. Under any parameters there does not exist a pure- or mixed-strategy equilibrium (satisfying the Intuitive criterion) in which the bad entrepreneur would attract an active outside blockholder (offer $\overline{\beta} \geq c$) with a positive probability and the good one would choose ownership structure without an active blockholder ($\underline{\beta} < c$) with a positive probability.

Proof. The claims of Proposition restricted to the pure-strategy strategies follow from the preceding analysis. In the Appendix we extend the arguments to the mixed strategies. ■

Notice that there is a region where *all* equilibria satisfying the Intuitive criterion are separating. These equilibria are not unique in this region, but this is not important for our qualitative result. For instance, the good entrepreneur can randomize between different ownership structures $(\underline{a}_1, \underline{\beta}_1)$ and $(\underline{a}_2, \underline{\beta}_2)$, but both structures must have an active outside blockholder, $\underline{\beta}_i \geq c$. Similarly, the bad entrepreneur may randomize between different ownership structures but in any of them the large blockholder must be absent. All such equilibria, therefore, are payoff-equivalent for both types of entrepreneur.

The stark contrast with the symmetric information benchmark is that now the outside ownership concentration chosen by the good type is never below the level chosen by the bad type and, what is especially remarkable, is even higher under certain parameters. Thus, the asymmetry of information reverses the relationship between the severity of the agency problem and the presence of an outside blockholder. In other words, it is not true anymore that firms with higher pledgeable income are more likely to raise non-monitored finance.

Obviously, the information asymmetry leads to inefficiency: in contrast to the symmetric information case, now the good type sometimes has to attract a blockholder, whose monitoring is costly. For him, an outside blockholder either serves a signal that the agency problem is moderate (separating equilibrium) or is a necessity that he has to bear in order not to be perceived bad (pooling equilibrium with both types choosing to have an outside blockholder).

4.4 Implications for the value of dispersed equity (stock price)

In our basic model, apart from the signaling effect, a monitor has a direct positive impact on the minority shareholders' value. Indeed, if introduced exogenously into a firm, a blockholder would eliminate diversion of profits regardless of the firm's type. In a separating equilibrium, the dispersed equity value per unit share (i.e., the stock price) is $1 - \overline{d}$ in the bad firm and 1 in the good firm. The aggregate effect of the presence of a blockholder on the dispersed shareholders' value, $\overline{d}$, can be decomposed into the direct effect of monitoring in the good firm, $\underline{d}$, and the signaling effect, $\overline{d} - \underline{d}$. Thus, our model yields a novel interpretation of an often documented positive relationship between the outside ownership concentration and a firm's market valuation: this correlation may result not only from the direct effect of monitoring, but also from the signaling. This is relevant both for studies that look at market valuations in a cross-section of firms and for works examining the stock price reaction to private placements of equity to active blockholders versus public issues or private placements that do not create active blockholders (this literature was described in the Introduction).

In the next section we introduce a model in which monitoring has *no direct effect* on the value for dispersed shareholders, but a firm with a blockholder is still valued higher in equilibrium due to a pure signaling effect.

5 Model with collusion (transferable d)

It is widely recognized that large shareholders do not always act in the interest of small shareholders. Having sufficient voting power, they can benefit themselves at the expense of the latter. This opportunity is partly reflected in the block premia, which are found to be especially large in countries with weak legal protection of shareholders (Dyck and Zingales (2004)). So, one might wonder how our results change is we allow the outside blockholder to transfer value from dispersed shareholders to herself. The way we model this is through a collusion between the blockholder and the entrepreneur.[21] The qualitative results of this section do not necessarily require the particular collusion setup we employ. We just need a setting in which the blockholder performs *costly* intervention such that it does not benefit small shareholders and generates private benefits for the blockholder while reducing the entrepreneur's private benefits at the same time (the blockholder "steals" herself while not allowing the entrepreneur to "steal" too much).

We assume that collusion occurs after monitoring, at $t = 1.5$.[22] Here we assume that monitoring itself does not yet reduce the private benefit extraction, but gives the blockholder an opportunity to do that. Alternatively, one can assume that monitoring does reduce d, but this reduction can be reversed at no cost. So, instead of reducing expropriation, the blockholder can split d with the entrepreneur at zero cost. Formally, the entrepreneur and the blockholder bargain over the private benefits according to the Nash bargaining rule with γ being the entrepreneur's bargaining power. Similarly to Burkart et al (2003), we assume that if an agreement is not achieved, the blockholder simply shields y from expropriation. In other words, the outside options (disagreement payoffs) in bargaining are:

Blockholder's: $\beta(1 - (d - y))$

Entrepreneur's: $\alpha(1 - (d - y)) + d - y$

If the agreement is reached, their joint (post-monitoring) payoff is $(\alpha + \beta)(1 - d) + d$. Thus, the surplus is $y(1 - (\alpha + \beta))$, that is, the gain of the dispersed shareholders from prevented diversion. For $\alpha + \beta < 1$ the surplus is positive, so collusion will always occur whenever there

[21] After all, it is difficult to imagine that expropriation of small shareholders can occur without the manager's participation.

[22] Thus, collusion is not about the level of monitoring, as in Pagano and Röell (1998), but about sharing the private benefits, like in Burkart et al. (2003). This is crucial in order to ensure that the blockholder's presence results in a *costly* intervention (monitoring). Such a cost is necessary for signaling to work. If the two parties could efficiently bargain over *both* the monitoring intensity *and* the extent of expropriation, the blockholder would commit to zero monitoring in exhange for a promised transfer from the entrepreneur. In this case, the presence of a blockholder would not be a credible signal in equilibrium. Yet, commitment to zero monitoring is, arguably, dificult to sustain in reality: the blockholder would be tempted to monitor in order to improve her bargaining position, especially if she expects that the entrepreneur is likely to breach on the agreement and appopriate "too much" of the diverted cash flows.

are small shareholders. Thus, under the possibility of collusion, blockholder monitoring only improves her payoff but does not benefit dispersed shareholders, as they obtain $1 - d$ per unit share regardless of the monitoring choice.

Given that the blockholder's bargaining power is $1 - \gamma$, she obtains $\beta(1 - (d - y)) + (1 - \gamma)y(1 - (\alpha + \beta)) = \beta(1 - d) + y(\gamma\beta + (1 - \gamma)(1 - \alpha))$. Hence, she chooses y by maximizing

$$\beta(1 - d) + y(\gamma\beta + (1 - \gamma)(1 - \alpha)) - cy,$$

which yields:

$$\begin{cases} \text{if } \beta \geq \dfrac{c - (1 - \gamma)(1 - \alpha)}{\gamma} \equiv \widehat{\beta}(\alpha) \text{ then } y = d \\ \text{if } \beta < \widehat{\beta}(\alpha) \text{ then } y = 0 \end{cases} \tag{12}$$

Let us compare (12) with (1). Condition $\beta \geq c$ in (1) implies $1 - \alpha > c$ whenever there is some dispersed equity ($1 - \alpha \geq c$ if there is no dispersed equity). It is straightforward to verify that the latter implies $\widehat{\beta}(\alpha) < c$. Thus, $\beta \geq \widehat{\beta}(\alpha)$ is a weaker condition than $\beta \geq c$. This is natural: now, for any positive bargaining power, the blockholder gains more from monitoring because she participates in sharing the private benefits.

One may even notice that for small enough γ and α the blockholder will monitor for *any* β (for example, take $\gamma = 0$ and $1 - \alpha > c$). This is problematic for two reasons. First, from the modelling viewpoint, it becomes unclear what should happen in our setup if all outside shareholders are dispersed, and even zero share creates monitoring incentives provided that a shareholder treats herself as a single monitor. Second, it is unrealistic that an ordinary shareholder with an infinitesimal share would be able to monitor the manager.[23] Effective monitoring requires at least some power/control rights in order to be able to influence or threaten the manager, such as, rights to nominate directors, call an extraordinary shareholder meeting, launch a lawsuit, access certain non-public documents, etc.

In order to address these problems, we make the following assumption for this section:

Assumption 4. In order to be *able* to monitor, a shareholder need to have at least share $\delta > 0$ in the company.[24]

Thus, the necessary and sufficient condition for a blockholder to be an active monitor is

[23] These problems did not arise in Section 4, because there creating monitoring incentives always required a monitor's share above $c > 0$.

[24] There are two alternative ways to deal with the mentioned problem. First, we could set a restriction from above on the blockholder's bargaining power, so that $\widehat{\beta}(\alpha)$ is always strictly positive. For example, $1 - \gamma > c$ would suffice.

Second, we could assume that along with the cash-flow rights the entrepreneur can allocate "monitoring rights" necessary to conduct monitoring. These "monitoring rights" could mean a seat in the board of directors or special voting rights or any other contractual arrangement giving a shareholder enough power to monitor the entrepreneur. In that case, creating an "active outside blockholder" would mean both selling her $\beta \geq \widehat{\beta}(\alpha)$ and giving her the "monitoring rights".

$\beta \geq \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$

5.1 Symmetric information benchmark

Analogously to the basic model, the entrepreneur's payoff as of $t = 0$ is:

$$U = \alpha(1 - d + y(\beta, d)) + (d - y(\beta, d)) + \gamma y(\beta, d)(1 - (\alpha + \beta)) + P_b(\beta, d) + P_d(\beta, d) - I, \quad (13)$$

where $\gamma y(\beta, d)(1 - (\alpha + \beta))$ is the new term that appears due to collusion.

The prices are now:

$$P_b = \beta(1 - d) + y(\beta, d)(\gamma\beta + (1 - \gamma)(1 - \alpha)) - cy(\beta, d)$$
$$P_d = (1 - \alpha - \beta)(1 - d)$$

For the investors to be willing to provide finance the price of outstanding shares should be sufficient to cover investment: $P_b(\beta, d) + P_d(\beta, d) \geq I$.

As in the basic model, if we plug the expressions for the prices in the entrepreneur's utility function, we will obtain that maximizing U is equivalent to minimizing y subject to $P_b(\beta, d) + P_d(\beta, d) \geq I$ and (12). Just like in the basic model, the entrepreneur's payoffs will be determined by (5). Hence, again, the entrepreneur would prefer to raise unmonitored financing by selecting $\beta < \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$. It turns out that collusion does not change the basic results of section 3. As in the no-collusion case, due to Assumption 1, the good type can always do it, e.g., by selling $1 - \alpha = I/(1 - \underline{d})$ to dispersed investors. The bad type can attract unmonitored finance only if $1 - \overline{d} > I$. If $1 - \overline{d} < I$ the bad type needs to resort to creating a blockholder with $\beta \geq \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$, as otherwise there will be no monitoring and even offering 100% of the shares to investors will not satisfy their participation constraint. The only difference with the basic model is that now the blockholder will get a part of the private benefit, and, hence her stake will have a higher per-share value (and the dispersed shares will have a lower value) than in the no-collusion case.

Proposition 3 *Under symmetric information, when collusion between the blockholder and the entrepreneur is possible, the good type never chooses to attract an active outside blockholder, while the bad type attracts an active outside blockholder when the investment opportunity is not good enough* ($1 - \overline{d} < I$)*.*

Hence, under symmetric information the possibility for the blockholder-entrepreneur collusion does not change the pattern of equilibria: firms with a greater potential for insider expropriation are more likely to have an outside blockholder. The intuition remains the same: attracting a blockholder is costly and firms revert to it only if they cannot raise finance otherwise.

5.2 Solution under asymmetric information

Under asymmetric information the entrepreneur's payoff as of $t = 0$ is:

$$U = \alpha(1 - d + y(\beta, d)) + (d - y(\beta, d)) + \gamma y(\beta, d)(1 - (\alpha + \beta)) + \widetilde{P}_b + \widetilde{P}_d - I \tag{14}$$

The share prices are as follows. When $\beta \geq \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$, there is full monitoring, and the prices are:

$$\widetilde{P}_b = \beta + (1 - \gamma)(1 - (\alpha + \beta))\widetilde{d} - c\widetilde{d},\ \widetilde{P}_d = (1 - \alpha - \beta)(1 - \widetilde{d})$$

When $\beta < \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$, there is no monitoring, and the prices are:

$$\widetilde{P}_b = \beta(1 - \widetilde{d}),\ \widetilde{P}_d = (1 - \alpha - \beta)(1 - \widetilde{d})$$

Using the expression for prices we obtain:

$$\begin{cases} \text{If } \beta \geq \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}, U = 1 + \gamma(d - \widetilde{d})(1 - (\alpha + \beta)) - c\widetilde{d} - I \\ \text{If } \beta < \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}, U = 1 + (1 - \alpha)(d - \widetilde{d}) - I \end{cases} \tag{15}$$

5.2.1 Case 1: good investment opportunities for both firms ($I < 1 - \overline{d}$)

First, no separating equilibrium with $\overline{\beta} \geq \max\left\{\widehat{\beta}(\overline{\alpha}),\ \delta\right\}$ can exist. In such an equilibrium the bad type would obtain $1 - c\overline{d} - I$, while by deviating to $\beta < \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$ he would obtain at least $1 - I$. Second, similarly to the basic model, a separating equilibrium with both types choosing $\beta < \max\left\{\widehat{\beta}(\alpha),\ \delta\right\}$ is impossible either, since the bad type would clearly want to mimic the good type and get a premium for the shares he would sell.

Thus the only candidate for a separating equilibrium is the pair of vectors $(\overline{\alpha},\ \overline{\beta})$, $(\underline{\alpha},\ \underline{\beta})$ such that $\overline{\beta} < \max\left\{\widehat{\beta}(\overline{\alpha}),\ \delta\right\}$, $\underline{\beta} \geq \max\left\{\widehat{\beta}(\underline{\alpha}),\ \delta\right\}$. In such equilibrium, exactly as in the no-collusion case, the bad type obtains $\overline{U} = 1 - I$, and the good type's payoff is $\underline{U} = 1 - c\underline{d} - I$. The following lemma establishes the conditions under which such equilibrium exists and characterizes the set of all separating equilibria.

Lemma 4 *When $I < 1 - \overline{d}$, a separating equilibrium satisfying the Cho-Kreps intuitive criterion exists iff*

$$c\underline{d} \leq \frac{I(\overline{d} - \underline{d})}{1 - \overline{d}} \tag{16}$$

The set of all such separating equilibria is characterized by all pairs of pairs $((\underline{a}, \underline{\beta}), (\overline{a}, \overline{\beta}))$, $(\underline{a}, \underline{\beta}) \neq (\overline{a}, \overline{\beta})$, such that , $\underline{\beta} \geq \max\left\{\widehat{\beta}(\underline{\alpha}),\ \delta\right\}$, $\overline{\beta} < \max\left\{\widehat{\beta}(\overline{\alpha}),\ \delta\right\}$, $\underline{a} \leq \min\{1 - \frac{c\underline{d} + I - \gamma \underline{d}\underline{\beta}}{1 - \underline{d} + \underline{d}(1-\gamma)}$, $1 - \underline{\beta}\}$, $\overline{a} \leq \min\{1 - \frac{I}{1 - \overline{d}}$, $1 - \overline{\beta}\}$, and $\underline{\alpha} + \underline{\beta} \geq 1 - \frac{c\underline{d}}{\gamma(\overline{d} - \underline{d})}$ In any separating equilibrium both types raise finance.

Proof. *See the appendix.* ■

The condition for the existence of a separating equilibrium is exactly as in the basic model – it stems from the same incentive compatibility constraint for the good type (see the proof for details). The set of all equilibria is depicted in Figure 3. Assumption 4 does not affect the equilibrium existence; it may only restrict the set of ownership structures that can be chosen by the good type in a separating equilibrium through the constraint $\beta \geq \delta$ (it does not bind in the figure, but it will if δ is large enough). There are a few other differences compared to the basic model. First, $\widehat{\beta}(\alpha)$ is an upward-sloping line rather than a constant. Second, the participation constraint $(\underline{P})$ depends not only on $\underline{\alpha}$ but on $\underline{\beta}$ as well (see the proof of the proposition for details). Finally, the set of $(\underline{\alpha}, \underline{\beta})$ is limited by the no-deviation condition for the bad type, $(\overline{IC})$. In the basic model, the bad type would never gain from a deviation (see subsection 4.1.1). When collusion is possible, pretending to be good becomes more attractive, because the monitor leaves a part of the private benefit to the entrepreneur. As follows from the payoff functions presented in the beginning of subsection 5.2, the equilibrium bad type's payoff is $\overline{U} = 1 - I$, while his payoff from mimicking the good type would be $\overline{U}' = 1 + \gamma(\overline{d} - \underline{d})(1 - (\alpha + \beta)) - c\underline{d} - I$. Constraint $(\overline{IC})$ is simply $\overline{U} \geq \overline{U}'$, i.e., it requires that $\alpha + \beta$ is large enough. While $(\overline{IC})$ does constrain the set of equilibria, it does not affect the existence of a separating equilibrium, as it always lies below $\alpha + \beta = 1$.

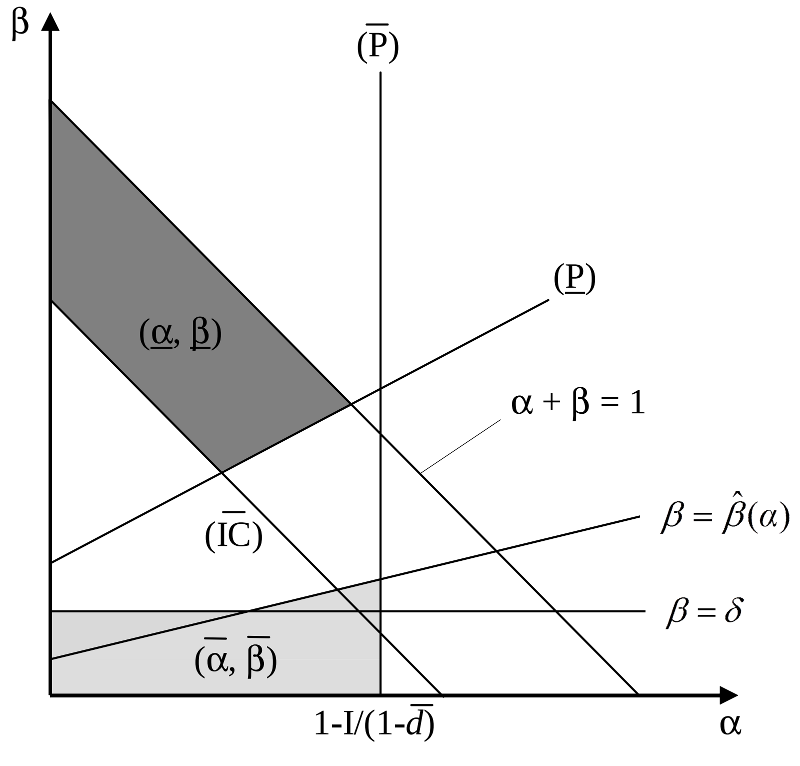

Figure 3: The set of separating equilibria in the model with collusion. $(\underline{P})$ and $(\overline{P})$ are the investors' participarion constraints in the "good" and "bad" firms respectively, $(\overline{IC})$ is the

no-deviation constraint for the "bad" type.

For tractability reasons we shall not present a complete analysis of equilibria in the model with collusion. However, we will show that qualitative features of the model are robust to this extension. There can exist pooling equilibria, but as the following lemma shows they do not exist when the cost of monitoring is low and the fraction of good firms is also low.

Lemma 5 *Assume that*

$$\frac{\overline{d}-\widehat{d}}{\overline{d}} < c < \frac{I(\widehat{d}-\underline{d})}{\underline{d}(1-\widehat{d})}. \tag{17}$$

Then, the only pure-strategy equilibria that satisfy the Intuitive criterion are separating with the good entrepreneur attracting an active blockholder and the bad entrepreneur not attracting the active blockholder.

Proof. See Appendix. ■

Note that the admissible range for the monitoring cost c is nonempty if the fraction of good entrepreneurs ν is low enough: when $\nu \to 0$, the lower bound tends to 0, while the upper bound is increasing in ν and has a positive limit.

5.2.2 Case 2: limited investment opportunities for the bad firm $(1-\overline{d} < I < 1-\underline{d})$

Similarly to the no-collusion case there exist no separating equilibria in this range of parameters. The arguments are exactly the same as in subsection 4.2. If the entrepreneur is believed to be bad, he cannot raise unmonitored financing when $1-\overline{d} < I$. In a separating equilibrium with $\overline{\beta} \geq \max\left\{\widehat{\beta}(\overline{\alpha}),\ \delta\right\}$ the bad entrepreneur would obtain $1-c\overline{d}-I$. But by mimicking the good type he would get either $1+\gamma(\overline{d}-\underline{d})(1-(\underline{\alpha}+\underline{\beta}))-c\underline{d}-I$, if the good type attracts a monitor, or $1+(1-\underline{\alpha})(\overline{d}-\underline{d})-I$, if the good type raises unmonitored financing. In either case the bad type would clearly gain from the deviation. There exist pooling equilibria, but the complete equilibrium analysis is beyond the scope of this paper as it does not bring new insights.

5.3 Model with collusion: round-up and implications for dispersed equity value

Proposition 4 *In the model with the possibility of collusion between the entrepreneur and the blockholder:*

1. *If the cost of investment is low, $I < 1-\overline{d}$, the cost of monitoring c and the fraction of good entrepreneurs ν are both sufficiently low so that $(\overline{d}-\hat{d})\underline{d}/\overline{d} < c\underline{d} < I(\hat{d}-\underline{d})/(1-\hat{d})$, and the entrepreneur's bargaining power $\gamma > 1-c(1-\overline{d})/I$, the only pure-strategy equilibria that satisfy the Intuitive criterion are separating, where the good entrepreneur attracts an*

active outside blockholder (offers $\underline{\beta} \geq \max\left\{\widehat{\beta}(\underline{\alpha}),\ \delta\right\}$*) and the bad one does not (*$\overline{\beta} < \max\left\{\widehat{\beta}(\overline{\alpha}),\ \delta\right\}$*).*

2. *Under any parameters there does not exist a pure-strategy equilibrium satisfying the Intuitive criterion in which the bad entrepreneur would attract an active outside blockholder (offer* $\overline{\beta} \geq \max\left\{\widehat{\beta}(\overline{\alpha}),\ \delta\right\}$*) and the good one would choose an ownership structure without an active outside blockholder (*$\underline{\beta} < \max\left\{\widehat{\beta}(\underline{\alpha}),\ \delta\right\}$*).*

Proof. The first statement follows from Lemma 5; the second follows from an argument in the proof of Lemma 5. ■

Thus, the model in which the entrepreneur and the outside blockholder can collude yields qualitatively the same result as the basic model: entrepreneurs with lower expropriation propensity are more likely to attract outside blockholders. Notice, that in any separating equilibrium, dispersed equity in a firm with a blockholder is valued higher than a firm without a blockholder ($1-\underline{d} > 1-\overline{d}$) despite the fact that monitoring does not help raising the dispersed shareholders' value. In the model with collusion the difference stems from a pure signaling effect. Thus, the results of this section suggest that even if blockholders do not restrict managerial misbehavior, their presence may still be positively correlated with the firm's stock price.

6 Conclusion

In this paper we studied the value of attracting an "active monitor", a question much explored in the literature, from a new angle. We focused on the informational content of this decision taken by the entrepreneur (initial owner) who selects an optimal ownership structure. When the market is perfectly informed about the scope of the agency problem in the firm, our model generates the standard result: the entrepreneur will attract a large blockholder (monitor) only when the agency problem is so severe that he cannot raise finance otherwise. However, when the entrepreneur has private information about how profound the potential agency problem is, the equilibrium pattern changes drastically. Now, by attracting a large blockholder the owner signals that he is not prone to/has no opportunities for massive diversion of assets. Interestingly, this result holds even if an outside blockholder may collude with the entrepreneur to expropriate dispersed shareholders. Thus, our model provides a new rationale for the emergence of outside blockholders in a company.

Our model contributes to explaining empirical observations that the market value of firms with a large outside blockholder tend to be higher. This is relevant both for studies that find higher valuations of firms with outside blockholders in a cross-section and for works that find a more favorable stock price reaction to private placements of large equity stakes to active investors. We emphasize that our explanation is valid irrespective of whether collusion between the entrepreneur and the monitor is possible, so it is applicable in both weak and strong governance regimes. Previous explanations mostly focused on the direct effect of outside blockholders: restraining insiders from self-dealing, thereby raising the firm's market value. We claim that this is only a part of the story: in addition to the direct effect, differences in valuation can have a signaling explanation. In fact, when the blockholder's monitoring does not have any effect on the reduction of self-dealing (collusion case), signaling remains the only cause of a higher market valuation of a company with an outside blockholder.

Another type of framework in which a *direct* effect of monitoring on shareholder value is not necessarily positive (and may even be negative) is a framework in which monitoring can potentially reduce managerial initiative, like in Burkart et al. (1997). Arguably, a signaling effect of the kind we have obtained may appear in such a model too. Indeed, as the potential for expropriation is lower in a good firm, value-reducing overmonitoring would be less likely to occur there. Therefore, a good entrepreneur may be less concerned about the downside of attracting a monitor than a bad one. Exploring this possibility may be a topic for future research.

Appendix

Proof of Lemma 1. First, let us impose the restrictions on the beliefs according to the Cho-Kreps intuitive criterion.

For any possible deviation (α', β') with $\beta' < c$, the bad type would obviously gain from it if he were believed to be good. Thus, the Cho-Kreps criterion does not restrict beliefs for $\beta' < c$, and we can assume that any $\beta' < c$ yields the worst (pessimistic) beliefs.

For any possible deviation β' of the bad type such that $\beta' \geq c$, if the bad type is believed to be good he obtains $1 - c\underline{d} - I < 1 - I$. Thus, he would not deviate there even if he is taken for the good type. This means that to satisfy the Cho-Kreps criterion, the belief (probability) that the entrepreneur choosing $\beta \geq c$ is bad must be zero.

Now let us consider possible deviations. The equilibrium payoff of the bad type is $\overline{U} = 1 - I$. As we have just shown, he would not deviate to $\beta' \geq c$ even if taken for the good type. Assuming the worst possible beliefs for any out-of-equilibrium $\beta' < c$, a deviation to another $\beta' < c$ yields the same $1 - I$. Thus, there is no profitable deviation for the bad type.

The equilibrium payoff of the good type is

$$\underline{U} = 1 - c\underline{d} - I$$

The good type does not profit from deviating to another $\beta' \geq c$: even though he must be considered good by the market (due to the Cho-Kreps refinement), he would get the same $1 - c\underline{d} - I$. However, he might deviate to $\beta' < c$. He would suffer from the bad market beliefs but would avoid costly monitoring. His payoff from deviating is

$$\begin{aligned} \underline{U}' &= \alpha'(1-\underline{d}) + \underline{d} + (1-\alpha')(1-\overline{d}) - I = \\ &= \alpha'(\overline{d} - \underline{d}) + 1 - \overline{d} + \underline{d} - I \end{aligned}$$

The best possible deviation is to choose the maximum possible α' (intuitively, since the market underprices the firm's equity, the entrepreneur wants to sell as few shares as possible). This α' is obtained by making the investors' participation constraint binding, which, given the bad beliefs, is $(1-\alpha')(1-\overline{d}) = I$. Substituting this into $\underline{U}'$, we obtain

$$\underline{U}' = 1 - \frac{I(\overline{d} - \underline{d})}{1 - \overline{d}} - I$$

So, the necessary and sufficient condition for no deviation to be profitable is $1 - c\underline{d} - I \geq 1 - \frac{I(\overline{d}-\underline{d})}{1-\overline{d}} - I$, or

$$c\underline{d} \leq \frac{I(\overline{d} - \underline{d})}{1 - \overline{d}}$$

Finally, the investors' participation constraints must hold, i.e. it must be that $\underline{a} \leq 1 - c\underline{d} - I$ and $\overline{a} \leq 1 - \frac{I}{1-\overline{d}}$. ■

Proof of Lemma 2. First, let us impose the restrictions on the beliefs according to the Cho-Kreps intuitive criterion.

For any possible deviation β' of the bad type such that $\beta' < c$, the bad type would obviously gain if he were believed to be good. Thus, the Cho-Kreps criterion does not restrict beliefs for $\beta' < c$, and we can assume that any $\beta' < c$ yields the worst beliefs.

For any possible deviation β' of the bad type such that $\beta' \geq c$, if the bad type is believed to be good he obtains $1 - c\underline{d} - I < \overline{U} = 1 + (1-\alpha^P)(\overline{d} - \widehat{d}) - I$. Thus, he would not deviate there even if he is taken for the good type. This means that to satisfy the Cho-Kreps criterion, the belief (probability) that the entrepreneur choosing $\beta \geq c$ is bad must be zero.

We have already established that the bad type would not want to deviate to any $\beta' \geq c$ even if the market believes he is good. Given the bad out-of-equilibrium belief for any deviation such that $\beta' < c$, the bad type would get $1 - I$ from such deviation, which is smaller than $\overline{U}$. Hence, the bad type does not want to deviate regardless of α^P.

The equilibrium payoff of the good type is

$$\underline{U} = 1 - (1-\alpha^P)(\widehat{d} - \underline{d}) - I$$

Two types of deviations must be considered. First, the good type could deviate to some $\beta' < c$. As we know from the separating equilibrium analysis, the best the good type could get by such deviation is $1 - \frac{I(\bar{d}-\underline{d})}{1-\bar{d}} - I$ (given the worst beliefs). Hence, the first no-deviation condition is $1 - (1-\alpha^P)(\widehat{d} - \underline{d}) - I \geq 1 - \frac{I(\bar{d}-\underline{d})}{1-\bar{d}} - I$ or

$$\alpha^P \geq 1 - \frac{I}{(1-\bar{d})(1-\nu)}$$

The investors' participation constraint requires that

$$\alpha^P \leq 1 - \frac{I}{1-\widehat{d}}$$

It is easy to show that there always exists α^P that satisfies both conditions.

Second, the good type could deviate to some $\beta' \geq c$. Then, given the optimistic out-of-equilibrium beliefs (due to the Cho-Kreps refinement), his payoff would be $1 - c\underline{d} - I$. Hence, the second no-deviation condition is $1 - (1-\alpha^P)(\widehat{d} - \underline{d}) - I \geq 1 - c\underline{d} - I$ or

$$\alpha^P \geq 1 - \frac{c\underline{d}}{\widehat{d} - \underline{d}}$$

Combining this condition with the investors' participation constraint we obtain the necessary and sufficient condition for a pooling equilibrium satisfying the Cho-Kreps criterion to exist:

$$c\underline{d} \geq \frac{I(\widehat{d} - \underline{d})}{1-\widehat{d}}.$$

■

Proof of Proposition 2. 1) Let us prove the first claim. Lemma 2 shows that in the specified range of parameters pooling equilibria with no monitoring ($\beta^P < c$) do not exist. At the same time, in any pure- or mixed-strategy equilibrium the bad type never chooses $\beta \geq c$ (under the specified assumptions on parameters), because he can gain by deviating to $\beta < c$ and receiving his symmetric information payoff. Therefore, a pooling equilibrium with monitoring does not exist in this range. There cannot be separating equilibria with both types choosing not to attract active blockholders (the bad entrepreneur would want to imitate the good one).

Finally, assume there is a mixed-strategy equilibrium such that one or several ownership structures (α, β) with $\beta < c$ are chosen with positive probabilities by the good entrepreneur. Let us denote the set of these ownership structures by Ω. Then, *all* ownership structures chosen by the bad type must belong to Ω: if this were not the case, the bad type would clearly gain by deviating from $(\alpha, \beta) \notin \Omega$ to an ownership structure from Ω, as he would both avoid monitoring and sell overpriced equity. Then, there is at least one ownership structure among those chosen by the bad type, say (α', β'), where the investors' beliefs are that it is chosen by the bad entrepreneur with probability at least equal to the prior probability $1-\nu$. But since $c\underline{d} < I(\hat{d}-\underline{d})/(1-\hat{d})$, the good entrepreneur would gain from deviating from (α', β') to $(0,1)$ and thus attracting an active monitor (by the Intuitive criterion beliefs after this deviation should be that the entrepreneur is good).

2) To prove the second claim assume that an equilibrium exists where ownership structure with $\beta_1 \geq c$ is selected by the bad entrepreneur with a positive probability, and the good type selects with a positive probability an ownership structure without an active blockholder ($\beta_2 < c$). Since the latter ownership structure allows raising the funds (otherwise the good type would never choose it), the bad type would clearly deviate to it from the former, as he would both avoid monitoring and sell overpriced equity. ■

Proof of Lemma 4. First, let us impose the restrictions on the beliefs according to the Cho-Kreps intuitive criterion. The equilibrium payoff of the bad type is $\overline{U} = 1 - I$. Obviously, the bad type would deviate to (α', β') such that $\beta' < \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$ if he were believed to be good upon choosing such deviation. Thus, the Cho-Kreps criterion does not set restrictions on the beliefs for $\beta' < \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$. Consider a deviation of the bad type to some (α', β') such that $\beta' \geq \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$ and assume that he is believed to be good. Then his payoff would be $\overline{U}' = 1 + \gamma(\overline{d} - \underline{d})(1 - (\alpha' + \beta')) - c\underline{d} - I$. This is smaller than $1 - I$ whenever $\alpha' + \beta' > 1 - \frac{c\underline{d}}{\gamma(\overline{d}-\underline{d})}$. Thus for all (α', β') such that $\beta' \geq \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$ and $\alpha' + \beta' > 1 - \frac{c\underline{d}}{\gamma(\overline{d}-\underline{d})}$, the market must believe that the type is bad with probability zero. For any (α', β') such that $\beta' \geq \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$ and $\alpha' + \beta' \leq 1 - \frac{c\underline{d}}{\gamma(\overline{d}-\underline{d})}$, beliefs can be any.

Not let us consider deviation incentives. Assuming the worst beliefs for out-of-equilibrium move such that $\beta' < \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$, the bad type does not gain anything from such deviation. Now assume $\beta' \geq \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$. As we have just shown, if $\alpha' + \beta' \geq 1 - \frac{c\underline{d}}{\gamma(\overline{d}-\underline{d})}$, the bad type does not gain from such a move regardless of the beliefs. If $\alpha' + \beta' < 1 - \frac{c\underline{d}}{\gamma(\overline{d}-\underline{d})}$, and $(\alpha', \beta') \neq (\underline{\alpha}, \underline{\beta})$, then, assuming the worst out-of-equilibrium beliefs, the bad type is strictly worse off from such deviation as then he would obtain $1 - c\overline{d} - I < 1 - I$.

Thus, the necessary and sufficient condition for no deviation to be profitable for the bad type is

$$\underline{\alpha} + \underline{\beta} \geq 1 - \frac{c\underline{d}}{\gamma(\overline{d} - \underline{d})}$$

Given that $\underline{\beta} \geq \max\left\{\widehat{\beta}(\underline{\alpha}), \ \delta\right\}$ in our separating equilibrium, this condition only sets a restriction on $\underline{\alpha}$ and $\underline{\beta}$ but does not pose a threat to the equilibrium existence: $\underline{\alpha}$ and $\underline{\beta}$ can always be selected large enough for this condition to hold.

Consider now deviation incentives for the good type. His equilibrium payoff is $\underline{U} = 1 - c\underline{d} - I$. If he deviates to (α', β') such that $\beta' \geq \max\left\{\widehat{\beta}(\alpha'), \ \delta\right\}$, then he obtains $1 + \gamma(\underline{d} - \widetilde{d})(1 - (\alpha' +$

$\beta'))-c\widetilde{d}-I$. Since $\widetilde{d}\geq\underline{d}$, this is no greater than $1-c\underline{d}-I$ regardless of $\widetilde{d}$. Hence, such deviation is not profitable. If the good type deviates to to $(\alpha',\ \beta')$ such that $\beta' < \max\left\{\widehat{\beta}(\alpha'),\ \delta\right\}$, then, assuming the worst beliefs, he gets $1+(1-\alpha')(\underline{d}-\overline{d})-I$. The best deviation is the maximum possible α', i.e. the one that makes the investors' participation constraint binding: $(1-\alpha')(1-\overline{d})=I$ or $\alpha'=1-\frac{I}{1-\overline{d}}$.

Thus, the necessary and sufficient condition for no deviation to be profitable for the good type is $1-c\underline{d}-I\geq 1-\frac{I(\overline{d}-\underline{d})}{1-\overline{d}}-I$, or

$$c\underline{d}\leq\frac{I(\overline{d}-\underline{d})}{1-\overline{d}},$$

i.e. he should not be willing to imitate the good one.

We must also make sure that the investors' participation constraints are satisfied. For the good type this constraint is $\underline{\beta}(1-\underline{d})+\underline{d}\left[\gamma\underline{\beta}+(1-\gamma)(1-\underline{\alpha})\right]-c\underline{d}+(1-\underline{\alpha}-\underline{\beta})(1-\underline{d})\geq I$, which can be rewritten as $\underline{\alpha}\leq 1-\frac{c\underline{d}+I-\gamma\underline{d}\underline{\beta}}{1-\underline{d}+\underline{d}(1-\gamma)}$. This constraint only sets a restriction on $\underline{\alpha}$ and $\underline{\beta}$ but does not affect equilibrium existence: one can always select $\underline{\alpha}$ and $\underline{\beta}\geq\max\left\{\widehat{\beta}(\underline{\alpha}),\ \delta\right\}$ such that the constraint is satisfied (e.g. $\underline{\alpha}=0,\ \underline{\beta}=1$).

For the bad type, the investors' participation constraint is $\overline{\alpha}\leq 1-\frac{I}{1-\overline{d}}$, which simply sets a restriction on $\overline{\alpha}$. ■

Proof of Lemma 5. Let us first show that a pooling equilibrium with no active monitoring, that is (α^P,β^P) with $\beta^P<\max\left\{\hat{\beta}(\alpha^P),\ \delta\right\}$, does not exist. Were such equilibrium to exist, the good entrepreneur would get at most $1-I-I(\hat{d}-\underline{d})/(1-\hat{d})$: this is his highest payoff in such an equilibrium (i.e., the one with the largest α compatible with raising sufficient finance). From (15) the bad entrepreneur's payoff in such an equilibrium is $\overline{U}=1+(1-\alpha^P)(\overline{d}-\widehat{d})-I>1-I$. Assume the bad entrepreneur deviates to $(\alpha',\beta')=(0,1)$. This ownership structure implies monitoring, $1>\max\left\{\hat{\beta}(0),\ \delta\right\}$. Then, the bad entrepreneur gets at most $\overline{U}'=1-I-c\underline{d}<\overline{U}$. Therefore, he will never deviate to (α',β') and the Intuitive criterion implies that the entrepreneur should be considered good with probability 1 after such deviation. But then the good type wants to deviate to $(\alpha',\beta')=(0,1)$ as his payoff under optimistic beliefs $\underline{U}'=1-I-c\underline{d}$ is greater than $1-I-I(\hat{d}-\underline{d})/(1-\hat{d})$ if $c\underline{d}<I(\hat{d}-\underline{d})/(1-\hat{d})$.

Let us now check that neither does exist a pooling equilibrium (α^P,β^P) with $\beta^P\geq\max\left\{\hat{\beta}(\alpha^P),\ \delta\right\}$. The bad entrepreneur's payoff in this equilibrium is $\overline{U}=1+\gamma(1-(\alpha^P+\beta^P))(\overline{d}-\widehat{d})-c\hat{d}-I$. The presence of active monitoring, $\beta^P\geq\max\left\{\hat{\beta}(\alpha^P),\ \delta\right\}$, implies $\gamma(1-(\alpha^P+\beta^P))(\overline{d}-\widehat{d})<(1-c-\alpha^P)(\overline{d}-\widehat{d})$. But then one easily shows that $(1-c-\alpha^P)(\overline{d}-\widehat{d})<c\hat{d}$ is satisfied if $(\overline{d}-\widehat{d})/\overline{d}<c$. Therefore, the bad entrepreneur prefers to deviate to a contract (α',β') with $\beta'<\max\left\{\hat{\beta}(\alpha'),\ \delta\right\}$ even under pessimistic beliefs which guarantees him payoff $\overline{U}'=1-I$.

Finally, no separating equilibrium with both types attracting the monitor, both types not attracting the monitor cannot exist for obvious reasons: the bad type would be willing to imitate the good one. For the same reason there cannot be a separating equilibrium where the bad type attracts the monitor while the good one does not. ■

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Агентская проблема и структура собственности: привлечение внешнего крупного акционера как механизм сигнализирования [Электронный ресурс] : препринт WP9/2015/02 / С. Степанов, А. Суворов ; Нац. исслед. ун-т «Высшая школа экономики». – Электрон. текст. дан. (2 Мб). – М. : Изд. дом Высшей школы экономики, 2015. – (Серия WP9 «Исследования по экономике и финансам»). – 36 с. (на англ. яз.)

Мы моделируем решение предпринимателя о продаже пакета акций крупному инвестору в процессе привлечения финансирования. В существующей литературе привлечение внешнего крупного акционера обычно рассматривается как механизм уменьшения агентской проблемы путем мониторинга действий менеджеров. Наша модель предлагает новый взгляд на роль таких акционеров: компании могут привлекать их не для решения агентской проблемы, а для сигнализирования о том, что менеджер не склонен вести себя оппортунистически и извлекать значительные частные выгоды. Этот результат позволяет по-новому интерпретировать наблюдения о положительной связи между концентрацией внешней собственности и рыночной стоимостью компании: такая связь может являться следствием описанного сигнализирования, а не прямого эффекта мониторинга. Мы показываем, что данная положительная корреляция может возникать, даже если предположить, что крупный акционер сам участвует в извлечении частных выгод и не создает никакой стоимости для миноритарных акционеров. Наш анализ помогает объяснить, почему рынок более позитивно (либо менее негативно) реагирует на частные размещения акций по сравнению с публичными.

Ключевые слова: агентская проблема, крупные акционеры, мониторинг, структура собственности, асимметричная информация

Препринт WP9/2015/02
Серия WP9
Исследования по экономике и финансам

Степанов Сергей, Суворов Антон

Агентская проблема и структура собственности: привлечение внешнего крупного акционера как механизм сигнализирования

(*на английском языке*)