## Investor activism

- The costs and benefits of active monitoring
- Incentives of an active monitor

- Important topics in corporate governance
  - Banks vs stock markets
  - Concentrated vs dispersed ownership

- Costs and benefits of active monitoring
  - Costs
    - Monitoring costs
    - Scarcity rents to monitors
    - Monitor illiquidity
  - Benefits
    - Learning by lending
    - Externalities to non-monitoring investors
    - Control (chapter 10)

## Basic model of investor activism

- Fixed-investment model
  - Risk neutral entrepreneur has assets $A$ and a project needing $I > A$. Project yields $R$ if success, 0 if failure. Success probability $p_H$ if entrepreneur works, $p_L = p_H - \Delta p$ if not.
- No monitoring
  - Benefit from shirking $B$.
  - Funding to project if expected pledgeable income exceeds investors' expenses:

$$p_H(R - \frac{B}{\Delta p}) \geq I - A$$

- Monitoring
  - The monitor moves first.
  - The extent of moral hazard is reduced.
  - The benefit from shirking reduced from $B$ to $b < B$.
  - Monitor's private cost: $c$
  - Interpretation
    - Manager picks among three projects: good, bad and Bad.

| | Pr (success) | Private benefit |
|---|---|---|
| Bad | $p_L$ | $B$ |
| bad | $p_L$ | $b$ |

    - By incurring cost $c$, monitor eliminates Bad project but still cannot tell good from bad.

- With a monitor present, entrepreneur's incentive constraint is

$$R_b \geq \frac{b}{\Delta p}$$

- Incentives for the monitor
  - Also monitor is risk neutral
  - When not incurring cost $c$, the monitor cannot prevent shirking
  - Monitor's reward $R_m$ must satisfy

$$R_m \geq \frac{c}{\Delta p}$$

- Suppose first that *monitoring capital is abundant*: there is a large supply of monitors willing to invest their capital.
  - A monitor is available supplying investment $I_m$ such that his net payment equals his costs:

$$p_H R_m - I_m = c$$

- Funding possible if non-monitoring investors' breakeven constraint is satisfied:

$$p_H(R - R_b - R_m) \geq I - A - I_m \Leftrightarrow$$

$$p_H(R - \frac{b}{\Delta p}) - (I_m + c) \geq I - A - I_m \Leftrightarrow$$

$$p_H(R - \frac{b}{\Delta p}) \geq I - A + c$$

  - Monitoring reduces the moral-hazard problem – at cost $c$.
- Investment by monitor: blockholding

$$I_m = p_H R_m - c = p_H \frac{c}{\Delta p} - c = c(\frac{p_H}{\Delta p} - 1) = \frac{p_L}{\Delta p} c$$

  - Return on the investment: $\frac{p_H R_m}{I_m} = \frac{p_H c/\Delta p}{p_L c/\Delta p} = \frac{p_H}{p_L}$

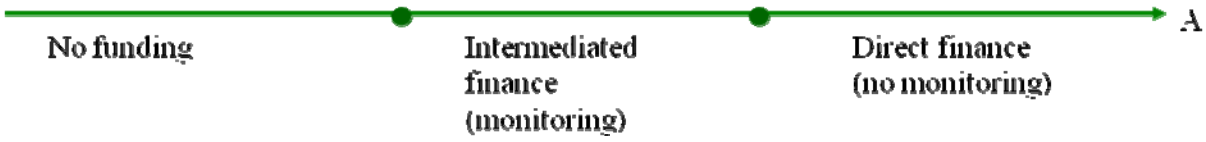
- Monitoring has a role to play when it increases pledgeable income, which happens when

$$p_H \frac{b}{\Delta p} + c < p_H \frac{B}{\Delta p} \Leftrightarrow c < \frac{p_H}{\Delta p}(B - b)$$

- Entrepreneur's utility equals NPV under monitoring

$$U_b = p_H R - I - c.$$

  - The entrepreneur will only enlist a monitor when this is necessary to obtain funding.
  - Strong firms are financed without monitoring.




- Empirical evidence: Legal systems with poor investor protection have also concentrated ownership.
  - High $B$ leads to high needs for monitoring by a monitor holding a block of shares.

## Overmonitoring

- The monitor exerts two kinds of externalities
  - A positive externality on other investors
  - A negative externality on the entrepreneur
- A model of *variable monitoring intensity*.
  - The monitor identifies the Bad project with prob $x$, and learns nothing with prob $1 - x$.
  - The greater monitoring costs incurred, the greater is the probability $x$:

$$c = c(x),\ c' > 0,\ c'' > 0.$$

- Borrower's utility equals NPV and depends on $x$:
$$U_b(x) = xp_HR + (1-x)(p_LR + B) - I - c(x)$$
- NPV is maximized at monitoring level $x^*$, where
$$c'(x^*) = (\Delta p)R - B$$
- Suppose that this monitoring level is sufficient for funding, while no monitoring is not.
- The monitor's incentives: he maximizes
$$[xp_H + (1-x)p_L]R_m - c(x)$$
- In order to get the monitor to choose the correct monitoring level, it is necessary for the entrepreneur that
$$(\Delta p)R - B = c'(x^*) = (\Delta p)R_m \Leftrightarrow R_m = R - \frac{B}{\Delta p}$$
- The entrepreneur not getting funding without monitoring implies that $R_b < \frac{B}{\Delta p}$. Therefore:
$$R_m = R - \frac{B}{\Delta p} < R - R_b \Leftrightarrow R_b + R_m < R$$
- In order to get the proper monitoring level, the entrepreneur needs other, non-monitoring investors in addition to the monitor.
  - If the monitor holds all external shares, there is no positive externality on other outside investors, only a negative externality on the entrepreneur – *excessive monitoring*.
- A large monitoring investor may also
  - aggravate the problem of soft budget constraints, by facilitating renegotiations
  - dampen the entrepreneur's incentives to come up with new ideas.

Scarce monitoring capital

- People with *both* skills in monitoring *and* own capital to invest may be scarce.
- Polar case – monitor has no own capital: $I_m = 0$.
  - Example: monitors as non-owning board members.
  - Monitor's incentive constraint: $R_m \geq \frac{c}{\Delta p}$
  - Monitor earns a *rent*: $p_H R_m - c = \frac{p_L}{\Delta p} c$.
  - Borrower's utility is no longer equal to NPV.
    NPV $= p_H R - I - c$
    $U_b = p_H R - I - c - \frac{p_L}{\Delta p} c = p_H R - I - \frac{p_H}{\Delta p} c$
  - A decrease in the scope for monitoring, and an increase in the occurrence of no funding.
- More generally, a high return on monitor's investment, because of investment opportunities elsewhere:

$$\chi = \frac{p_H R_m}{I_m} > \frac{p_H}{p_L}$$

  - Monitor's rent:

$$M = p_H R_m - I_m - c = p_H R_m - \frac{p_H R_m}{\chi} - c =$$

$$p_H \frac{c}{\Delta p}(1 - \frac{1}{\chi}) - c = (p_L - \frac{p_H}{\chi})\frac{c}{\Delta p} > 0.$$

  - Borrower's utility: $p_H R - I - c - M$.
  - Funding possible if

$$p_H(R - \frac{b}{\Delta p}) - c - M \geq I - A$$

  - The scarcer monitor capital is, the higher is $\chi$, the higher is $M$, and therefore the more difficult it is to get funding.

## Monitor-entrepreneur collusion

- *A three-tier hierarchy*
  - principal-supervisor-agent
  - here: investor-monitor-entrepreneur
  - two incentive problems: agent and supervisor
  - in addition: the agent may try to persuade the supervisor into not performing
  - *Ex ante* collusion: the agreement to collude is made before the monitor decides to collect information.
  - *Ex post* collusion: the monitor collects information and then offers to the entrepreneur to be cooperative, by not ruling out the Bad project.
- A model of *ex post* collusion
  - The entrepreneur bribes the monitor into colluding by diverting corporate resources. The diversion creates a gain $G > 0$ to the monitor but uniformly reduces the success probability by $\tau > 0$: from $p_H$ to $p_H - \tau$ if entrepreneur works, from $p_L$ to $p_L - \tau$ if not.
  - The diversion is wasteful: $G < \tau R$. Direct payments not possible.
  - Collusion occurs if both monitor and entrepreneur gain from it:

$$G \geq (\Delta p + \tau) R_m$$
$$B \geq (\Delta p + \tau) R_b$$

  - In order to prevent collusion, monitor's stake must be raised from $\frac{c}{\Delta p}$ to $\frac{G}{\Delta p + \tau}$, if the latter is higher.

The monitor as advisor

- Board members and others perform *two* tasks: monitoring and advising.
- Advisory activity is *productive*, like that of the entrepreneur.
  - A double-sided moral hazard problem
  - The advisor increases NPV and is useful even without own capital.
  - Strong entrepreneurs do not need *pure monitors* to get funding and are therefore more interested in a *pure advisor*.
- A model of pure advising
  - Fixed investment $I$, entrepreneur's own funds $A < I$.
  - Success probability is $p + q$
    - Entrepreneur determines $p \in \{p_H, p_L\}$ and earns $B$ when misbehaving.
    - Advisor determines $q \in \{q_H, q_L = 0\}$ and incurs non-verifiable cost $c$ to give a useful advice raising success probability by $q_H$.
  - Suppose advising is socially efficient:
    $$(\Delta q)R = q_H R > c.$$
  - Crucial difference between entrepreneur and advisor: Entrepreneur owns the idea and decides whether or not to hire advisor.
  - Benchmark: no advisor.
    - Funding if $A \geq \overline{A} = I - p_H(R - \frac{B}{\Delta p})$
    - Borrower's utility: $U_b^{nm} = p_H R - I$.

- Suppose that advisors' capital is abundant.
- In case of success, entrepreneur receives $R_b$, advisor $R_m$, and other investors $R - R_b - R_m$.
- Advisor's incentive constraint binding: $R_m = \frac{c}{\Delta q}$.
- Investment demanded from advisor:

$$I_m = (p_H + q_H)R_m - c = (p_H + q_H)\frac{c}{\Delta q} - c$$

- Borrower's utility equals NPV, since advisor does not receive rent: $U_b^m = (p_H + q_H)R - I - c$.
- The entrepreneur prefers advising as long as she can afford it, since $U_b^m > U_b^{nm}$.
- But does advising make funding easier?
- Other investors' breakeven constraint with advising:

$$(p_H + q_H)(R - \frac{B}{\Delta p} - \frac{c}{\Delta q}) \geq I - A - I_m \Leftrightarrow$$

$$(p_H + q_H)(R - \frac{B}{\Delta p}) - c \geq I - A \Leftrightarrow$$

$$A \geq \hat{A} = I - (p_H + q_H)(R - \frac{B}{\Delta p}) + c$$

- Funding facilitated by advising if and only if

$$q_H(R - \frac{B}{\Delta p}) > c$$

- Two cases
  - If $q_H R > c > q_H(R - \frac{B}{\Delta p})$, then advising increases NPV but makes funding more difficult. Advisor hired by strong firms only.
  - If $q_H(R - \frac{B}{\Delta p}) > c$, then advising helps on funding. Advisor hired by all funded firms.

A monitor arising endogenously

- Suppose, instead of the entrepreneur enlisting him (a *private deal*), the monitor needs to arise through share purchases in the stock market.
- To start with, external shares are held by dispersed owners.
- A potential large monitor makes *an unconditional and unrestricted tender offer* of price $P$ per share on all external shares.
    - Unconditional and unrestricted: the offer stands irrespective of how many shares it attracts.
- A free-rider problem
    - Getting a monitor enhances the value of the firm.
    - Selling to the potential monitor supplies a public good to other current share owners.
- In order to attract any shares, the potential monitor has to offer a price corresponding to the ex post value of the firm.
- The potential monitor has himself to bear the full cost of monitoring.
- In equilibrium, there will no monitoring.
- Ways to monitoring in equilibrium
    - Liquidity traders, making it possible for the potential monitor to disguise his offer.
    - Risk aversion among current investors.
    - The entrepreneur selling shares.

Learning by lending

- An additional effect from monitoring
  - Not only alleviating the moral hazard problem
  - But also providing the monitor with information about the borrower that the monitor can profit from later on.
- Competition among asymmetrically informed investors.
- Model: Fixed investment. Two periods. Discount factor $\beta$. No cash initially: $A = 0$. No savings between periods. Short-term contracts only.
- Date 1: Entrepreneur has a project requiring $I > 0$. Private benefit without monitoring, $B$, is large: no funding unless a monitor is enlisted. With monitor, private benefit $b < B$. No scarcity of monitors.
  - Assume pledgeable income sufficient even with no continuation project:

$$p_H(R - \frac{b}{\Delta p}) \geq I + c$$

- Date 2: Independently of what happens at date 1, the entrepreneur has a new project, statistically independent of the first project, and identical to it, with one difference:
  - With probability $\alpha$, the date-2 profitability is high: success probability has increased uniformly by $\tau$. If the entrepreneur behaves, the success probability is $p_H + \tau$, if not, it is $p_L + \tau$. But $B$ is so large that the project still gets no funding without monitoring.
  - With probability $(1 - \alpha)$, the success probabilities are unchanged from date 1.

- Symmetric information: no-one learns date-2 profitability. No gain to the borrower from having the same monitor in both periods.
- Asymmetric information: only the date-1 monitor (the incumbent) learns date-2 profitability.
  - Suppose the entrepreneur auctions off the position as active monitor.
  - The incumbent has an informational advantage.
  - Sequential-move bidding game where incumbent moves last: pure-strategy equilibrium.
    - Stage 1 of date-2 bidding game: Entrepreneur offers a monitor a stake $R_m^2 = c/\Delta p$ in the date-2 project and seeks bids of investment contribution $I_m^2$ for the position of active monitor.
    - Stage 2: New investors bid.
    - Stage 3: Incumbent monitor bids.
    - Stage 4: Uninformed investors contribute the residual investment: $I - I_m^2$.
  - Adverse selection: it never pays for uninformed investors to bid according to a higher date-2 success probability than $p_H$; if it is in fact higher, uninformed bidders will be outbid.
  - Monitor investment at date 2:

$$I_m^2 = p_H R_m^2 - c = p_H \frac{c}{\Delta p} - c$$

  - Date 1: Because of the expected informational rent at date 2, investors are willing to contribute up to

$$I_m^1 = p_H \frac{c}{\Delta p} + \beta\alpha\tau \frac{c}{\Delta p} - c = (p_L + \beta\alpha\tau)\frac{c}{\Delta p}$$

  - The monitor position acquired at a premium and maintained at a discount.

- Discussion: Learning by lending
  - Endogenous date-2 profitability: a *hold-up problem*
    - Suppose the entrepreneur, through an effort, can affect the chance of increased date-2 profitability. The incumbent monitor's informational advantage deteriorates the entrepreneur's incentives to perform.
  - Empirical studies indicate a value to being associated with a long-term investor.
    - Firms with close ties to investors are less liquidity constrained than others.
    - Firms with a bank relationship observe positive reactions in stock price.
  - The possibility of commitment.
  - The entrepreneur's own knowledge about date-2 profitability.
  - Competition among investors: with imperfect competition among available investors, the possibility for the monitor to recoup expenses later on is further increased, facilitating funding at date 1 even more.
    - Empirical evidence: concentrated banking markets may facilitate funding for weak firms.

Liquidity needs among monitors

- Tradeoff: commitment vs liquidity
- Comparative corporate governance
  - Market-based systems: lack of investor commitment
  - Bank-based systems: lack of investor liquidity
- A monitor may have liquidity needs before project returns arrive. Liquidity vs accountability – just as with the borrower (chapter 4).
  - Late compensation to the monitor is good for accountability, since more information about the project is known, but bad for monitor liquidity.
- Performance measures along the way may give the monitor an exit option.
  - A role for *passive monitoring* in providing liquidity to the active monitor.
- A model of monitor liquidity
  - Basic model of investor activism, with monitor liquidity needs added.
- Fixed-investment model. Risk neutral entrepreneur has asset $A$ and a project needing $I > A$ at date 0. Project yields $R$ if success, 0 if failure, at date 2. Success probability $p_H$ or $p_L$.
- At date 1, the monitor faces a liquidity shock with probability $\lambda$: An investment opportunity transforming an intermediate compensation $r_m$ into $\mu r_m$, where $\mu > 1$.
- Strategic exit: the monitor may choose to exit even without a liquidity shock.

- Imperfect performance measurement at date 1: After the monitor learns about the liquidity shock, speculative information arrives which is informative about effort, but which is *not* a sufficient statistic: the final outcome is even more informative.
  - The probability of an $H$ signal is $q_H$ with effort and $q_L$ without effort, where
$$\frac{q_H - q_L}{q_H} < \frac{p_H - p_L}{p_H}$$
- Scarce monitoring capital
  - Monitor earns a gross surplus $U_m = \kappa I_m$, where $\kappa \geq \lambda\mu + 1 - \lambda$ is the monitor's return on alternative investments.

- *Illiquid contract*: Monitor receives $R_m$ at date 2, if success, and nothing at date 1.
  - Participation constraint of monitor: $p_H R_m - c = \kappa I_m$
  - Incentive constraint of monitor: $R_m \geq \frac{c}{\Delta p}$
  - The cost of enlisting an active monitor exceeds the cost of monitoring
$$C^{IL} = p_H R_m - I_m = \frac{p_H - \frac{p_L}{\kappa}}{p_H - p_L} c \geq c$$
  - Borrower's utility: $U_b = p_H R - I - C^{IL}$
  - Pledgeable income: $p_H(R - \frac{b}{\Delta p}) - C^{IL}$

- *Liquid contract*: $\{r_m, R_m\}$. The monitor receives
  - $r_m$ at date 1 if signal is $H$ and nothing at date 2, in the case of a liquidity shock.
  - $R_m$ on date 2 if success and nothing at date 1, in the case of no liquidity shock.
- Assume $p_L$ is so low that, if he does not monitor, the active monitor prefers receiving $r_m$ than waiting for an unlikely $R_m$, even without a liquidity shock.
- Without monitoring, he earns

$$\lambda\mu q_L r_m + (1-\lambda) q_L r_m = [\lambda\mu + 1 - \lambda] q_L r_m$$

- Truth-telling constraint when there is no liquidity shock:

$$p_H R_m \geq q_H r_m$$

- With monitoring, the active monitor earns

$$U_m = \lambda q_H \mu r_m + (1-\lambda) p_H R_m - c$$

- Incentive constraint for the monitor:

$$\lambda q_H \mu r_m + (1-\lambda) p_H R_m - c \geq [\lambda\mu + 1 - \lambda] q_L r_m$$

- The constraint is binding, and so the monitor earns

$$U_m = [\lambda\mu + 1 - \lambda] q_L r_m$$

- The cost of hiring the monitor with a liquid contract is

$$C^L = \lambda q_H r_m + (1-\lambda) p_H R_m - I_m =$$
$$\lambda\mu q_H r_m + (1-\lambda) p_H R_m - \lambda(\mu - 1) q_H r_m - I_m =$$
$$U_m + c - \frac{U_m}{\kappa} - \lambda(\mu - 1) q_H r_m =$$
$$c + r_m[(1 - \frac{1}{\kappa})(\lambda\mu + 1 - \lambda) q_L - \lambda(\mu - 1) q_H] =$$
$$c + K r_m > c \text{ if and only if } K > 0.$$

- Providing the monitor with liquidity – that is, giving him a liquid contract – is optimal if $C^L < C^{IL}$.
  - Simple case: $p_L = 0 \rightarrow C^{IL} = c$.
  - We have $C^L < c = C^{IL}$ if and only if

$$(1 - \frac{1}{\kappa})(\lambda\mu + 1 - \lambda)q_L < \lambda(\mu - 1)q_H \Leftrightarrow$$

$$\frac{q_H - q_L}{q_H} > \frac{1}{\kappa - 1}(\frac{\kappa}{\lambda\mu + 1 - \lambda} - 1)$$

  - The liquid contract is more likely to be the optimal one when
    - The monitor's liquidity shock is likely: $\lambda$ high
    - The value of the monitor's reinvestment opportunity is high: $\mu$ high
    - Speculative information is of high quality: $\frac{q_H - q_L}{q_H}$ high
      - Speculative activity helps in providing liquidity for large, monitoring shareholders.
    - Monitoring capital is not too scarce: $\kappa$ low
      - When scarcity is high, too much of the benefit from liquidity is kept by the monitor and not returned to the entrepreneur.