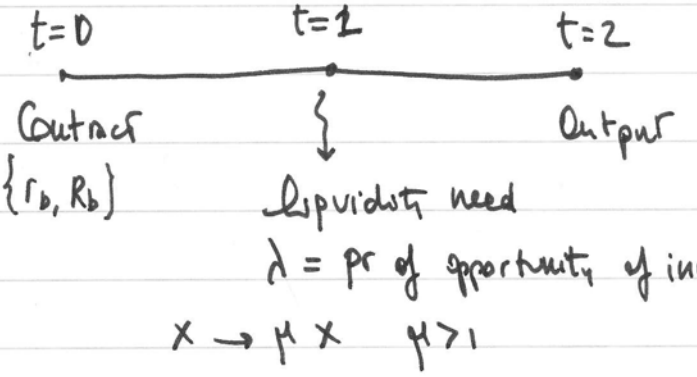
Exam 2009



(e) liquidity need observable and verifiable

$$IC_b: \quad (1-\lambda)p_H R_b + \lambda\mu r_b \geq (1-\lambda)p_L R_b + \lambda\mu r_b + B$$

$$R_b \geq \frac{B}{\Delta p(1-\lambda)} \qquad (1)$$

$$R_b^* = \frac{B}{\Delta p(1-\lambda)} < \frac{B}{\Delta p}$$

pledgeable income

$$p_H R - \{\lambda r_b + (1-\lambda)p_H R_b\} = p_H R - \{\lambda r_b + (1-\lambda)p_H \frac{B}{\Delta p(1-\lambda)}\}$$

$$= p_H\left(R - \frac{B}{\Delta p}\right) - \lambda r_b < p_H\left(R - \frac{B}{\Delta p}\right) \qquad (2)$$

expected utility

$$U_b = NPV = p_H R - I + \underbrace{\lambda(\mu-1)r_b}_{\text{r_b must be ~~low~~ \& the highest}} > p_H R - I \qquad (3)$$

from (2) $$r_b^* = \frac{1}{\lambda}\left\{p_H\left(R - \frac{B}{\Delta p}\right) - (I-A)\right\}$$

(b) If liquidity need not observable nor verifiable

$$IC_b: \quad \lambda\mu r_b + (1-\lambda)\rho_H R_b \geq [\lambda\mu + (1-\lambda)] r_b + B$$

$$(1-\lambda)[\rho_H R_b - r_b] \geq B \qquad \rho_L = 0 \quad \rho_H = \Delta\rho$$

$$\hat{R}_b \geq \frac{B}{\Delta\rho(1-\lambda)} + \frac{r_b}{\Delta\rho}$$

$$\hat{R}_b = \frac{B}{\Delta\rho(1-\lambda)} + \frac{r_b}{\Delta\rho} > \frac{B}{\Delta\rho(1-\lambda)}$$

pledg. income $\quad \rho_H R - \{\lambda r_b + (1-\lambda)\rho_H \underbrace{[\frac{B}{\Delta\rho(1-\lambda)} + \frac{r_b}{\Delta\rho}]}_{\hat{R}_b}\}$

$$= \rho_H\left(R - \frac{B}{\Delta\rho}\right) - r_b\left\{\lambda + (1-\lambda)\frac{\rho_H}{\Delta\rho}\right\} = I - A$$

$$\Leftrightarrow \hat{r}_b = \left(\rho_H\left(R - \frac{B}{\Delta\rho}\right) - (I-A)\right)\frac{1}{\lambda + (1-\lambda)\frac{\rho_H}{\Delta\rho}} < r_b$$

Control Rights

transfer of control right to investors increases pledg. income and facilitates financing

.interim action to improve profitability $\rho_H + \tau$, $\rho_L + \tau$

costly γ for entrepreneur

not contractible but the party can contract on who is entitled to decide.

Contract → Moral hazard → Outcome

Interim action

↓

choice between status quo and profit enhancing $\quad IR < \gamma$

$IC_b \qquad (\rho_H + \tau) R_b \geq (\rho_L + \tau) R_b + B \quad$ ← τ does not affect IC_b then this action can be taken before/after the Moral hazard decision

$-\gamma \qquad -\gamma$

$R_b \geq \frac{B}{\Delta \rho}$

control right to investor they do not sustain costs

pled. income $\quad (\rho_H + \tau)\left[R - \frac{B}{\Delta \rho}\right]$

$$NPV = V_b = (\rho_H + \tau) R - I - \gamma$$

no possibility of renegotiation, entrepren. has no money to compensate investors for the loss of value on their claims

Control right to entrepr Since $R_b \leq R$ then $\tau R_b < \gamma$

Then entrepreneur does not pick the profit enhancing action

$$\text{pledg. income} \quad p_H\left(R - \frac{B}{\Delta p}\right) < (p_H + \tau)\left(R - \frac{B}{\Delta p}\right)$$

$$NPV = p_H R - I > (p_H + \tau) R - I - \gamma$$

Then if control right to investor then higher possibilities of financing. Suppose

$$p_H\left(R - \frac{B}{\Delta p}\right) < I - A < (p_H + \tau)\left(R - \frac{B}{\Delta p}\right)$$

Then entrepreneur has insufficient cash on hand and can raise funds only by relinquishing the control right to the investors.

Real vs formal control

assume that τ and γ are unknown at the date of contracting

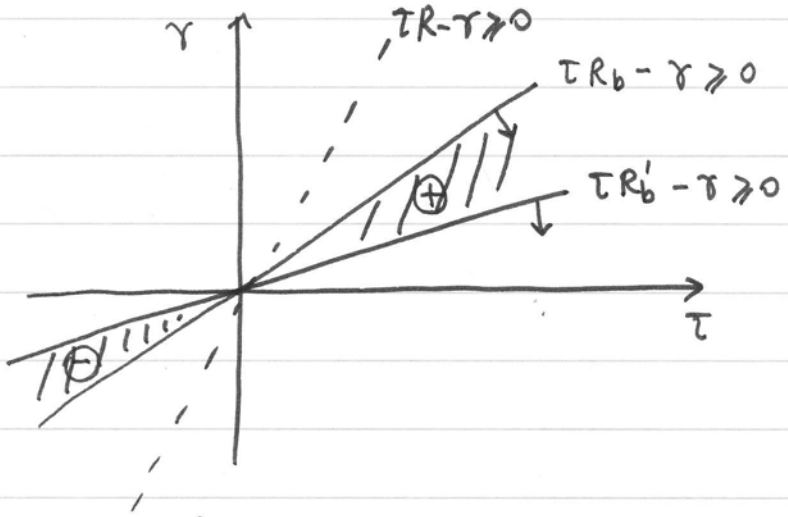
$$\tau \gtrless 0 \qquad \gamma \gtrless 0$$

Suppose that the entrepren. learns (τ, γ) at the interim stage and the investors learn nothing. Then the entrep. can propose the action to investors and he will do so if the action yields the entrepr.

$$\tau R_b - \gamma \geq 0$$

Then the investors try to figure out if the proposed action is profit enhancing

$$\mathbb{E}\left(\tau \mid \underbrace{\tau R_b - \gamma \geq 0}_{\gamma \leq \tau R_b}\right) \geq 0$$



Then if we ~~reduce~~ increase $R_b' \rightarrow R_b' < R_b$ then we add points with $\tau > 0$ and subtract points with $\tau < 0 \Rightarrow \nearrow \mathbb{E}(\tau \mid \gamma \leq \tau R_b)$

Then the higher the power of the managerial incentive scheme, the more likely it is that investors will go along with the entrepreneurs proposal

problem 7

(i) $R_b < \frac{B}{\Delta p}$ Then if no monitoring no funds

monitor obj. $\max_x \{[x p_H + (1-x) p_L] \alpha R - c(x)\}$

$$c'(x^*) = \alpha R \Delta p \quad (1)$$

borrower $U_b = NPV$

$$\max_x \{x p_H R + (1-x)(p_L R + B) - I - c(x)\}$$

$$c'(x^{FB}) = R(\Delta p) - B \quad (2)$$

$(1)+(2) \Rightarrow \alpha R \Delta p = R \Delta p - B \Rightarrow \alpha = 1 - \frac{B}{R\Delta p} < 1 - \frac{R_b}{R}$

Then if all residual is given to the monitor, then he will monitor too much (overmonitoring)

(ii) Suppose α shares are tendered. Then

$$x^*(\alpha) = c'^{-1}(\Delta p \alpha R) \text{ is increasing in } \alpha$$

Therefore the price is

$$P(\alpha) = (x^*(\alpha) p_H + (1 - x^*(\alpha)) p_L) R$$

$\Rightarrow \alpha(P)$ is the inverse function and it is increasing
↳ (supply function)

The large shareholder's profit for a given $\underline{P}$ is

$$\max_{x} \{x p_H + (1-x) p_L\} \alpha(P) R - c(x) - \underline{P}\,\alpha(\underline{P})$$

$$= -c(x) + \underbrace{\left[\underbrace{(x p_H + (1-x) p_L) R}_{\underline{P}} - \underline{P}\right]}_{\geq 0} \alpha(\underline{P})$$

because neg. value

$\Rightarrow$ there is no monitoring and the borrower cannot raise funds
↳ free riding problem

(iii) the large shareholder needs to be able to dilute (see Chap. 11) → instead of purchasing shares through a tender offer, it can try to acquire shares through anonymous orders

Problem 1

(IV) (V) Liquidity need among potential monitors

(market-based)
Anglo-Saxon model ⟶ lack of investor commitment

(bank-based)
Europe - Japan model ⟶ lack of investor liquidity

trade off commitment - liquidity

⇒ A large investor has limited incentives to build long-term value if he can resell his stake before the impact of his monitoring is realized or observed in the market

↳ various way of making it costly for a large investor to exit, for example the illiquidity of shares

⇒ the result is: the optimal contract for the active monitor is more likely to be liquid if:

1. the frequency of reinvest. opportunity is high
2. the intermediate signal is informative
3. monitoring capital is not too scarce