Control rights

- *Control right*: the right to make decisions that affect the firm's activities after the firm has started.
  - Day-to-day management, choice of personnel, etc.
  - Ownership; authority; constitution/ charter.
- *Contingent control rights*: contingent on some future event
- *Partial control rights*: covering some decisions and not others.
- *Induced control rights*: controlling decision *A* may give some bargaining power with respect to decision *B*.
- *Key question*: what is the *optimal* allocation of control rights?
  - Between entrepreneur and investors.
  - Between various investors.

Pledgeable income and the allocation of control rights

- Fixed-investment model
  - Risk neutral entrepreneur has asset A and a project needing $I > A$. Project yields R if success, 0 if failure. Success probability p_H if entrepreneur works, $p_L = p_H - \Delta p$ and a private benefit B if not.
- Modelling day-to-day management:
  - An *interim action* (that cannot be contracted upon at the financing stage) raises the success probability by $\tau > 0$, to $p_H + \tau$ or $p_L + \tau$, but costs $\gamma > 0$ for the entrepreneur.
  - A scope for *renegotiation* on the interim action, since it is not included in the initial contract.
- Entrepreneur and investors can agree in advance who is to decide on the interim action.
  - Two conflicts of interests – over success probability and interim action; choosing the latter need not be delegated to the entrepreneur.
- Allocating control over the interim action affects the chances of getting funding.
- Suppose the interim action is *not* optimal: $\tau R < \gamma$.
  - The action costs the entrepreneur more than it gains the project.

- *Investor control*: Investors get part of the gain and none of the cost and will therefore carry out the action.
  - No renegotiation, since the entrepreneur has no cash to compensate investors for the loss of the action not being carried out.
  - Pledgeable income: $(p_H + \tau)(R - \frac{B}{\Delta p})$
  - Borrower utility equals NPV: $U_b = (p_H + \tau)R - I - \gamma$.
- *Entrepreneur control*: The entrepreneur will not carry out the action.
  - $\tau R < \gamma$ and $R_b \leq R$ imply that $\tau R_b < \gamma$.
  - Pledgeable income: $p_H(R - \frac{B}{\Delta p})$
  - Borrower utility: $U_b = p_H R - I > (p_H + \tau)R - I - \gamma$.
- Investor control reduces borrower utility but increases pledgeable income.
- Investor control is necessary for funding if

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

- If the interim action *is* optimal, $\tau R > \gamma$, then investor control is surely better.
- Going public
  - A family owned firm may have to surrender control to outsiders in order to finance further growth.
- <u>Multiple control rights</u>
  - Suppose there are *many* intermediate actions, $k \in \{1,\ldots, K\}$. The entrepreneur surrenders control over those with the highest ratios $\tau_k R/\gamma_k$.
  - Strong firms (with high A) abandon fewer rights.

- Contingent control rights
  - Transfer of control rights made contingent on verifiable information.
  - Resemblance with multiple rights: control rights in multiple states of nature
  - In addition: control rights contingent on a measure of performance can boost incentives and therefore the entrepreneur's borrowing capacity.
  - Fixed-investment model with a suboptimal interim action: $\tau R < \gamma$.
  - Before the interim action is decided upon, a measure of performance is obtained.
    - A signal that is high or low.
    - The probability that the signal is j when effort is i is: σ_{ij}, where $i, j \in \{H, L\}$.
    - Note: $\sigma_{iH} + \sigma_{iL} = 1$, $i \in \{H, L\}$.
  - The signal is a sufficient statistic of effort: the entrepreneur should be rewarded based on the signal only. The entrepreneur receives R_b if signal is high, 0 if it is low.
  - Non-contingent investor control
    - Entrepreneur's incentive compatibility constraint:

$$(\sigma_{HH} - \sigma_{LH})R_b \geq B$$

    - Pledgeable income:

$$(p_H + \tau)R - \sigma_{HH}\frac{B}{\sigma_{HH} - \sigma_{LH}}$$

- Contingent control: the entrepreneur has control if signal is high, investors if signal is low.
  - When signal is high, entrepreneur both receives R_b and avoids costs γ. Incentive compatibility constraint:

$$(\sigma_{HH} - \sigma_{LH})(R_b + \gamma) \geq B$$

  - Pledgeable income:

$$(p_H + \sigma_{HL}\tau)R - \sigma_{HH}\left(\frac{B}{\sigma_{HH} - \sigma_{LH}} - \gamma\right)$$

- Contingent control facilitates funding.
  - The statement is true whenever

$$(p_H + \sigma_{HL}\tau)R - \sigma_{HH}\left(\frac{B}{\sigma_{HH} - \sigma_{LH}} - \gamma\right) >$$

$$(p_H + \tau)R - \sigma_{HH}\frac{B}{\sigma_{HH} - \sigma_{LH}}$$

$$\Leftrightarrow \quad \sigma_{HH}\gamma > (1 - \sigma_{HL})\tau R \quad \Leftrightarrow \quad \gamma > \tau R$$

Noncontractible investments

- Suppose the interim action requires *managerial initiative*.
- Fixed-investment model.
- After project start, entrepreneur may spend $c > 0$ in order to find an alternative way to run the project – the managerial initiative.
- If she spends c, she finds two versions of the modification
  - Borrower friendly: Success probability increases by τ_b and creates a private benefit, $-\gamma_b > 0$, for the entrepreneur.
  - Lender friendly: Success probability increases by τ_l and creates a private benefit, $-\gamma_l > 0$, for the entrepreneur.
- Further assumptions:
  - Both versions are good for the entrepreneur, since costs are now benefits: $-\gamma_b > -\gamma_l > 0$.
  - Investors prefer lender-friendly version: $\tau_l > \tau_b > 0$.
  - Entrepreneur prefers borrower-friendly version, for relevant values of R_b: $\tau_b R_b - \gamma_b > \tau_l R_b - \gamma_l > 0$.
  - Managerial initiative is desirable, and investor control is first-best optimal: $\tau_l R - \gamma_l > \tau_b R - \gamma_b > c$.
  - If the entrepreneur spends c, the entrepreneur and the investor may renegotiate over the version, with the entrepreneur making *take-it-or-leave-it offers* to the investors.
- Incentive compatibility requires $R_b \geq B/\Delta p$.

- Investor control
  - No scope for renegotiation, since entrepreneur cannot compensate investors.
  - Investors choose lender-friendly version in case there is an interim action to take.
  - The entrepreneur shows managerial initiative if and only if

$$\tau_l R_b - \gamma_l \geq c \Leftrightarrow$$
$$(\tau_l R - \gamma_l) - c \geq \tau_l (R - R_b)$$

    - The increase in NPV from the managerial initiative is greater than what the investors get out of it.
- Entrepreneur control
  - Investors are willing to accept a higher return $R_b' > R_b$ to the entrepreneur as compensation for the entrepreneur choosing the lender-friendly version of the interim action, as long as

$$(p_H + \tau_l)(R - R_b') \geq (p_H + \tau_b)(R - R_b) \Rightarrow$$
$$R_b' = \frac{\tau_l - \tau_b}{p_H + \tau_l} R + \frac{p_H + \tau_b}{p_H + \tau_l} R_b$$

  - So, with managerial initiative, the entrepreneur obtains utility

$$(p_H + \tau_l) R_b' - \gamma_l - c =$$
$$(\tau_l - \tau_b) R + (p_H + \tau_b) R_b - \gamma_l - c$$

  - Without managerial initiative, the entrepreneur obtains $p_H R_b$.

- The entrepreneur shows managerial initiative as long as

$$(\tau_l - \tau_b)R + (p_H + \tau_b)R_b - \gamma_l - c \geq p_H R_b \Leftrightarrow$$
$$(\tau_l R - \gamma_l) - c \geq \tau_b(R - R_b)$$

  - Again, the increase in NPV from the managerial initiative must be greater than what the investors get out of it.

- The difference between investor control and entrepreneur control is not the outcome, because of the renegotiation. Rather, it is the split of the gain that differs – with entrepreneur control, investors get less:

$$\tau_b(R - R_b) < \tau_l(R - R_b)$$

- With entrepreneur control, the entrepreneur appropriates more of the gain from her non-contractible investment – the managerial initiative.
- As a result, entrepreneur control may *increase* pledgeable income and therefore be good for funding.
- A large literature on buyer-supplier relationships
  - Incomplete contracts and relationship-specific investments.
  - The hold-up problem: disincentives to invest in investments that do not pay off with other partners, if such investments worsen the bargaining position in a subsequent renegotiation.
  - Costs and benefits of *integration*.
  - Building on Ronald Coase, "The Nature of the Firm", 1937.

Real control to managers

- Suppose investors have *formal control*.
- But investors do not know which interim action to take: There exist many possible actions, characterized by various combinations $\{\tau, \gamma\}$.
- Suppose the manager has information about the various actions that can be taken. Should the investors go along with the manager's proposal – that is, should they give her *real control*?
- The investors can only know that an action proposed by the manager has $\tau R_b - \gamma \geq 0$. They will say yes if and only if $E(\tau \mid \tau R_b - \gamma \geq 0) \geq 0$.
- The higher is R_b, the more *congruent* are the objectives of manager and investors.
- Managers with higher R_b – that is, with more high-powered incentives – have more real control.
- Entrepreneurs in strong firms – with a high A – have more real control than those in weak firms.
- An active monitor with similar interests to other investors collects information about the possible actions.
    - A proposal which is also backed by the monitor conveys even more information.
    - Active monitoring – by blockholding shareholders or relationship lenders – is particularly useful for weak firms.

- Supplementary section to chapter 10 is *not* required reading.