

Corporate Finance Theory 3: Monitoring and Control Rights

An Intuitive and Connected Study Structure

1 One Unified Mental Picture

After financing, two things happen:

1. **Information arrives** (early signals, private learning) \Rightarrow someone may **monitor**.
2. **Decisions must be made** (continue/liquidate, strategy, pivot, refinancing) \Rightarrow someone must have **control rights**.

Both are governance tools used to raise **pledgeable income** (what outsiders can safely expect to recover), but they work differently:

- **Monitoring** = acquire information and, if active, intervene. Passive monitors *reveal*; active monitors *act*.
- **Control rights** = allocate decision/veto power ex post (often contingent, selective, and separate from cash-flow rights).

Key bridge: active monitoring typically requires control rights (or strong covenants) to enforce changes.

2 Monitoring

2.1 Taxonomy (Always Start Here)

Passive monitoring (“exit”)

- Uses information to value assets in place; disciplines via prices/terms.
- No direct intervention; influence is indirect (pricing, spreads, rollover terms).

Active monitoring (“voice”)

- Produces forward-looking information and intervenes (board seats, covenants, staged finance).
- Requires control rights / strong covenants; information is costly; compensation is often option-like.

2.2 Early Performance Monitoring (Free, Verifiable Signal) “Reduces Effective Agency Cost”

Timeline / information tree (learn once)

Finance \rightarrow effort $i \in \{H, L\}$ \rightarrow early signal $j \in \{H, L\}$ \rightarrow final outcome.

Connecting effort, early signals, and final success

Let $\sigma_{ij} = \Pr(j | i)$ denote the distribution of early signals given effort, and ν_H, ν_L denote the conditional success probabilities given the early signal.

Unconditional success under effort H :

$$p_H = \sigma_{HH}\nu_H + \sigma_{HL}\nu_L, \quad (1)$$

and similarly for p_L . A useful decomposition is

$$\Delta p \equiv p_H - p_L = (\sigma_{HH} - \sigma_{LH})(\nu_H - \nu_L) > 0. \quad (2)$$

Benchmark: no early signal

Let x denote the success-state transfer promised to outsiders (lenders/investors). The incentive compatibility (IC) constraint implies:

$$(\Delta p)(R - x) \geq B, \quad (3)$$

so the maximal pledgeable success-state transfer is

$$x^* = R - \frac{B}{\Delta p}. \quad (4)$$

Hence pledgeable income is

$$\text{PI}_0 = p_H x^* = p_H R - \frac{p_H}{\Delta p} B. \quad (5)$$

With a free, verifiable early signal (pay on the signal)

Consider a contract that pays the entrepreneur a bonus R_b only if $j = H$. IC becomes

$$(\sigma_{HH} - \sigma_{LH})R_b \geq B \implies R_b^* = \frac{B}{\sigma_{HH} - \sigma_{LH}}. \quad (6)$$

Pledgeable income becomes

$$\text{PI}_1 = p_H R - \frac{\sigma_{HH}}{\sigma_{HH} - \sigma_{LH}} B. \quad (7)$$

Interpretation (the core connection). A more informative early test increases $(\sigma_{HH} - \sigma_{LH})$, which reduces the minimum “irreducible rent” that must be left to the entrepreneur. Equivalently, one can rewrite

$$\text{PI}_1 = p_H R - \frac{p_H}{\Delta p} B_1 \quad \text{with } B_1 < B$$

when the early signal is sufficiently informative. This raises pledgeable income and expands debt capacity / reduces required net worth.

Bridge to control rights. A verifiable early signal is a natural *trigger* for contingent control (covenants/milestones) used later in the course.

2.3 Costly Monitoring (Designated Monitor) “Pay with an Information-Sensitive Claim”

A monitor can acquire a soft (unverifiable) signal at private cost c . A standard way to incentivize information production is to compensate the monitor with an option-like payoff:

$$P_0 = p_H R \quad (\text{ex-ante fundamental price}), \quad (8)$$

and the monitor receives a call option struck at P_0 . The scale s^* is chosen so that the expected option gain conditional on the favorable signal equals the monitoring cost c (break-even monitoring incentive).

New trade-off. Financing monitoring via dilution can create a *monitoring tax* on the entrepreneur's incentives, and can introduce collusion / bribe-to-silence risks. Typical safeguards include partial verification, multiple monitors, and claw-back structures.

2.4 Monitoring II: When Monitoring is Used, and What Can Go Wrong

Fixed-intensity active monitoring

Suppose monitoring reduces private benefit from B to $b < B$ at cost c . A representative financing feasibility condition becomes

$$p_H \left(R - \frac{b}{\Delta p} \right) \geq (I - A) + c. \quad (9)$$

Financing regions (cutoffs)

Define cutoffs A^+ and A^- such that:

- $A \geq A^+$: no monitoring needed,
- $A^- \leq A < A^+$: monitoring is required,
- $A < A^-$: no funding even with monitoring.

Scarce monitoring capital

If monitoring capital is scarce, monitors may earn a rent $M > 0$, making funding harder (the effective cost of monitoring increases).

Over-monitoring (too much “voice”)

Let monitoring intensity be x , with cost $c(x)$. Socially optimal intensity x^* solves

$$c'(x^*) = (\Delta p)R - B. \quad (10)$$

If a monitor internalizes too much of the outsider payoff but ignores the entrepreneur's private costs/externalities, the monitor may choose $x > x^*$ (over-monitoring), reducing total surplus.

Advising vs. pure monitoring

Advising adds know-how and shifts the success probability frontier (value creation), e.g. success probability becomes $p + q$. A simple desirability condition is:

$$(\Delta q)R > c, \quad (11)$$

highlighting that advising changes the production frontier (not merely information).

3 Control Rights

3.1 What Control Rights Are (Definition and Features)

A **control right** is an ex-ante right to decide or veto actions under specified circumstances after the firm is operating. Control rights are:

- distinct from cash-flow rights,
- often contingent and partial,
- implementable via gatekeeping (board seats, vetoes, covenants, liquidation rights).

Crucial distinction from monitoring. Allocating control can increase pledgeable income even if it lowers NPV (a pledgeability–efficiency trade-off), whereas monitoring is modeled as intervention that can raise both NPV and pledgeable income (no inherent conflict).

3.2 Control as Collateral (Aghion–Bolton Logic): Pledgeability vs. Efficiency

Environment: moral-hazard backbone (IC) plus an interim action that raises success probability by $\tau > 0$ but costs insiders γ . The moral-hazard floor is

$$(\Delta p)R_b \geq B \Rightarrow R_b \geq \frac{B}{\Delta p}.$$

Investor control (action enforced)

$$\Pi_I = (p_H + \tau) \left(R - \frac{B}{\Delta p} \right). \quad (12)$$

Insider control (action optional)

Insiders take the action only if $\tau R_b \geq \gamma$; otherwise pledgeable income is

$$\Pi_E = p_H \left(R - \frac{B}{\Delta p} \right). \quad (13)$$

Value of control as collateral

$$\Pi_I - \Pi_E = \tau \left(R - \frac{B}{\Delta p} \right). \quad (14)$$

Financing regions

Cutoffs A_I and A_E determine when the entrepreneur must cede control to obtain funding.

Efficiency vs. pledgeability tension

First-best takes the action iff $\tau R \geq \gamma$. Investor control may force the action even if $\tau R < \gamma$ because it increases pledgeability.

Two “currencies” to pay investors

- Cash-flow rights: an *efficient currency*.
- Control rights: an *inefficient currency* (can destroy surplus).

Cash-flow transfers are used up to the IC floor $R_b = \frac{B}{\Delta p}$; beyond that, one may need to pay with control.

3.3 Multiple Rights: A Pecking Order of Ceded Rights

With many decisions indexed by k , each investor-controlled right raises success probability by τ_k but costs insiders γ_k . Optimal allocation is characterized by a threshold rule:

$$\frac{\tau_k R}{\gamma_k} \geq \theta, \quad (15)$$

with $\theta < 1$ when financing constraints are tight. Prediction: weaker balance sheets \Rightarrow more/stronger rights (board seats, vetoes, liquidation rights, collateral sweeps).

3.4 Contingent Control: Covenants/Milestones as Verifiable Triggers

Contingent rights preserve initiative in good states and allow intervention when performance deteriorates. Formally, let a verifiable signal $s \in \{H, L\}$ be observed; control transfers to investors if $s = L$. This can tighten incentives and raise pledgeable income. (One representative IC form under contingent control is)

$$[\Delta p - \tau(\sigma_{HH} - \sigma_{LH})]R_b \geq B - (\sigma_{HH} - \sigma_{LH})\gamma. \quad (16)$$

3.5 Control Rights II: Property Rights / Hold-up with Noncontractible Investments

Motivation: many key investments are noncontractible; ex post efficiency \neq ex ante incentives (hold-up). Residual control over *which version is implemented* affects initiative incentives and financing capacity.

Model: an initiative discovers a modification with two versions:

$$b \text{ (borrower-friendly)} \quad \text{and} \quad \ell \text{ (lender-friendly)}, \quad \tau_\ell > \tau_b,$$

with different private costs/benefits.

Investor control

Initiative condition:

$$\tau_\ell R_b - \gamma_\ell \geq c. \quad (17)$$

Pledgeable income uses

$$(p_H + \tau_\ell)(R - R_b), \quad (18)$$

creating a tension between inducing initiative (requires higher R_b) and pledgeability (prefers lower R_b).

Borrower control

Borrower can credibly threaten to implement b ; renegotiation implies ex ante pledgeable income is only

$$(p_H + \tau_b)(R - R_b), \quad (19)$$

and the incremental ℓ -value is transferred to the entrepreneur.

Leakage insight

Investor control induces larger “leakage”

$$\tau_\ell(R - R_b) \quad \text{than borrower control} \quad \tau_b(R - R_b),$$

and since $\tau_b < \tau_\ell$, borrower control can make initiative easier to sustain in some regions, potentially increasing feasible finance.

4 The Clean Connection Between Monitoring and Control Rights

1. Active monitoring needs control rights to intervene (board seats, covenants, staging).
2. Monitoring is (conceptually) value-creating: it can raise NPV and pledgeable income together. Control rights can be value-reducing but still necessary to raise pledgeable income enough to fund the project.

3. Both can be excessive:

- too much monitoring stake \Rightarrow over-monitoring $x > x^*$,
- too much investor control \Rightarrow decision distortions / deadweight loss (maximize pledgeability, not total surplus).

4. **Contingent rights are the bridge:** monitoring-triggered control transfers (covenant breach / milestones) preserve initiative in good states while enabling intervention in bad states.

Appendix - Core Idea

Monitoring helps outsiders “see” (generate earlier/cleaner verifiable information), while *control rights* help outsiders “act” (enforce interventions after bad signals). Both operate by raising **pledgeable income** Π , relaxing the financing constraint.

1. Common Financing Feasibility Constraint

External finance is feasible if pledgeable income covers the external funding need:

$$\Pi \geq I - A, \quad (20)$$

where Π denotes the maximum expected repayment that can be credibly promised to outsiders.

2. Monitoring = “See” \Rightarrow Higher Π

(a) Benchmark: No Early Signal

Let x denote outsiders’ success-state transfer. Incentive compatibility (IC) implies:

$$(\Delta p)(R - x) \geq B, \quad \Delta p \equiv p_H - p_L, \quad (21)$$

so the maximal outsiders’ transfer is

$$x^* = R - \frac{B}{\Delta p}. \quad (22)$$

Hence pledgeable income in the benchmark is

$$\Pi_0 = p_H x^* = p_H R - \frac{p_H}{\Delta p} B. \quad (23)$$

(b) Free, Verifiable Early Signal: “Clean” Monitoring

Suppose an early verifiable signal $j \in \{H, L\}$ is observed. Consider contracts that pay the entrepreneur a bonus R_b only if the high signal H is realized. IC becomes

$$(\sigma_{HH} - \sigma_{LH}) R_b \geq B, \quad (24)$$

so the minimal incentive-compatible bonus is

$$R_b^* = \frac{B}{\sigma_{HH} - \sigma_{LH}}. \quad (25)$$

Pledgeable income under signal-based contracting is then

$$\Pi_1 = p_H R - \frac{\sigma_{HH}}{\sigma_{HH} - \sigma_{LH}} B. \quad (26)$$

Intuition. A cleaner (more informative) signal increases $(\sigma_{HH} - \sigma_{LH})$, which reduces the required “irreducible rent” left to the entrepreneur, thereby raising Π .

3. Control Rights = “Act” \Rightarrow Higher Π

In the control-rights environment, investor control can enforce an intervention that increases success probability by $\tau > 0$ (at private cost γ to insiders). Under investor control, pledgeable income is

$$\Pi_I = (p_H + \tau) \left(R - \frac{B}{\Delta p} \right), \quad (27)$$

while under insider control (intervention may not be taken),

$$\Pi_E = p_H \left(R - \frac{B}{\Delta p} \right). \quad (28)$$

Thus the incremental pledgeability gain from “control as collateral” is

$$\Pi_I - \Pi_E = \tau \left(R - \frac{B}{\Delta p} \right). \quad (29)$$

4. The Bridge: Monitoring-Triggered Control Transfer (Contingent Control)

Let monitoring deliver a verifiable signal $s \in \{H, L\}$. The contract allocates control rights contingently: if $s = L$, control transfers to investors, who enforce the intervention (raising success probability by τ).

(1) Entrepreneur Utilities

Under effort H versus shirking L ,

$$U_E(H) = [p_H + (1 - \sigma_{HH})\tau] R_b - (1 - \sigma_{HH})\gamma, \quad (30)$$

$$U_E(L) = [p_L + (1 - \sigma_{LH})\tau] R_b - (1 - \sigma_{LH})\gamma + B. \quad (31)$$

(2) Incentive Compatibility with Contingent Control

Effort is induced when

$$[\Delta p - \tau(\sigma_{HH} - \sigma_{LH})] R_b \geq B - (\sigma_{HH} - \sigma_{LH})\gamma. \quad (32)$$

(3) Pledgeable Income and Feasibility

Given the minimal incentive-compatible R_b , outsiders’ pledgeable income is

$$\Pi_{\text{cont}} = p_H(R - R_b) + (1 - \sigma_{HH})\tau(R - R_b), \quad (33)$$

and financing feasibility requires

$$\Pi_{\text{cont}} \geq I - A. \quad (34)$$

Summary (How the Equations Encode the Intuition)

Monitoring provides the *trigger* $(\sigma_{HH} - \sigma_{LH})$ that makes incentive provision cheaper ((25)–(26)), while control rights ensure that in bad states intervention is *enforceable* via $(1 - \sigma_{HH})\tau$ ((33)). Together they raise Π , thereby relaxing the external financing constraint (20).