

Corporate Finance Theory 4: Takeovers and Product Markets

A Coherent, Unified Study Structure

1 The Single Spine (Keep This Throughout)

You are studying two external “markets” that discipline firms:

1. **Market for corporate control (takeovers):** reallocates *control* when a bidder believes it can run the assets better (or extract private benefits), subject to financing, bargaining, and legal constraints.
2. **Product markets:** reallocate *profits and survival* through competition, which reshapes incentives and the firm’s *pledgeable income* (what outsiders can safely expect to recover).

Coherence rule: both topics repeatedly operate through the same bottleneck:

pledgeable income / financeability (driven by profits, incentives, and enforceable control/commitment).

2 Takeovers / Control Turnover

2.1 Facts First: What Takeover Activity Looks Like (Stylized Patterns)

- Hostile vs. friendly contests; tender offers vs. mergers; failure is common.
- Bids are revised in response to competition; premia reflect bargaining and expected synergies.
- Takeover activity clusters in *waves* driven by valuation, credit conditions, industry shocks, and legal/regulatory shifts.

Coherence point. These patterns already imply that takeover outcomes are not “pure efficiency”: they are shaped by **financing constraints, bargaining, and institutions**. This motivates mechanism-based theory.

2.2 Mechanics → Strategic Frictions (Why Efficient Transfers Are Not Automatic)

- **Free-riding with dispersed shareholders:** shareholders tender only if individually indifferent, so bidders may not capture all synergy and can break even in benchmark models.
- **Toeholds:** early stakes partially internalize free-riding and affect bidding incentives, but introduce disclosure, price-impact, and legal trade-offs.
- **Defenses (poison pills, staggered boards, etc.):** shift tendering thresholds and bargaining power, changing the probability and price of control transfer.

Coherence point. Once free-riding is understood, the role of toeholds, dilution, and pills becomes clear: they are tools that change the *tendering equilibrium* and the *division of surplus*.

2.3 Law as the “Rules of the Game” (Why Process Matters)

- Fiduciary standards and defensive tactics constrain what boards can do, and therefore shape credible threats and bargaining power in control contests.

Coherence point. Law matters because it changes *credible threats* and *bargaining power*—hence equilibrium price and whether control transfers at all.

2.4 Case Anchors (Use Cases to Remember Mechanisms)

- **RJR Nabisco:** auction dynamics; leverage discipline vs. over-leverage; boards care about deliverability and price certainty in sale-of-control settings.
- **Oracle–PeopleSoft:** defenses and embedded liabilities shift bargaining power and raise acquisition costs; litigation and regulation extend contests.
- **Airgas:** pill plus staggered board can materially alter takeover probability; highlights the “just say no” boundary and entrenchment concerns.
- **Twitter:** pill buys time; negotiated merger contracts emphasize closing certainty (remedies, termination fees, limited financing outs).

Coherence point. Each case corresponds to a theoretical object: *auction (surplus split)*, *defense as a price lever*, *blocking/entrenchment*, and *contracting for closing certainty*.

2.5 Theory Bridge: Pure → Positive

- **Pure theory:** defines welfare benchmarks for when takeovers are desirable for shareholders and/or efficient for total surplus.
- **Positive theory:** adds frictions (free-riding, defenses, financing constraints, legal context) to explain observed outcomes.

Coherence point. Pure theory tells you *what* efficient control transfer would look like; positive theory explains *why* actual outcomes deviate and what predicts those deviations.

2.6 Financing Constraints and Incentives (Where Takeovers Connect to the Course)

- Takeover threat disciplines managers through the *replacement* channel, ideally stronger after poor performance and weaker after good.
- Financing constraints and pledgeability can affect the “price of control” and the frequency of transfers.
- Takeover pressure can also induce myopia (underinvestment) if the threat becomes too intense.

3 Product Markets

3.1 The Two-Way Map (Keep Fixed)

- **Product-market → finance:** rivalry changes profits and financing capacity.
- **Finance → product-market:** financing choices change competitive conduct and bargaining.
Two opposing mechanisms:
- **Profit destruction:** more competition lowers profits ⇒ lowers pledgeable income.

- **Benchmarking:** rivals provide informative relative performance signals \Rightarrow can tighten incentives and raise pledgeable income.

3.2 Horizontal Competition with Moral Hazard: “Who Gets Funded?”

Innovation duopoly payoffs: monopoly payoff M , duopoly payoff D , with $M \geq D \geq 0$. Moral hazard implies an incentive rent term $\frac{B}{\Delta p}$.

- **Both firms funded:** pledgeable-income feasibility involves expected profits under duopoly outcomes, net of the incentive rent.
- **Only one firm funded:** feasibility uses monopoly profits (larger cash-flow base) net of the same rent.

Coherence point. Competition changes the *cash-flow base* that can be pledged. Hence market structure and financing constraints are jointly determined.

3.3 Benchmarking: Competition Can Improve Incentives

Relative performance can act as a benchmark signal, reducing moral-hazard costs and raising pledgeable income. Thus rivalry can reduce profits yet increase contractibility—two effects that move in opposite directions.

Coherence point. This is exactly the monitoring logic (cleaner signals reduce effective agency wedges), applied to product-market environments.

3.4 Predation: Financing Constraints as a Competitive Weapon

Predation arises when a strong firm can take short-run losses to push a financially constrained rival out, then recoup via future monopoly rents.

A canonical predation condition:

$$k < p_H^2(M - D),$$

where k is the short-run predation cost and $p_H^2(M - D)$ is the expected future incremental monopoly value.

Coherence point. With financing constraints, competition becomes dynamic: today’s losses affect tomorrow’s funding and survival.

3.5 Financial Design to Deter Predation (Continuation Policy)

Predation deterrence requires continuation to be *less sensitive* to short-run performance. A representative condition:

$$D \geq (z_S - z_F)(M - D) \iff \frac{D}{M - D} \geq z_S - z_F,$$

where z_S, z_F are continuation probabilities after success/failure.

Coherence point. This is finance \rightarrow product-market: contract design and liquidity buffers alter rivals’ incentives to prey.

3.6 Vertical Relationships: Finance as Commitment in Bargaining

Financial structure (leverage/control) can commit the firm in negotiations with suppliers/customers by making payoffs more “fragile” and thus shifting bargaining outcomes.

Coherence point. Financing is not only about raising funds; it is also a *commitment device* in product-market and vertical negotiations.

4 Tight Connection: Takeovers and Product Markets

Think of them as two external selection devices:

1. **Product markets** select via *profits and survival* (who can finance, who exits, who can be preyed on).
2. **Takeover markets** select via *control* (who runs the assets, given free-riding, defenses, and law).

They interact through three consistent channels:

- **Profit channel:** product-market profits determine takeover incentives/premia and financing capacity; takeover-induced restructuring changes competitive outcomes.
- **Pledgeability channel:** both topics reduce to financeability—what outsiders can expect to recover—via profits, incentives, and enforceable control.
- **Discipline channel:** competition disciplines managers; takeover threat disciplines managers; both can induce myopia if too intense.

A Key Equations: Takeovers and Product Markets

A.1 Takeovers (Core Theory)

Tender offer / free-riding (continuum shareholders)

$$\text{Offer price : } v + P, \quad (1)$$

$$\text{Tendering indifference : } P = \beta \quad (\text{so } \beta = P). \quad (2)$$

Post-takeover dilution (Grossman–Hart style)

If remaining shares are diluted by $\varphi \in [0, 1]$,

$$P = 1 - \varphi, \quad (3)$$

$$\pi = \varphi. \quad (4)$$

Poison pill “pricing”

If a pill dilutes the raider by $\Delta > 0$,

$$P = 1 + \Delta \quad (\Rightarrow \beta = 1), \quad (5)$$

$$\Delta^* = \hat{w}. \quad (6)$$

Voting / control threshold

With a voting shares and a requirement of k votes,

$$\kappa = \frac{k}{a}. \quad (7)$$

Monopoly pricing of control (charter chooses a “price” for sale of control)

Price–cutoff link and sale probability.

$$P = \hat{v} + \hat{w}^*, \quad \Pr(\text{sale}) = 1 - H(\hat{w}^*). \quad (8)$$

Entrepreneur payoff program.

$$U_b = -I + (v + w) H(\hat{w}^*) + (\hat{v} + \hat{w}^*) [1 - H(\hat{w}^*)]. \quad (9)$$

FOC (hazard form).

$$1 - H(\hat{w}^*) = h(\hat{w}^*) \left[(\hat{v} + \hat{w}^*) - (v + w) \right]. \quad (10)$$

Demand and elasticity.

$$D(P) = 1 - H(P - \hat{v}), \quad (11)$$

$$D'(P) = -h(P - \hat{v}), \quad (12)$$

$$\eta = \frac{h(\hat{w}^*) P}{1 - H(\hat{w}^*)}. \quad (13)$$

Lerner rule.

$$\frac{P - (v + w)}{P} = \frac{1}{\eta}. \quad (14)$$

Raider entry (preparation cost c).

$$\int_{\hat{w} \geq \hat{w}_m} (\hat{w} - \hat{w}_m) dH(\hat{w}) \geq c. \quad (15)$$

A.2 Product Market (Core Model)

A. Funding constraints in an innovation duopoly (profit destruction)

If both firms seek funding, the pledgeable-income condition is

$$p_H \left[(1 - p_H)M + p_H D - \frac{B}{\Delta p} \right] \geq I - A. \quad (16)$$

If only one firm is funded (monopoly if it succeeds),

$$p_H \left[M - \frac{B}{\Delta p} \right] \geq I - A \geq p_H \left[(1 - p_H)M + p_H D - \frac{B}{\Delta p} \right]. \quad (17)$$

Cutoffs (funding regions) are defined by

$$p_H \left[M - \frac{B}{\Delta p} \right] = I - \underline{A}, \quad (18)$$

$$p_H \left[(1 - p_H)M + p_H D - \frac{B}{\Delta p} \right] = I - \overline{A}. \quad (19)$$

B. Benchmarking channel (competition improves incentives)

$$\text{Pledgeable income} = p_H D, \quad \text{Funding if } p_H D \geq I. \quad (20)$$

C. Predation

$$\text{Predate iff } k < p_H^2(M - D). \quad (21)$$

D. Predation deterrence + continuation policy (Bolton–Scharfstein)

Predation-deterrence (PD) condition:

$$D \geq (z_S - z_F)(M - D) \iff \frac{D}{M - D} \geq z_S - z_F. \quad (22)$$

IC/IR-type constraints used in the continuation-policy section (examples).

$$R_b^S - z_F \frac{B}{\Delta p} \geq \frac{B^0}{\Delta p}, \quad (23)$$

$$U_b(z_S) - R_b^S + A \geq 0. \quad (24)$$

Deep-pockets binding example (illustrative equalities).

$$(1 - z_F)(M - D) = D, \quad (25)$$

$$R_b^S - z_F \frac{B}{\Delta p} = \frac{B^0}{\Delta p}. \quad (26)$$