

# 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  $\Rightarrow$  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).**

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

**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

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

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

### 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).**

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

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