

Monopoly Pricing Under a Heterogeneous Boycott

1 Intuition

Standard WTP distribution: consumers differ in valuation v . At price p , only consumers with $v \geq p$ buy. A boycott that is heterogeneous means some WTP consumers are more likely to exit than \neq WTP consumers. Mechanically, this trims one component of the valuation density more than the rest, making the residual demand less price-elastic in the relevant region. With lower elasticity, monopoly pricing pushes toward a higher markup (higher p^*) even as quantity falls.

2 Model

There is a unit mass (or market size M) of potential consumers with valuations

$$v \sim F, \quad f(v) \text{ density on } [0, \infty).$$

A monopolist has constant marginal cost $c \geq 0$ and posts a single price p .

2.1 Baseline (no boycott)

Demand at price p is the mass of consumers with $v \geq p$:

$$Q(p) = M \cdot \Pr(v \geq p) = M (1 - F(p)). \quad (1)$$

Profit is

$$\pi(p) = (p - c) Q(p).$$

2.2 Heterogeneous boycott as valuation-dependent survival

Let $s(v; \beta) \in [0, 1]$ be the probability a consumer with valuation v remains in the market during a boycott of intensity $\beta \in [0, 1]$. A *heterogeneous* boycott means $s(\cdot; \beta)$ is increasing in v (low-WTP exit more).

Residual demand becomes

$$Q_B(p; \beta) = M \int_p^\infty s(v; \beta) f(v) dv. \quad (2)$$

Profit under boycott:

$$\pi_B(p; \beta) = (p - c) Q_B(p; \beta).$$

3 Optimal pricing condition and why price can rise

Differentiate profit with respect to p :

$$\frac{d\pi_B}{dp} = Q_B(p; \beta) + (p - c) Q'_B(p; \beta).$$

Because $Q'_B(p; \beta) = -M s(p; \beta) f(p)$ (by Leibniz), the FOC can be written as the Lerner form:

$$\frac{p_B^*(\beta) - c}{p_B^*(\beta)} = \frac{1}{|\varepsilon_B(p_B^*(\beta); \beta)|}, \quad (3)$$

where the boycott (residual) elasticity is

$$\varepsilon_B(p; \beta) = \frac{dQ_B}{dp} \frac{p}{Q_B} = -\frac{M s(p; \beta) f(p)}{Q_B(p; \beta)} p. \quad (4)$$

A heterogeneous boycott typically *reduces* $|\varepsilon_B|$ around the monopoly optimum because it disproportionately removes the most price-sensitive (low-valuation) margin. Then the RHS increases, and the optimal markup increases, raising $p_B^*(\beta)$ even as $Q_B^*(\beta)$ falls.

4 “Profit-maximizing production curve”

when we use the firm’s “production choice” as the implied quantity sold at the optimal price, the profit-maximizing quantity is

$$Q_B^*(\beta) = Q_B(p_B^*(\beta); \beta).$$

Comparative statics in β trace out a curve $\beta \mapsto (Q_B^*(\beta), p_B^*(\beta))$: typically $Q_B^*(\beta)$ decreases and $p_B^*(\beta)$ increases over a range of β when the boycott is strongly left-tail (low-WTP) selective.