Lezione 16

Discriminazione del prezzo nel settore farmaceutico

A cura
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Two Policy Objectives:

- Access to and affordability of existing drugs
- Incentives for R&D to develop new drugs
  - Requires intellectual property rights

The Key to Reconciling these Objectives

- International price differentials, which requires
- Separability of international markets

The Cost Structure of Research-Based Medicines

- R&D expense is much higher for pharmaceuticals than for other industries
  - 13-20% of sales for US companies
  - > 30 % percent of total cost of developing, producing and marketing a drug (including forgone interest)
- R&D is a fixed cost, invariant to volume, sunk at launch
- Marginal cost (MC) is relatively low:
  - < 25 – 50 % of total cost (production, distribution)
- Marginal cost pricing (P = MC) will not pay for fixed costs of R&D

The Role of Patents in R&D

- Competition and free entry of copy products will force prices down to MC
- Marginal cost pricing (P = MC) will not pay for fixed costs of R&D
- Patents permit the innovator firm to bar copy products, in order to permit P>MC for life of patent
- Patents are necessary, not sufficient, for innovator to break even, including the cost of R&D

R&D as a Global Joint Cost

- R&D is a “joint” fixed cost of serving all patients
  - Cannot be causally attributed to specific countries
- Necessary conditions for break even:
  - $P_j > Mc_j$: price in each country covers its MC
  - $\Sigma (P_j - Mc_j) > F$; (F=rate of return of capital)
  - in aggregate, price-cost margins must be sufficient to cover the joint, fixed cost of R&D
- Uniform prices in all markets are not necessary or desirable to achieve global breakeven

R&D as a Global Joint Cost

Necessary conditions for (second best) efficiency in drug utilization and drug development are:

(1) price *P* is at least equal to marginal cost MC in each market or country;

(2) prices exceed MC by enough, in aggregate over all markets, to cover the joint costs of R&D, including a normal, risk-adjusted rate of return on capital (F):

$$P_j \geq MC_j, \text{ and}$$

$$\Sigma(P_j - MC_j) \geq F$$

Ramsey optimal pricing

Ramsey (1927) optimal pricing (ROP) is the set of price differentials that yield the highest possible social welfare, subject to assuring a specified target profit level for the producer, usually a normal, risk-adjusted return on capital.

The ROP solution is that:

prices should differ across market segments in inverse relation to their demand elasticities.

Ramsey optimal pricing

$$\frac{p^{\mathrm{j}} - c^{\mathrm{j}}}{p^{\mathrm{j}}} = -\frac{\lambda}{(1+\lambda)}\frac{1}{E_{\mathrm{j}}} \qquad \text{or}$$

$$L^{\mathrm{j}} = D/E_{\mathrm{j}}$$

where ***E*j** is the own elasticity of demand in market j. Thus ***L*j**, which is the mark-up of price over marginal cost (also called the Lerner index) in market j, should be proportional to the demand elasticity *E*j.

The proportionality term ***D*** is defined by the normal profit (or other) constraint.

Thus if marginal cost is the same in all markets, **ROP means prices differ depending only on demand elasticities.**

If marginal cost differs across markets, these conditions apply to mark-ups over market-specific marginal cost.

Ramsey optimal pricing

The intuitive explanation for ROP is simple.

- Recall that the ideal would be to charge everyone their marginal cost but this is not practical because pricing at marginal cost would not cover R&D.
- The Ramsey solution minimizes the welfare loss from departing from this ideal: more price-sensitive users should be charged a smaller mark-up over marginal cost than less price sensitive users, because the price-sensitive users would reduce their consumption by proportionately more, if faced with the same prices.
- Charging lower prices to more price-sensitive users is also consistent with equity, assuming that lower income consumers have more elastic demand, on average.

Optimal Pricing to Cover Joint Costs: “Ramsey Pricing”

- “Optimal” = pricing to achieve highest social welfare
- Prices inversely related to price elasticity
  - price-insensitive consumers pay more than pricesensitive consumers
- Applies to R&D-based drugs while on patent
- Differential pricing is common for other industries with joint costs (utilities, airlines etc.)
- Pharmacoeconomics implies similar price differentials
- Differential pricing requires separable markets

Market Separability is Breaking Down

Regulation based on International Price Comparisons

- Canada, Netherlands, Italy, etc.
- Informal comparisons in many countries: UK, US
- Minimum price => maximum price in all connected/referenced markets
- Toughest regulator sets the global price

Parallel trade

- Permitted within EU, not yet from non-EU countries
- US recently enacted reimportation provisions; not implemented but under debate
- =>Low price in one country spreads regionally/ globally

Manufacturer Response to Breakdown of Separate Markets

Economic Theory

- Manufacturers minimize losses by setting a single launch
  - Price near high end of the prior price range
  - delay launch rather than accept a much lower price

Evidence

- Launch prices are uniform or in narrow band, BUT
- A uniform price for pharmaceuticals is not good public policy
  - contrary to standard trade theory

A Single Price is Inequitable and Inefficient

- A single, relatively high price is unaffordable for low income countries

  => reduce utilization or lose access to new drugs, though they can pay Pi > MCi

- Single price reduces manufacturer revenues

  => fewer new drugs than with price differentials

  => all patients will be worse off in long run

Price Differences Are Not Cost Shifting

- Two separate markets:

  H = high income, L = low income
- Existing medicines:
  - the price in H is unaffected by the price in L, if markets are separate
- Prospective new medicines:
  - Sales in L with P > MC contribute to joint costs

  => lower price in H needed to recoup R&D costs

No Efficiency Gains from Parallel Trade

- Trade benefits consumers, provided that
- Low cost suppliers have lower real costs
  - low input prices or more efficient production
- Low prices for pharmaceuticals reflect aggressive regulation + weak patents
  - not superior efficiency
- Parallel trade may actually increase costs: relabeling, quality concern
- Conclusion: Parallel trade in on-patent, R&D-intensive products is not good policy

Policies to Maintain Separate Markets and Price Differentials

Patent rights based on national boundaries

- traditional in EU, US
- => Patent holder can bar parallel trade

Discourage regulation based on foreign prices

Permit manufacturers to give discounts/rebates through confidential contracts to specific payors/governments

=> Prices can differ without encouraging parallel trade or cross-national comparisons

=> With separate markets, manufacturers have incentives to charge low prices in low income countries

The Free Rider Temptation for Regulation

- R&D joint cost is sunk when prices are negotiated
- Who should pay for the joint costs?
  - => temptation to free ride
- Large buyers can force price to marginal cost through regulation or threat of compulsory licensing
  - no effect on supply of existing drugs
- Low prices in one country spill over to other countries, through parallel trade and international price comparisons
- If everyone pays marginal cost, no one pays for R&D!

Conclusions

- Differential pricing provides a way to pay for R&D while assuring access for low income countries
- If market separation is assured, to prevent “spillover” of low prices, patents need not imply high prices in LDCs
- Additional funding may nevertheless be needed: If developing countries cannot pay their marginal cost;
- To develop drugs not used in high income countries
  - In this case, prices in high income countries cannot be counted on to pay for the common costs of R&D