Price discrimination

Types of price discrimination

The (ambiguous) welfare effects of price discrimination

Parallel imports: not justified the EU *per se* prohibition of clauses which prevent parallel imports.

Price discrimination as monopolisation device

Anti-dumping

Price discrimination

It is a pervasive phenomenon: examples

Three types of price discrimination (PD):

- 1st degree (perfect) PD
- 2nd degree PD: self-selection of consumers
- 3rd degree PD: when different observable characteristics

Two main ingredients of price discrimination

- ability to "sort out" different consumers and charge them different prices
- no arbitrage opportunities

Welfare effects of PD

PD is not always bad: the extreme case of 1st degree PD, under which the first-best is attained (but: unrealistic example)

Quantity discounts (2nd degree PD). If consumers are charged according to T+pq, the unit price (p+T/q) decreases with the number of units bought.

Welfare increases because the fixed fee is used to extract surplus, allowing for a lower variable component than under linear pricing

Quantity discounts: welfare effects

A monopolist serves two types of consumers, l ('low') and h ('high'), with weight λ and 1- λ in the market.

Type i's (i=l,h) demand is: $q=v_i-p$, with $v_h>v_l$.

The monopolist's marginal cost is $c<v_l$.

No discounts, or uniform pricing (both markets served).

The firm's programme is:

$Max_p\ \Pi=(p-c)\ [\lambda\ (v_l-p)+(1-\lambda)\ (v_h-p)]$

From $d\Pi/dp=0$, the solution is:

Quantity discounts, II

$$p^u = \frac{\lambda v_l + (1-\lambda) v_h + c}{2}; \Pi^u = \frac{\left(\lambda v_l + (1-\lambda) v_h - c\right)^2}{4}.$$

$$W^u = \frac{3\left(\lambda v_l + (1-\lambda) v_h - c\right)^2}{8} + \frac{\lambda(1-\lambda)\left(v_h - v_l\right)^2}{2}.$$

Quantity discounts: Two-part tariffs as PD

The monopolist uses the tariff T+pq.
Assume also that $v_l > (v_h+c)/2$, which ensures all buy under both uniform (linear) pricing and two-part tariffs.

For low types to buy, the firm will set $T = CS_l + (v_l - p)^2/2$.
Therefore, its programme becomes:

Quantity discounts, III

$\text{Max}_p\ \Pi=(p-c)(\lambda(v_l-p)+(1-\lambda)(v_h-p)+(v_l-p)^2/2,$

whose solution is given by $p^{qd}=c+(1-\lambda)(v_h-v_l)$.

One can check that $p^{qd}<p^u$, $\Pi^{qd}<\Pi^u$, and $W^{qd}<W^u$.

Intuitions: the firm makes more money because it has two instruments (T,p) rather than one (p). Variable part is lower than p^u because the fixed part is used to extract surplus (and this explains why W is higher).

3rd degree PD and parallel imports

Re-interpret the model above: h and l are two EU countries with different demands (transport costs set to zero for simplicity).

If price discrimination across countries is allowed:

In each country i, the firm solves $\max_{pi} \Pi_i=(p_i-c)(v_i-p)$, with solution:

$$p_i^d = \frac{v_i + c}{2}; \Pi^d = \lambda \frac{(v_i - c)^2}{4} + (1-\lambda)\frac{(v_i - c)^2}{4};$$

$$W^d = \frac{3}{8}\left(\lambda \frac{(v_i - c)^2}{4} + (1-\lambda)\frac{(v_i - c)^2}{4} \right).$$

Parallel imports, II

If PD was prohibited (i.e., the firm cannot prevent parallel imports), then two cases may arise:

1) Under uniform pricing, sales in both markets. In that case, same result as previous example, and: $W^d<W^u$.
2) Under uniform pricing, one market is not served: the firm may prefer to set $p^h=(v^h+c)/2$, even if this implies no sales in country l.

   Example: if $v^h+c>2v^l$, $q_l=0$, and $\Pi^h=(1-\lambda)(v^h-c)^2/4$.

   If λ small enough, then $\Pi^h>\Pi^u$ and $W^h>W^u$.

General result: PD welfare detrimental if q^{PD} decreases.

Further remarks

PD and investments. Since PD increases the firms' profits, the uniform pricing policy may have long-run negative effects (on investments, innovations etc.)

PD and market power. Both small and large firms will have incentives to discriminate prices across countries. But in the former case welfare effects are less relevant.

To the extent that PD will induce firms to invest more, allowing 'small' firms to engage in PD may foster competition.

Sensible, to use a safe harbour: PD allowed for firms below a certain market share (not the current policy!).

PD as monopolisation device

PD may also affect market structure, i.e. be used by an incumbent to exclude rivals.

For instance, we have seen that discriminatory offers help exclude entrants

Rebates and selective discounts are other possible forms of PD which may lead to exclusion (but not much theory on this).

But an obligation to dominant firms not to discriminate (transparent pricing) may have adverse effects (helps a dominant firm to solve the commitment problem)

Anti-dumping actions

Anti-dumping actions are allowed by WTO rules, provided two conditions are fulfilled:

1) export prices are below their normal value

2) exports cause a material injury to the importing country's industry

Both conditions are ambiguous (subject to political influence): anti-dumping provisions often used.

But differing export and home prices is not an 'unfair practice': predatory price test should be used instead.

Likely adverse consequences on consumers, importing sectors (and collusion may be facilitated).