Managerial Economics in a Global Economy, 5th Edition by Dominick Salvatore

Chapter 11

Pricing Practices

Pricing of Multiple Products

- Products with Interrelated Demands
- Plant Capacity Utilization and Optimal Product Pricing
- Optimal Pricing of Joint Products
  - Fixed Proportions
  - Variable Proportions

Pricing of Multiple Products

Products with Interrelated Demands

For a two-product (A and B) firm, the marginal revenue functions of the firm are:

$$MR_A = \frac{\Delta TR_A}{\Delta Q_A} + \frac{\Delta TR_B}{\Delta Q_A}$$

$$MR_B = \frac{\Delta TR_B}{\Delta QB} + \frac{\Delta TR_A}{\Delta Q_B}$$

Pricing of Multiple Products

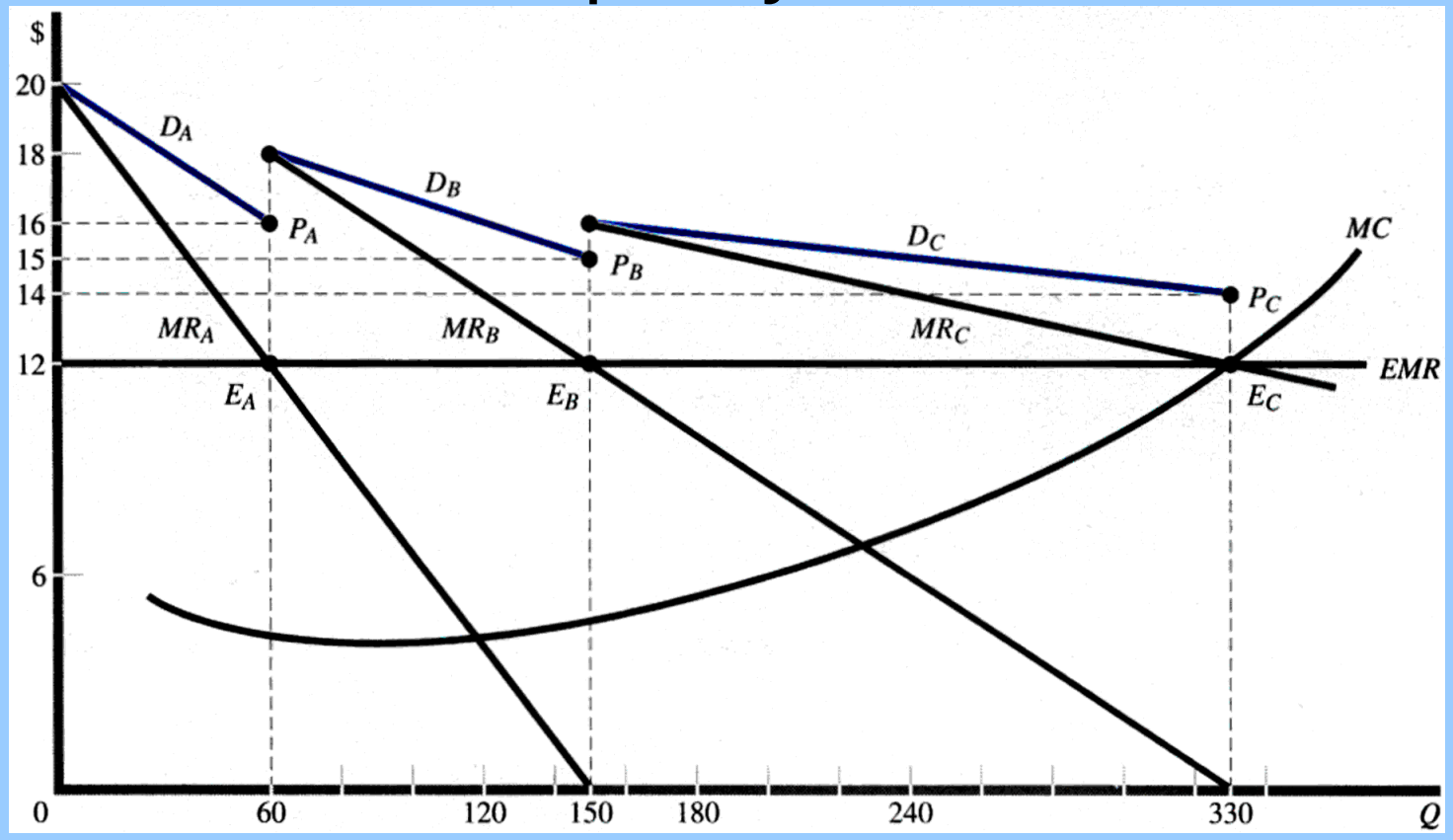
Plant Capacity Utilization

A multi-product firm using a single plant should produce quantities where the marginal revenue (MR_i) from each of its k products is equal to the marginal cost (MC) of production.

$$MR_1 = MR_2 = \cdots = MR_k = MC$$

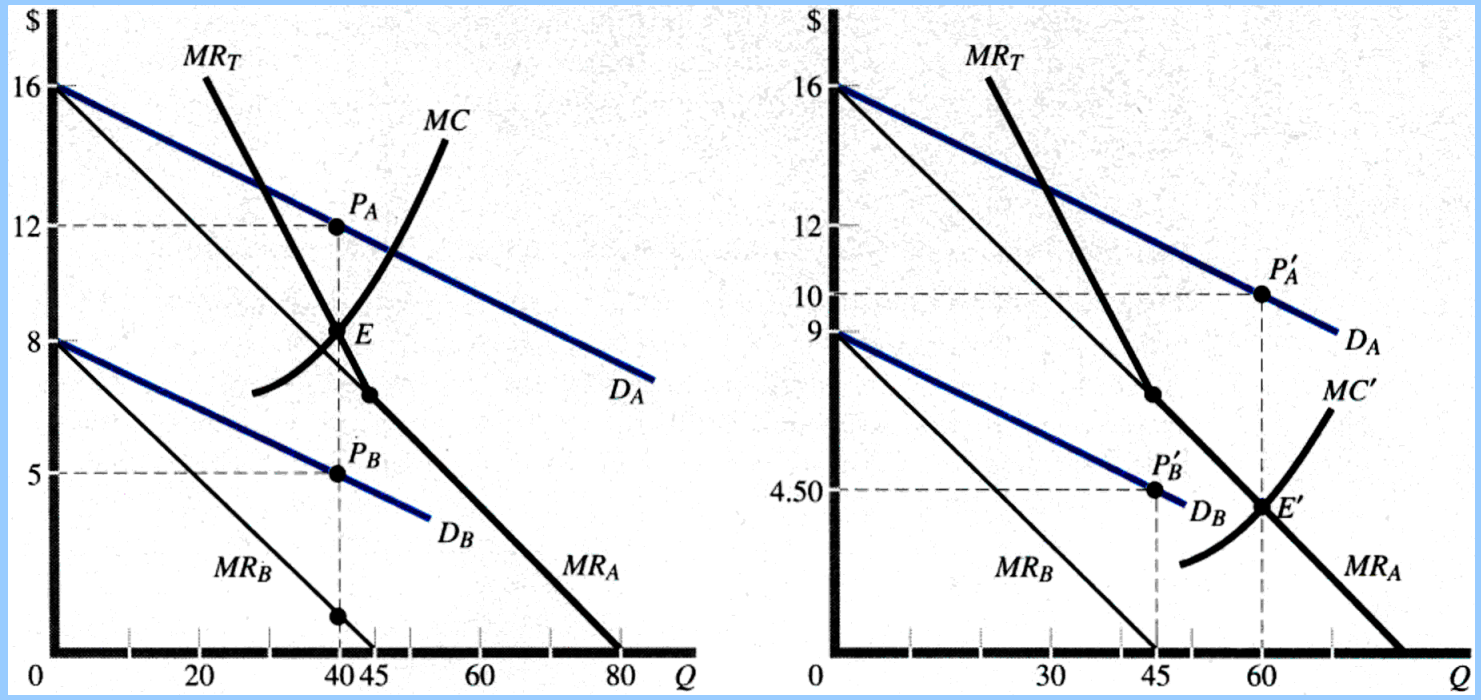
Pricing of Multiple Products

Plant Capacity Utilization



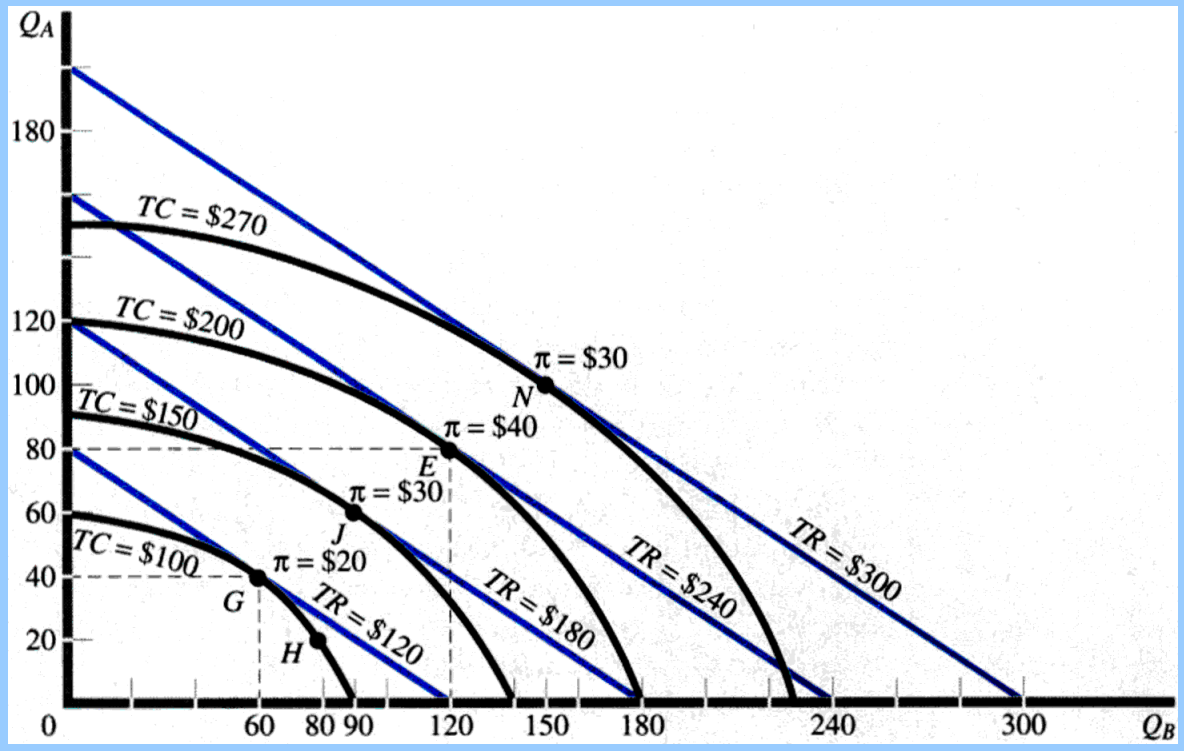
Pricing of Multiple Products

Joint Products in Fixed Proportions



Pricing of Multiple Products

Joint Products in Variable Proportions



Price Discrimination

Charging different prices for a product when the price differences are not justified by cost differences.

Objective of the firm is to attain higher profits than would be available otherwise.

Price Discrimination

1. Firm must be an imperfect competitor (a price maker)
2. Price elasticity must differ for units of the product sold at different prices
3. Firm must be able to segment the market and prevent resale of units across market segments

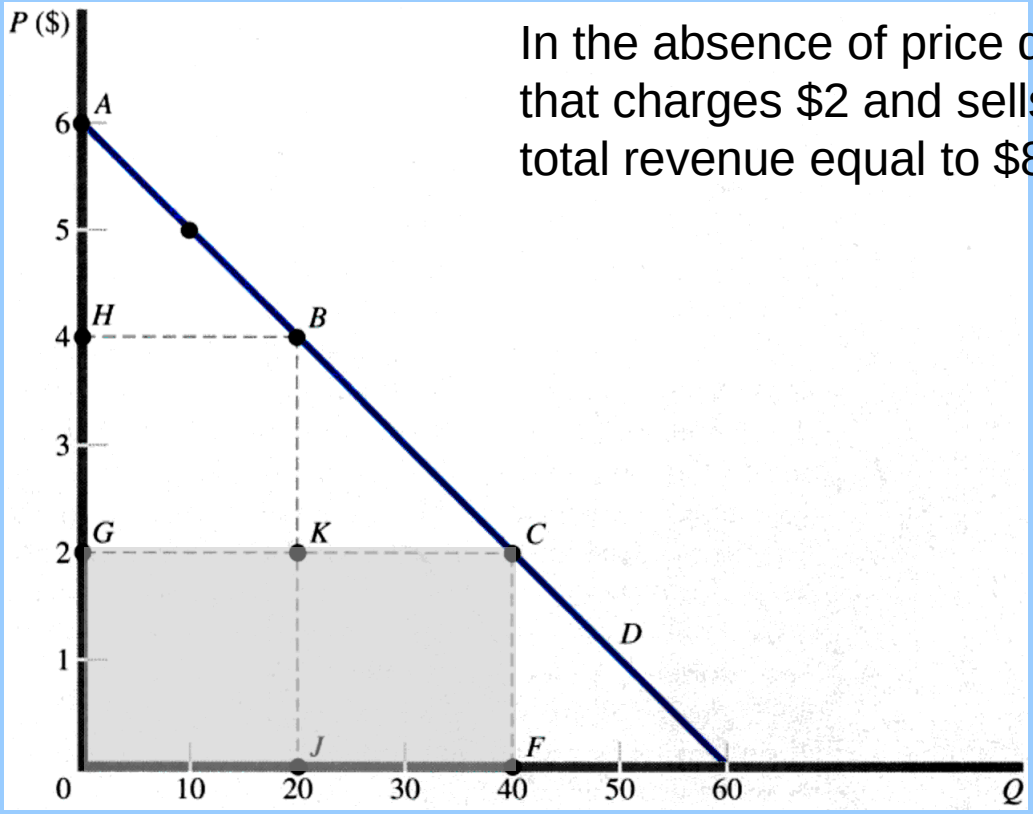
First-Degree Price Discrimination

- Each unit is sold at the highest possible price
- Firm extracts all of the consumers' surplus
- Firm maximizes total revenue and profit from any quantity sold

Second-Degree Price Discrimination

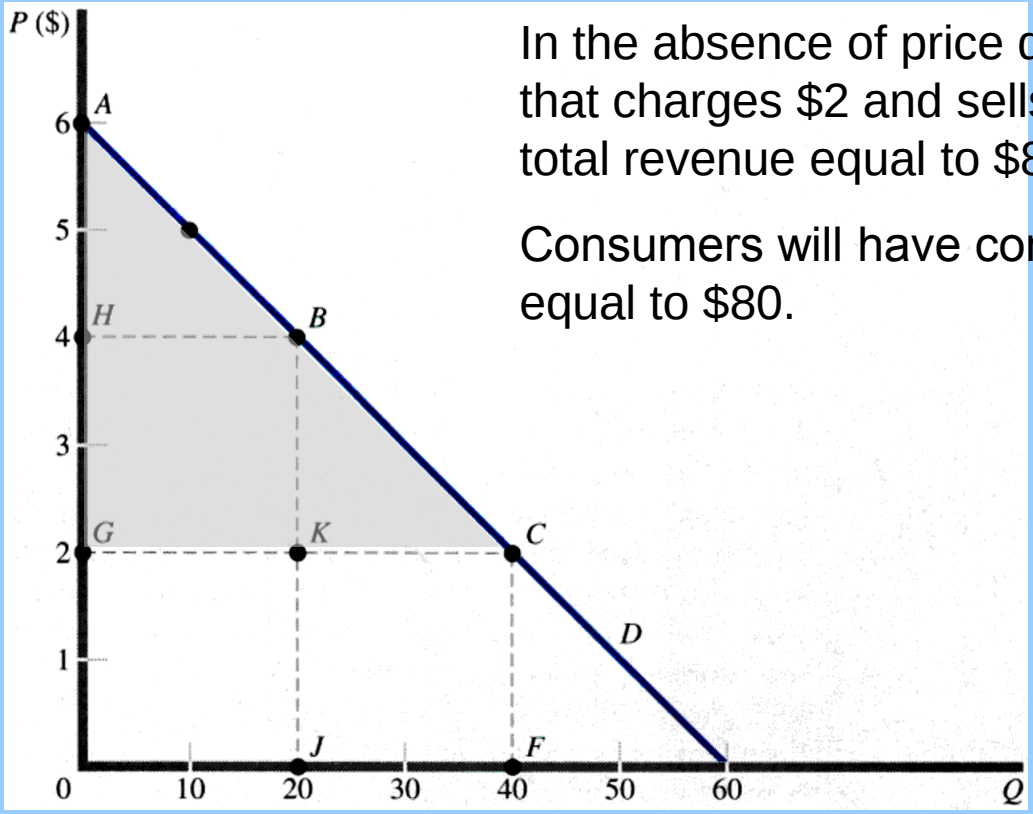
- Charging a uniform price per unit for a specific quantity, a lower price per unit for an additional quantity, and so on
- Firm extracts part, but not all, of the consumers' surplus

First- and Second-Degree Price Discrimination



In the absence of price discrimination, a firm that charges $2 and sells 40 units will have total revenue equal to $80.

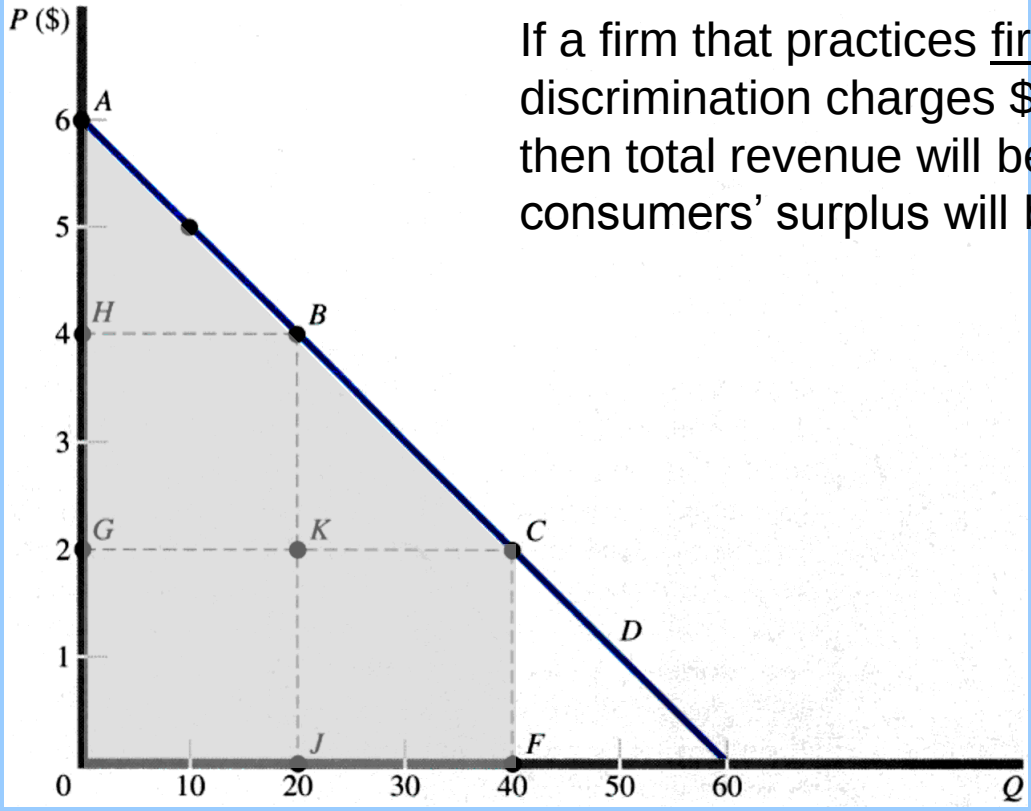
First- and Second-Degree Price Discrimination



In the absence of price discrimination, a firm that charges $2 and sells 40 units will have total revenue equal to $80.

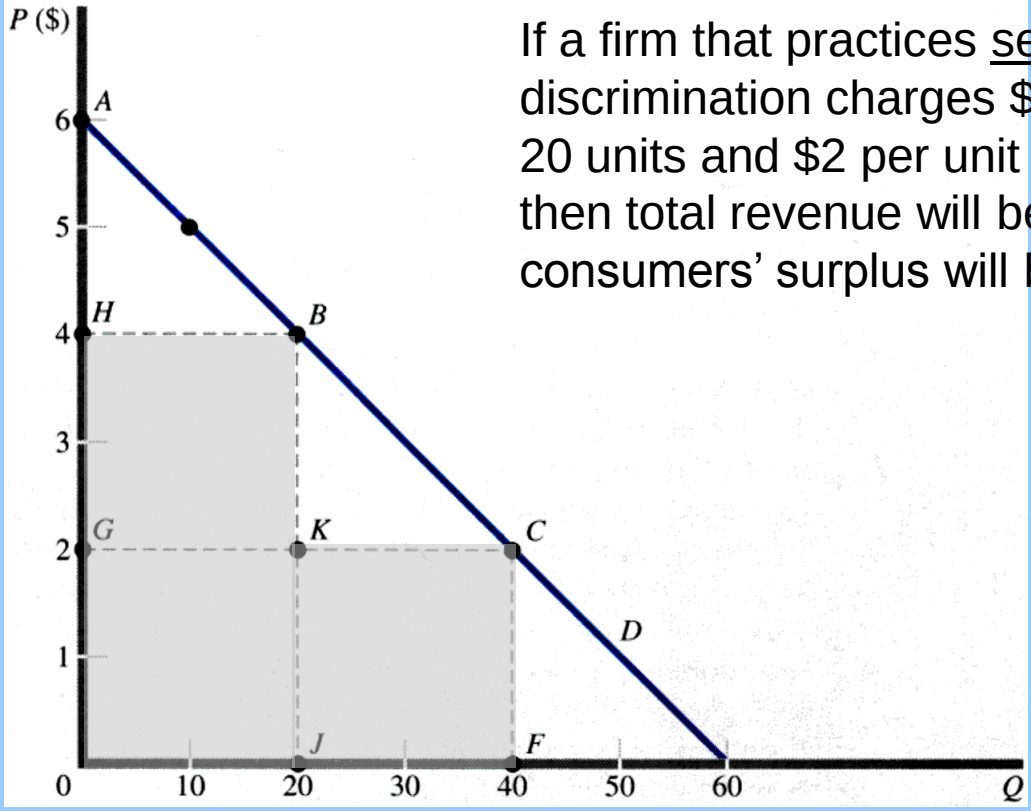
Consumers will have consumers' surplus equal to $80.

First- and Second-Degree Price Discrimination



If a firm that practices first-degree price discrimination charges $2 and sells 40 units, then total revenue will be equal to $160 and consumers' surplus will be zero.

First- and Second-Degree Price Discrimination



If a firm that practices second-degree price discrimination charges $4 per unit for the first 20 units and $2 per unit for the next 20 units, then total revenue will be equal to $120 and consumers' surplus will be $40.

Third-Degree Price Discrimination

- Charging different prices for the same product sold in different markets
- Firm maximizes profits by selling a quantity on each market such that the marginal revenue on each market is equal to the marginal cost of production

Third-Degree Price Discrimination

$Q_1 = 120 - 10\,P_1$ or $P_1 = 12 - 0.1\,Q_1$ and $MR_1 = 12 - 0.2\,Q_1$

$Q_2 = 120 - 20\,P_2$ or $P_2 = 6 - 0.05\,Q_2$ and $MR_2 = 6 - 0.1\,Q_2$

$MR_1 = MC = 2$

$MR_2 = MC = 2$

$MR_1 = 12 - 0.2\,Q_1 = 2$

$MR_2 = 6 - 0.1\,Q_2 = 2$

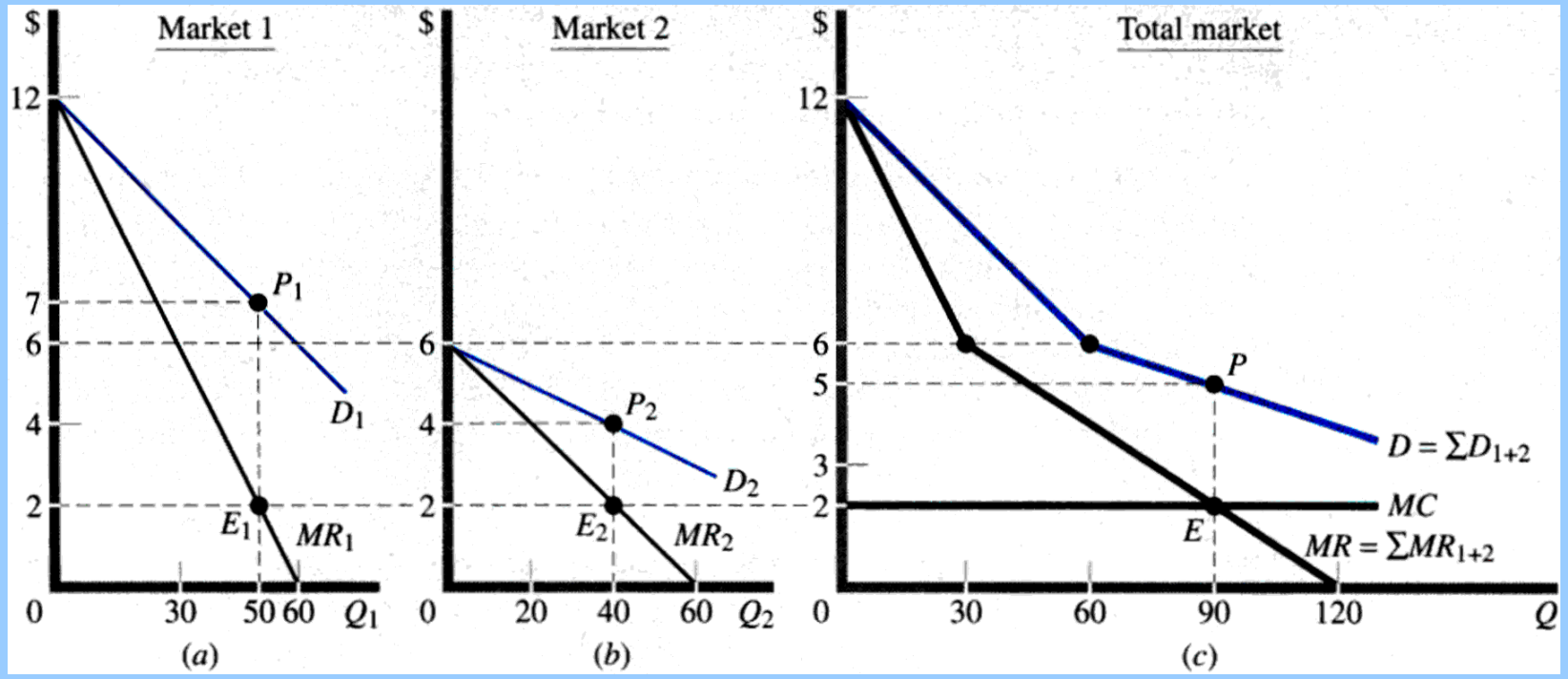
$Q_1 = 50$

$Q_2 = 40$

$P_1 = 12 - 0.1\,(50) = \$7$

$P_2 = 6 - 0.05\,(40) = \$4$

Third-Degree Price Discrimination



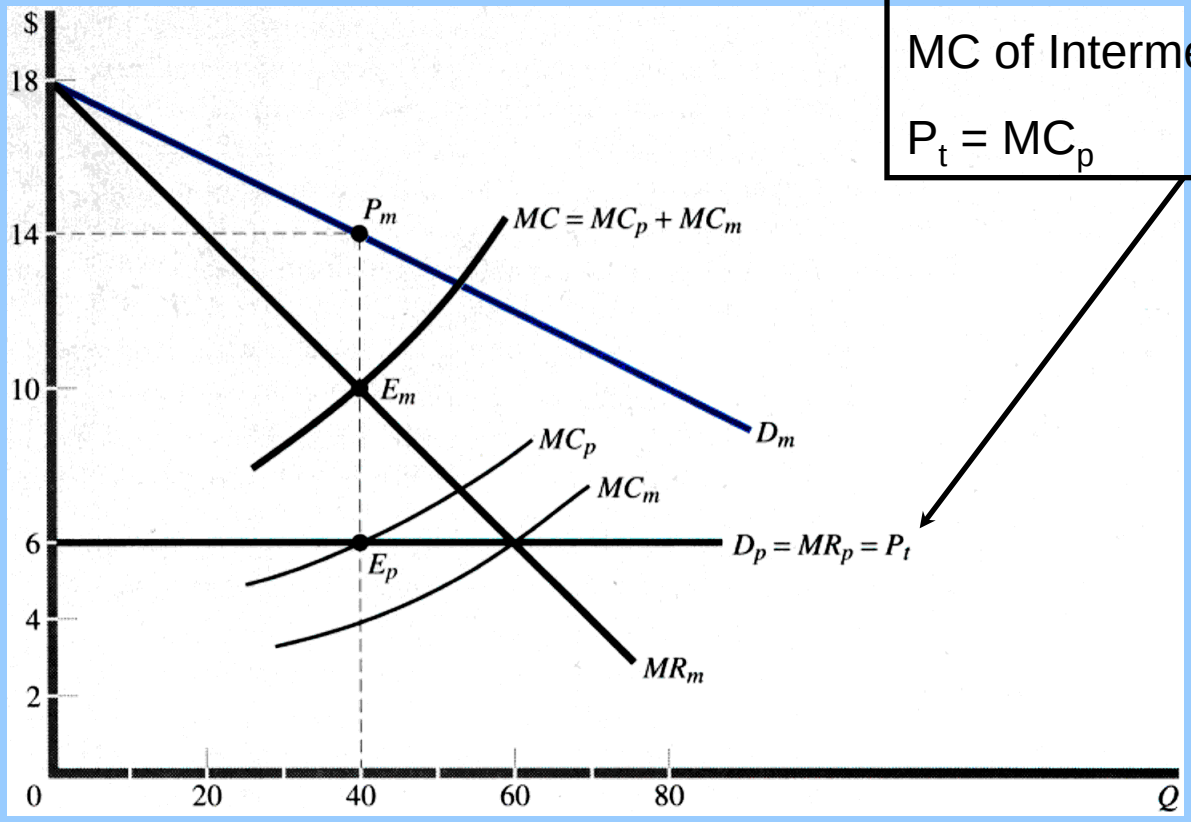
International Price Discrimination

- Persistent Dumping
- Predatory Dumping
  - Temporary sale at or below cost
  - Designed to bankrupt competitors
  - Trade restrictions apply
- Sporadic Dumping
  - Occasional sale of surplus output

Transfer Pricing

- Pricing of intermediate products sold by one division of a firm and purchased by another division of the same firm
- Made necessary by decentralization and the creation of semiautonomous profit centers within firms

Transfer Pricing
No External Market



Transfer Price = P_t

MC of Intermediate Good = MC_p

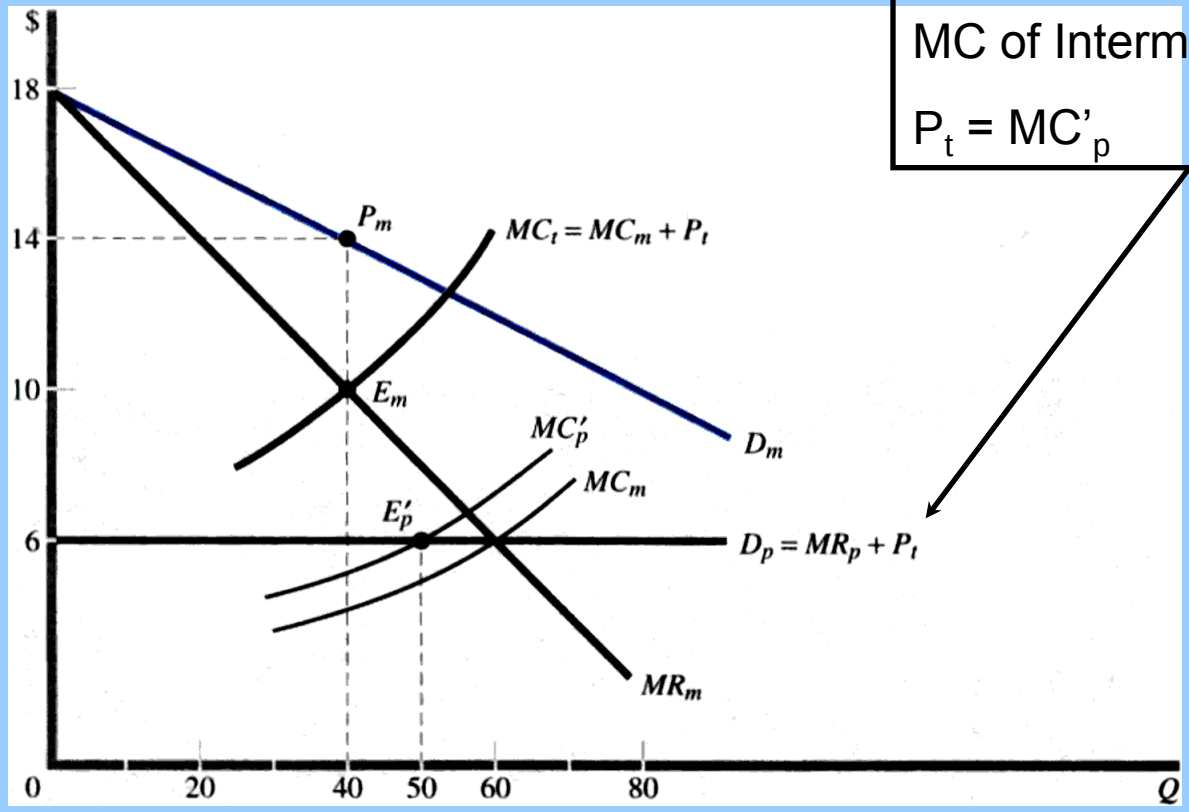
$P_t = MC_p$

Transfer Pricing
Competitive External Market

Transfer Price = P_t

MC of Intermediate Good = MC'_p

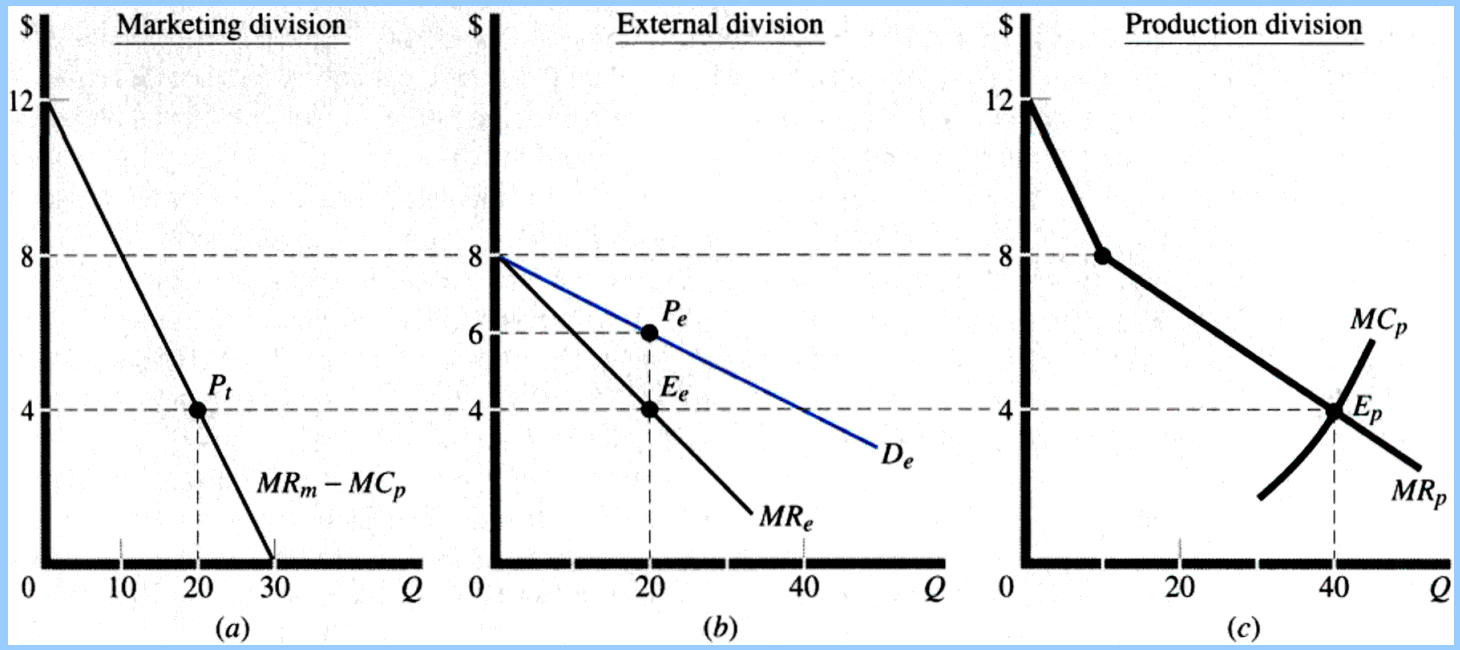
$P_t = MC'_p$



Transfer Pricing
Imperfectly Competitive External Market

Transfer Price = P_t = \$4

External Market Price = P_e = \$6



Pricing in Practice
Cost-Plus Pricing

- Markup or Full-Cost Pricing
- Fully Allocated Average Cost (C)
  - Average variable cost at normal output
  - Allocated overhead
- Markup on Cost (m) = (P - C)/C
- Price = P = C (1 + m)

Pricing in Practice
Optimal Markup

$$MR = P\left(1 + \frac{1}{E_P}\right)$$

$$P = MR\left(\frac{E_P}{E_p + 1}\right)$$

$$MR = C$$

$$P = C\left(\frac{E_P}{E_p + 1}\right)$$

Pricing in Practice
Optimal Markup

$$P = C\left(\frac{E_P}{E_p + 1}\right)$$

$$P = C(1 + m)$$

$$C(1 + m) = C\left(\frac{E_P}{E_p + 1}\right)$$

$$m = \frac{E_P}{E_P + 1} - 1$$

Pricing in Practice Incremental Analysis

A firm should take an action if the incremental increase in revenue from the action exceeds the incremental increase in cost from the action.

Pricing in Practice

- Two-Part Tariff
- Tying
- Bundling
- Prestige Pricing
- Price Lining
- Skimming
- Value Pricing

