

Part III

Imperfectly Competitive Markets

Imperfect vs. Perfect

Im-perfect = Perfect except that one or more of the following assumptions apply:

- Consumers/suppliers are **NOT** price-takers, or
- Goods are **NOT** homogeneous, or
- There **ARE** externalities, or
- Goods are **NOT** excludable and rival, or
- **Imperfect** (not full) information, or
- **NO** free entry and exit.

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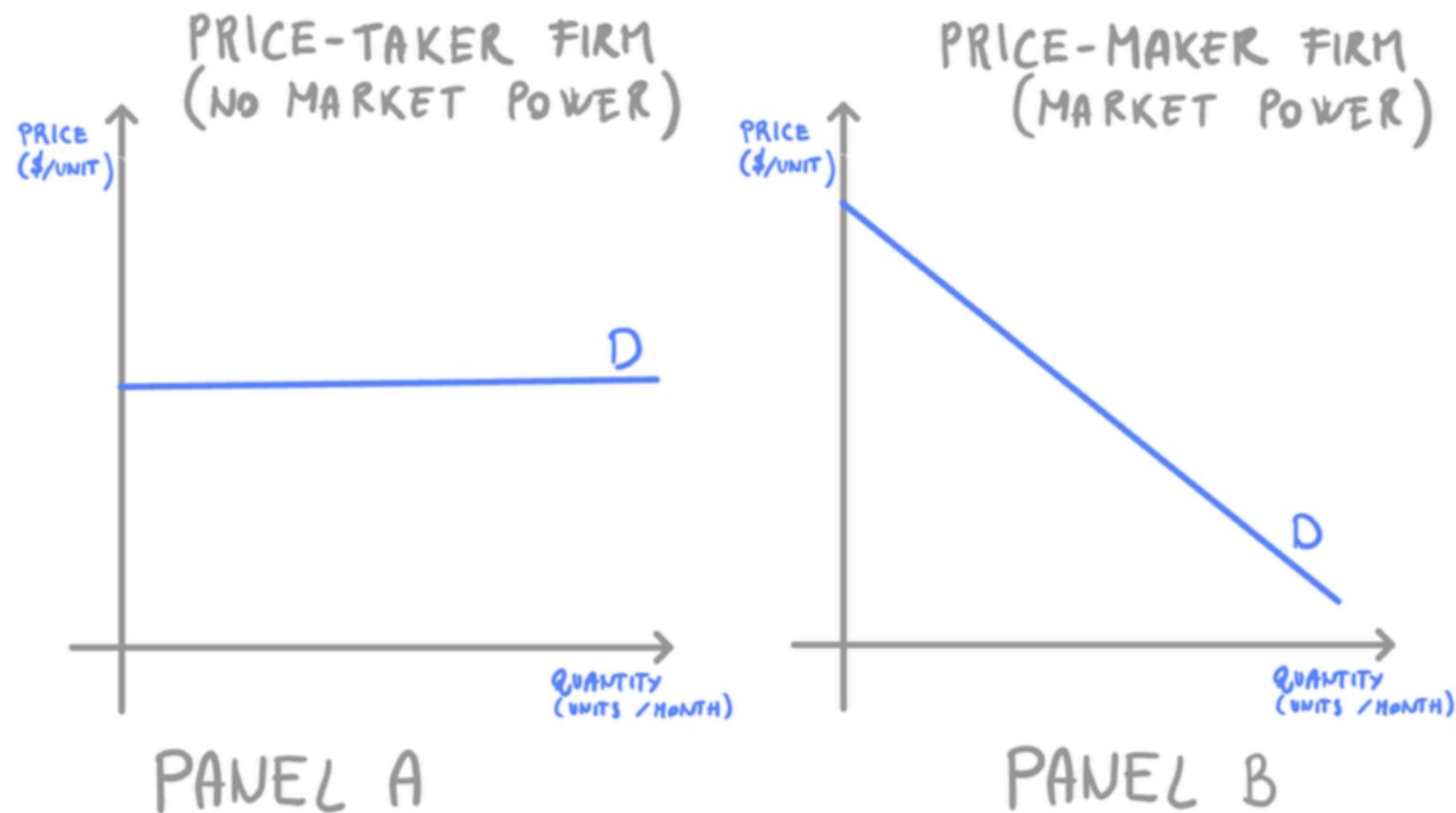
Market Power

Definition:

A firm is said to be a **Price-Maker (or Price-Setter)** if it has the ability to set its own prices.

A firm has **Market Power** if it has the ability to set its own price.

Market Power



Types of Market Power

- **Monopoly**: Only one firm in the market (→ the firm's individual D curve = market D curve!)
- **Monopolistic Competition**: There is a large number of firms, each producing slightly differentiated goods (almost perfect substitutes).
- **Oligopolistic Competition**: There is a small number of firms selling goods that are close substitutes.

Antidote to Market Power

Free Entry / Exit!

Otherwise, **barriers to entry**:

- **Control Over Scarce Resources**
- **Government-Created Barriers to Entry
(patents, copyrights, licenses, etc)**
- **Increasing Returns to Scale**
- **Network Economies**

Increasing Returns to Scale (IRS)

Definition:

We say that there are **Increasing Returns to Scale (Economies of Scale)** when the average cost of producing a certain good decreases with the amount of the good produced.

Increasing Returns to Scale (IRS)

- Firms experiencing IRS become *more profitable with size*
- A single firm producing a large quantity of the good can do so more efficiently than a large number of firms each producing small quantities.



Natural Monopoly!

Increasing Returns to Scale (IRS)

Definition:

A **Natural Monopoly** denotes a monopoly that occurs because of increasing returns to scale.

Chapter 7: Market Power

Monopoly

Market Power: Monopoly

Definition:

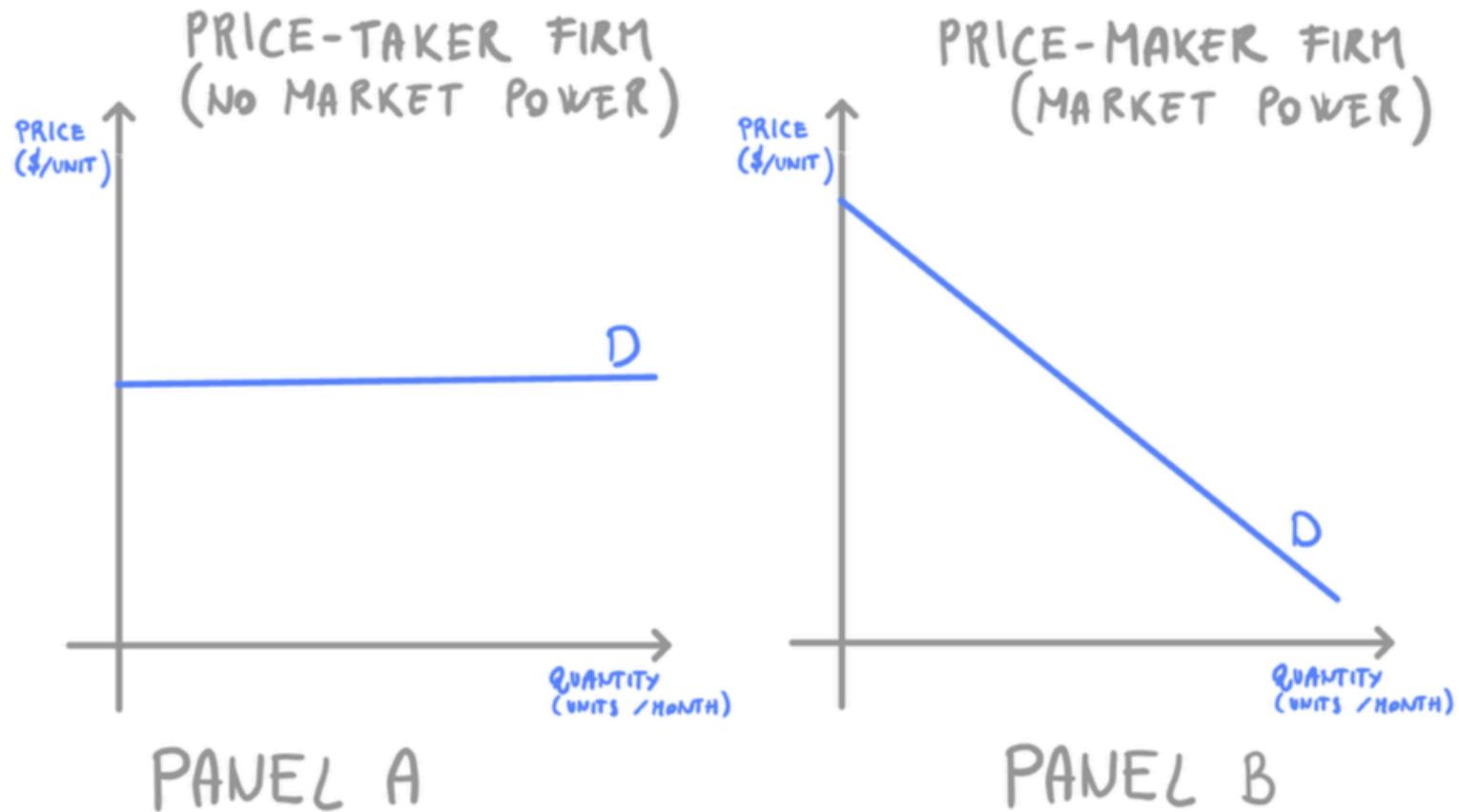
Monopoly is a market structure where there is only one firm operating in the market.

Market Power: Monopoly

Workers per day	Units per day	Fixed Cost (\$/day)	Variable Cost (\$/day)	Total Cost (\$/day)	Average Cost			Marginal Cost (\$/unit of output)
					Variable (\$/unit of output)	Total (\$/unit of output)		
W	Q	FC	$VC = \$10 \times W$	$TC = VC + FC$	$AVC = \frac{VC}{Q}$	$ATC = \frac{TC}{Q}$	$MC = \frac{\Delta TC}{\Delta Q}$	
0	0	100	0	100	—	—	—	
1	200	100	10	110	0.05	0.55	0.05	
2	400	100	20	120	0.05	0.3	0.05	
3	600	100	30	130	0.05	0.22	0.05	
4	800	100	40	140	0.05	0.17	0.05	
5	1000	100	50	150	0.05	0.15	0.05	

Table 7.1: Production costs for a monopolistic firm.

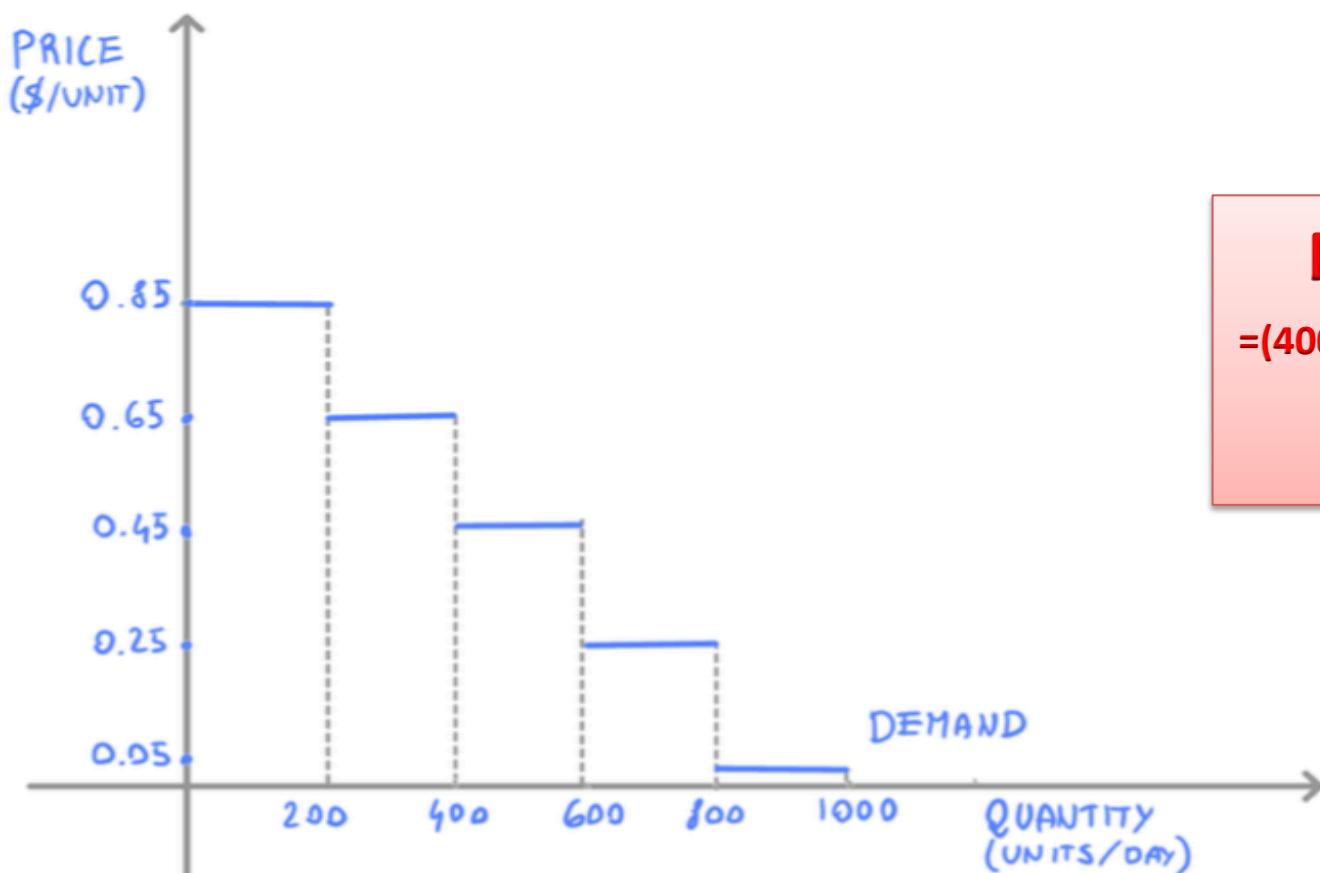
Market Power: Monopoly



Price-Taker Firm: $MR=P=\text{const}$
Perf. Compet. Mkts

Monopoly: $(MR=)D$ is downward-sloping
Imperf. Compet. Mkts

Market Power: Monopoly



$$\begin{aligned} MR &= \Delta R / \Delta Q = \\ &= (400 * .65 - 200 * .85) / (400 - 200) \\ &= \$0.45 \end{aligned}$$

Market Power: Monopoly

1 Workers per day	2 Units per day	3 Market Price (or Marginal Benefit) (\$/ unit of output)	4 Revenues (\$)	5 Marginal Cost (\$/ unit of output)	6 Marginal Revenue (\$/ unit of output)
W	Q	P	$R = P \times Q$	$MC = \frac{\Delta TC}{\Delta Q}$	$MR = \frac{\Delta R}{\Delta Q}$
0	0	—	0	—	—
1	200	0.85	170	0.05	0.85
2	400	0.65	260	0.05	0.45
3	600	0.45	270	0.05	0.05
4	800	0.25	200	0.05	-0.35
5	1000	0.05	50	0.05	-0.75

Number of units that maximizes
monopolist's profit? **MR=MC**

Table 7.2: Revenues and costs for a monopolistic firm.

Monopoly and the Invisible Hand

1 Workers per day	2 Units per day	3 Market Price (or Marginal Benefit) (\$/ unit of output)	4 Revenues (\$)	5 Marginal Cost (\$/ unit of output)	6 Marginal Revenue (\$/ unit of output)
W	Q	P	$R = P \times Q$	$MC = \frac{\Delta TC}{\Delta Q}$	$MR = \frac{\Delta R}{\Delta Q}$
0	0	—	0	—	—
1	200	0.85	170	0.05	0.85
2	400	0.65	260	0.05	0.45
3	600	0.45	270	0.05	0.05
4	800	0.25	200	0.05	-0.35
5	1000	0.05	50	0.05	-0.75

**Socially optimal quantity vs.
monopolist optimal quantity**

Table 7.2: Revenues and costs for a monopolistic firm.

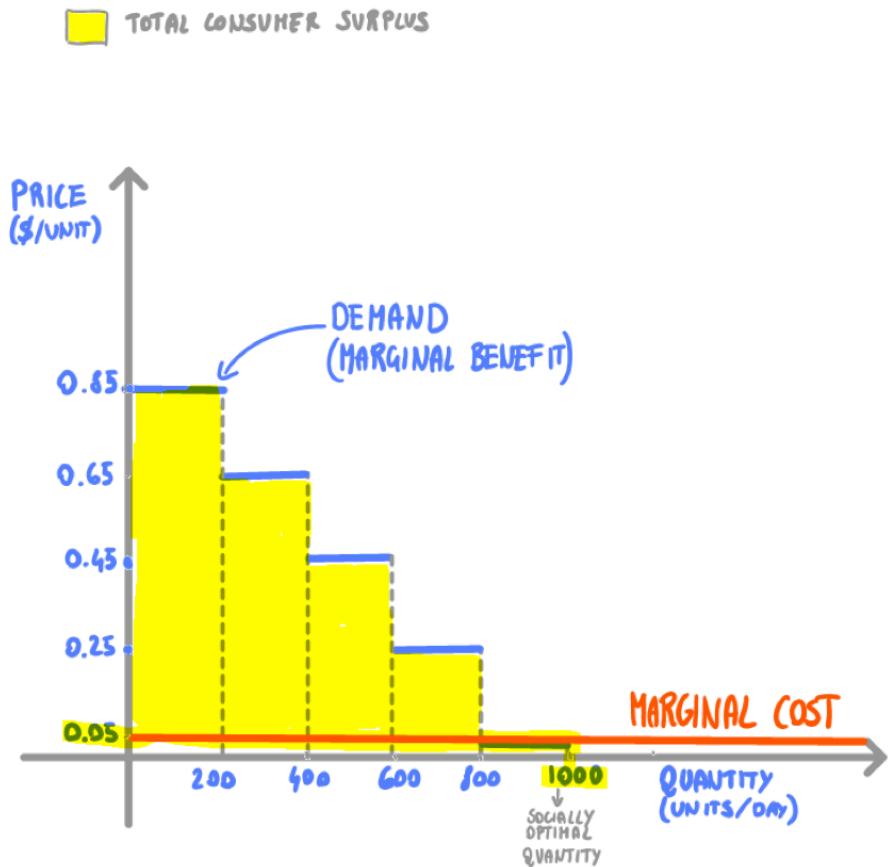
Monopoly and the Invisible Hand

Why is there a conflict between what the monopolist wants and what consumers desire?

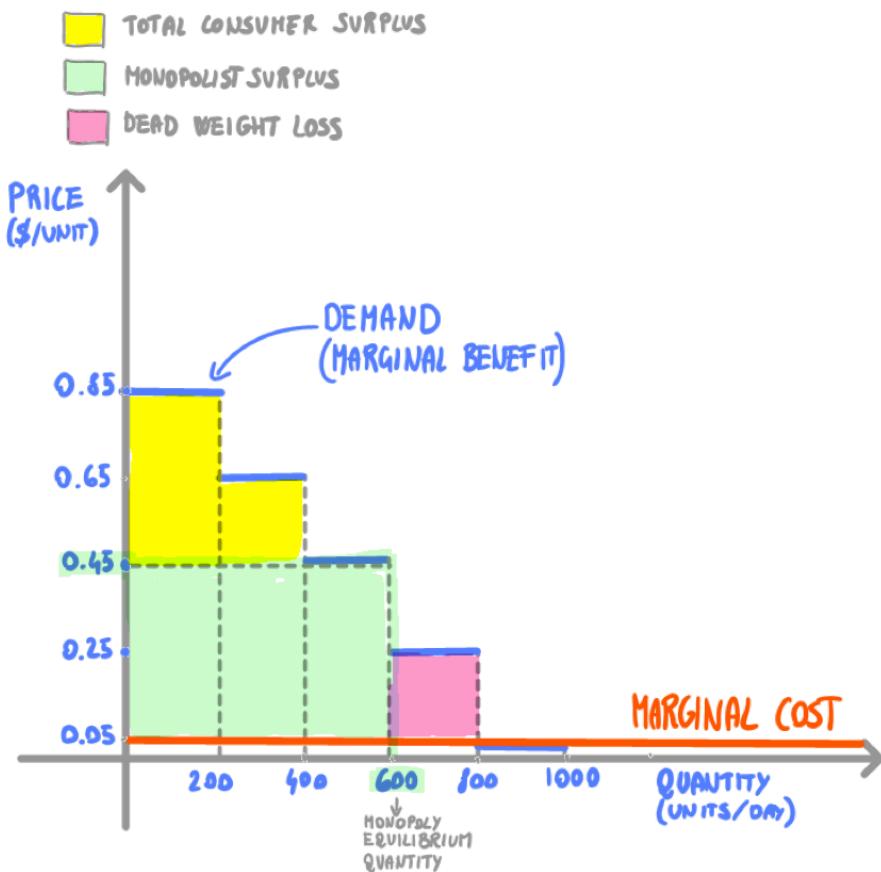
To sell the extra units of the good and attract new consumers, the monopolist needs to $\downarrow P$
→ affects all units sold (because the monopolist needs to charge all consumers the same price)
→ implicit cost in $\uparrow Q$ sold →

$$Q^*_{\text{monopoly}} < Q^*_{\text{socially}}$$

Monopoly and the Invisible Hand



PANEL A : SOCIALLY OPTIMAL QUANTITY



PANEL B : MONOPOLY EQUILIBRIUM QUANTITY

Government Regulation

Competition Law:

Competition Law denotes a law that is intended to foster market competition by regulating the anti-competitive conduct of firms.



ensures that consumers are charged the
lowest possible prices

Government Regulation

Average Cost Pricing (esp. for natural monopolies):

The **Average Cost Pricing** denotes a policy through which the government forces the monopolist to set the price and quantity at the intersection of the ATC curve and demand curve.



eliminates any positive profit accrued to
the monopolist

Government Regulation

The Average Cost Pricing is hard to implement:

- **government does not know the ATC** (it can only estimate them)
- once implemented, **firms have no incentive to invest in new technology** to lower their costs
- when implemented, the **firm's output is allocatively inefficient.**

Government Regulation

Definition:

A firm's output is said to be **Allocatively Inefficient** if the price asked for the goods produced exceeds their marginal cost.



Solution: Set Price Ceiling at MC

→ But in some cases $\Pi < 0$, the industry collapses!

First Degree Price Discrimination

What if the monopolist could set a different price for different consumers?

Assume that the monopolist

- knows the maximum price (or reservation price) that every consumer is willing to pay
AND
- can charge each consumer exactly his reservation price.

First Degree Price Discrimination

Definition:

First Degree Price Discrimination describes a situation in which the monopolist *knows* the reservation price of each consumer and *is able to charge* each consumer his marginal benefit (or reservation price).

First Degree Price Discrimination

1 Workers per day	2 Units per day	3 Market Price (or Marginal Benefit) (\$)/unit of output	4 Revenues (\$)	5 Marginal Cost (\$/ unit of output)	6 Marginal Revenue (\$/ unit of output)
W	$Q(W)$	$P(W)$	$R = \sum_{n=1}^W (P(n) \times [Q(n) - Q(n-1)])$	$MC = \frac{\Delta TC}{\Delta Q}$	$MR = \frac{\Delta R}{\Delta Q}$
0	0	—	0	—	—
1	200	0.85 (Italian Market)	170	0.05	0.85
2	400	0.65 (French Market)	300	0.05	0.65
3	600	0.45 (US Market)	390	0.05	0.45
4	800	0.25 (Canadian Market)	440	0.05	0.25
5	1000	0.05 (Brazilian Market)	450	0.05	0.05

$$MB = MR$$

(selling more in Country A does not require the monopolist to $\downarrow P$ in other countries)

Table 7.3: Production costs for a monopolistic firm that can engage in first degree price discrimination.

First Degree Price Discrimination

A monopolist engaging in 1st degree price discrimination is actually selling the socially optimal quantity (that max. social surplus)!

BUT uneven **distribution of surplus in society**:

The **monopolist extracts all surplus from the consumers** (i.e., it accrued all the surplus available in the market).

Other Forms of Price Discrimination

- **Second degree price discrimination:** the monopolist charges **different prices depending on the quantity/quality demanded** by each consumer (bulk discount, economy/business airfare, etc).
- **Third degree price discrimination:** the monopolist charges **different prices depending on observable consumers' attributes** such as location (European vs. Australia as 2 # mkts)

Third Degree Price Discrimination

1 Workers per day	2 Units per day	3 Market Price (or Marginal Benefit) (\$)/unit of output	4 Revenues (\$)	5 Marginal Cost (\$/ unit of output)	6 Marginal Revenue (\$/ unit of output)
<i>W</i>	<i>Q</i>	<i>P</i>	$R = P \times Q$	$MC = \frac{\Delta TC}{\Delta Q}$	$MR = \frac{\Delta R}{\Delta Q}$
0	0	—	0	—	—
1	200	0.85 (Italians)	170	0.05	0.85
2	400	0.65 (French)	260	0.05	0.45

Table 7.4: Third degree price discrimination: The European market.

Third Degree Price Discrimination

1 Workers per day	2 Units per day	3 Market Price (or Marginal Benefit) (\$)/unit of output	4 Revenues (\$)	5 Marginal Cost (\$/ unit of output)	6 Marginal Revenue (\$/ unit of output)
W	Q	P	$R = P \times Q$	$MC = \frac{\Delta TC}{\Delta Q}$	$MR = \frac{\Delta R}{\Delta Q}$
0	0	—	0	—	—
1	200	0.45 (Americans)	90	0.05	0.45
2	400	0.25 (Canadians)	100	0.05	0.05

Table 7.5: Third degree price discrimination: The North American market.

Third Degree Price Discrimination

1 Workers	2 Units per day	3 Market Price (or Marginal Benefit) (\$)/unit of output	4 Revenues (\$)	5 Marginal Cost (\$/ unit of output)	6 Marginal Revenue (\$/ unit of output)
W	Q	P	$R = P \times Q$	$MC = \frac{\Delta TC}{\Delta Q}$	$MR = \frac{\Delta R}{\Delta Q}$
0	0	—	0	—	—
1	200	0.05 (Brazilians)	10	0.05	0.05

Table 7.6: Third degree price discrimination. The South American market.