

International Business and Finance

Week 2 Seminar 3

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Competition

	No. of firms	Entry conditions	Product differentiation
Perfect competition	Many	Free entry	Identical products
Imperfect competition			
Monopolistic competition	Many	Free entry	Some differentiation
Oligopoly	Few	Barriers to entry	Some differentiation
Monopoly	One	No entry	Complete differentiation

Firm's Decision

- ▶ Using cost function, we can write firm's profit maximization problem succinctly as

$$\max_y py - c(y).$$

- ▶ Firm's profit maximization problem can be divided into two steps:
 - ▶ First, for various levels of output, the firm calculates the minimal costs needed, which is summarized by the cost function $c(\cdot)$.
 - ▶ Second, the firm decides how much to produce to maximize its profit.

Firm's Costs

- ▶ Consider a cost function $c(y)$.
- ▶ Costs $c(y)$ consists of two parts, **fixed costs** and **variable costs**.
- ▶ Fixed costs are costs that must be paid regardless of the level of production:

$$F \equiv c(0).$$

- ▶ Variable costs are costs that change when output changes:

$$c_v(y) \equiv c(y) - c(0).$$

- ▶ Hence

$$c(y) = c_v(y) + F.$$

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Firm's Costs

- ▶ The **average cost function** $AC(y)$ measures the costs per unit of output:

$$AC(y) \equiv \frac{c(y)}{y}.$$

- ▶ The **average variable cost function** $AVC(y)$ measures the variable costs per unit of output:

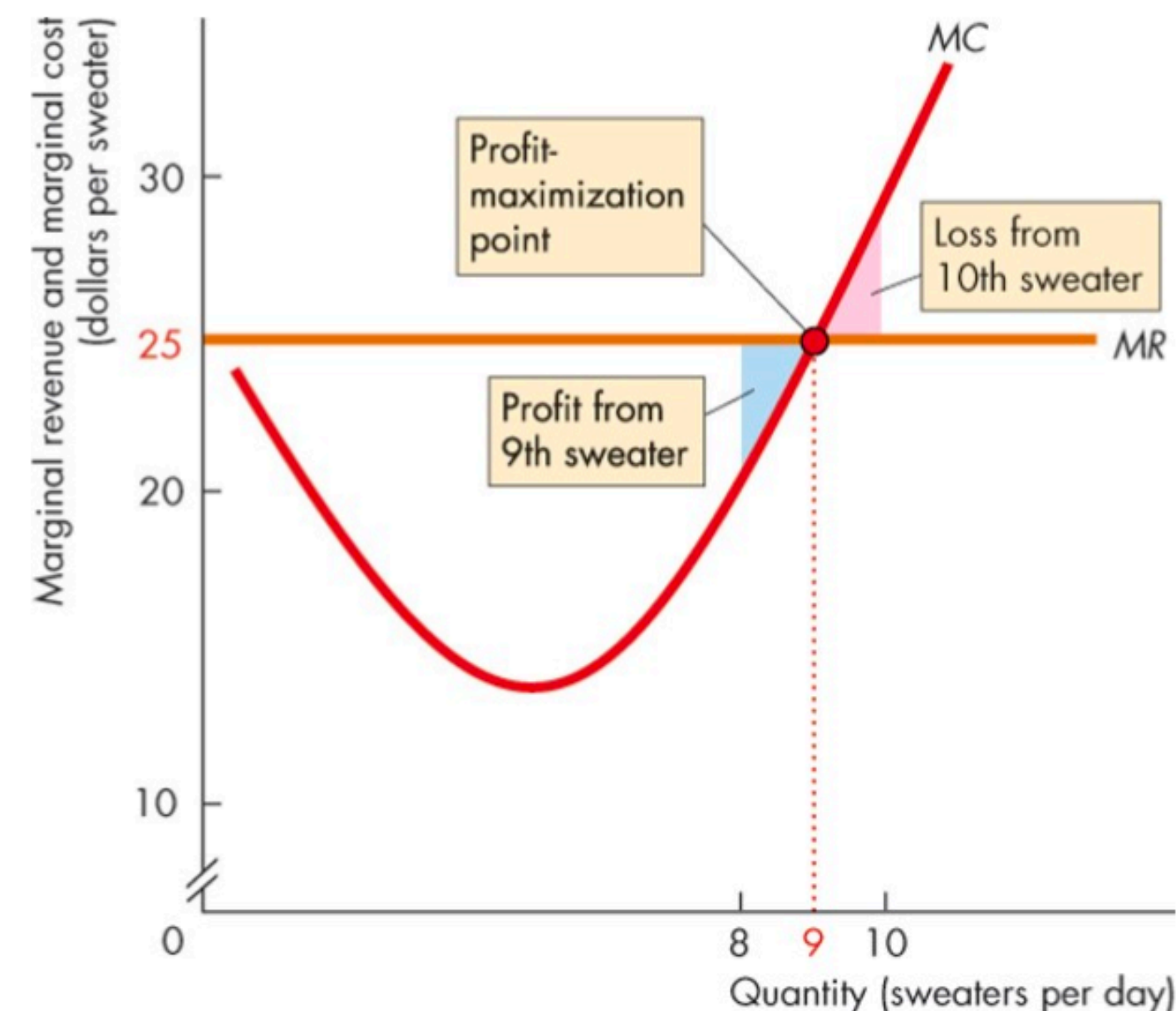
$$AVC(y) \equiv \frac{c_v(y)}{y}.$$

- ▶ The **average fixed cost function** $AFC(y)$ measures the fixed costs per unit of output:

$$AFC(y) \equiv \frac{F}{y}.$$

Firm's Supply

- ▶ How does a firm decide how much product to supply?
- ▶ Different behavior in different market environments
- ▶ For example, firms are price-takers in pure competition, but they might be able to set prices in monopoly settings
 - If $MR > MC$, economic profit increases if output increases.
 - If $MR < MC$, economic profit decreases if output increases.
 - If $MR = MC$, economic profit decreases if output changes in either direction, so economic profit is maximized.



Perfect Competition

- ▶ Consider a competitive firm with a cost function $c(y)$.
- ▶ If the market price is p , then the firm's profit maximization problem is

$$\max_{y \geq 0} py - c(y)$$

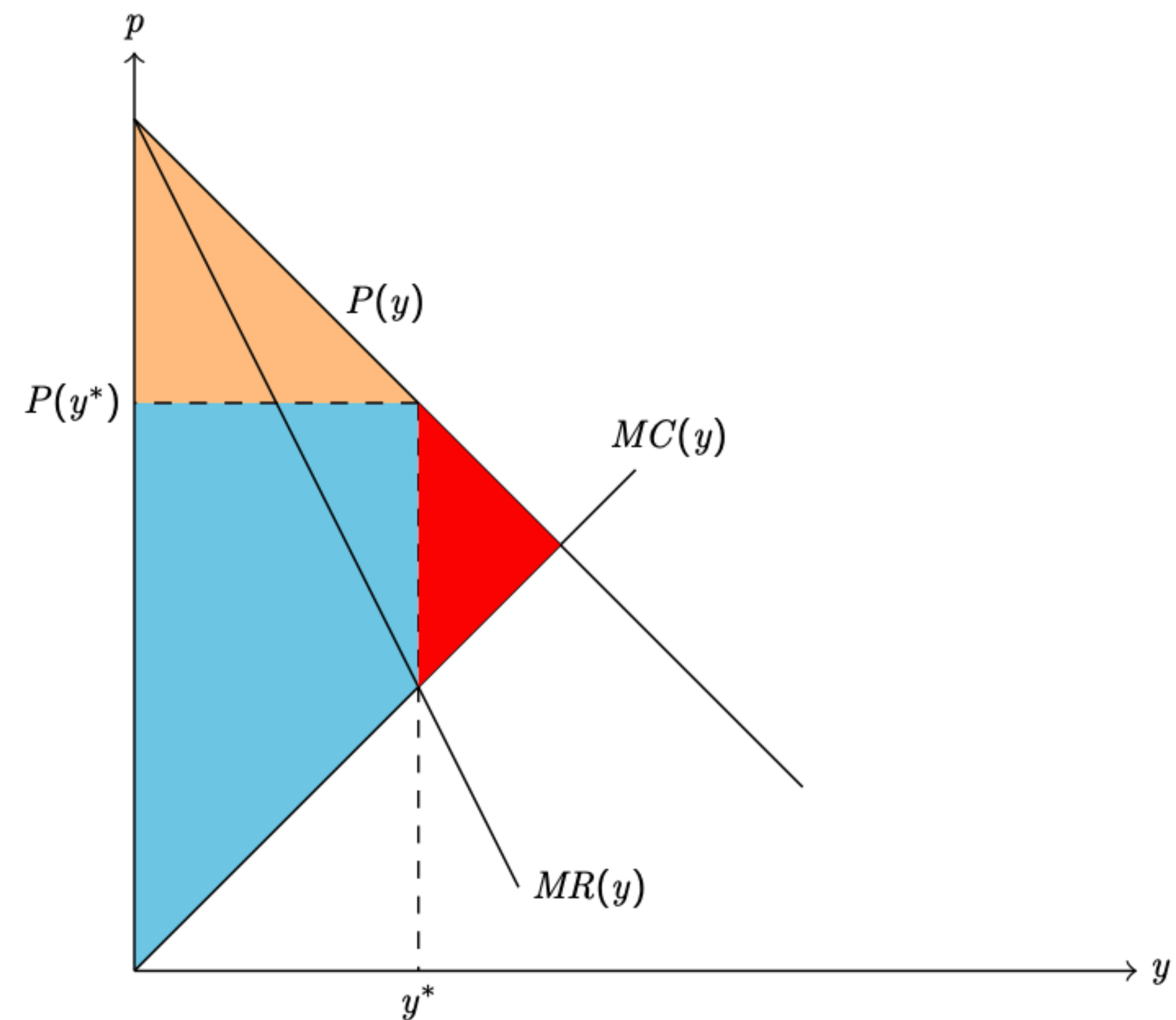
- ▶ A necessary condition (from the method of Lagrange multipliers) is

$$p \leq MC(y) \text{ with equality if } y > 0.$$

- ▶ This is usually referred to as the **first order condition** (FOC).

Monopoly

- ▶ Unlike competitive firms which take market price as given, a monopolist has its power to determine what the price of its product is.
- ▶ A monopolist's price is higher than its marginal cost in a uniform-pricing case
 - ▶ Illustration of deadweight loss of welfare (red area):



Price Discrimination

- ▶ First-degree price discrimination
- ▶ Second-degree price discrimination
- ▶ Third-degree price discrimination

First-Degree Price Discrimination

- ▶ What will happen if there are more than one consumers in the market?
- ▶ If the monopolist is able to perfectly identify consumers and treat each consumer individually, then previous analysis still applies.
- ▶ By adopting a nonlinear price strategy for each consumer, the monopolist is able to extract all the surplus.
- ▶ In short: Charging the maximum price consumers are willing to pay.
- ▶ However, it is hard (if not impossible) for the firm to know exactly each consumer's preference (or equivalently demand curve).
- ▶ In many markets, it is hard for the monopolist to prevent consumers from trading with each other.
- ▶ Examples?

Second-Degree Price Discrimination

- ▶ What will happen if the monopolist can not identify each consumer?
- ▶ Even if the monopolist can not identify and thus separate the consumers, the monopolist can still discriminate by carefully choosing price schemes.
- ▶ When a monopolist treats the market as a whole but adopts a **nonlinear pricing strategy**, we call this second degree price discrimination.
- ▶ Quantity:
 - ▶ bulk discounts,
 - ▶ charges for electricity/phone service
- ▶ Quality:
 - ▶ first/business/economy class,
 - ▶ different insurance plan.
- ▶ More Examples?

Third-Degree Price Discrimination

- ▶ The monopolist first divide all consumers into groups and then charge uniform price within each groups: third degree price discrimination.
- ▶ Examples
 - ▶ Student discount
 - ▶ Age-based insurance policies
 - ▶ Lady discount for bars
- ▶ More examples?

Summary of Price Discrimination

- ▶ The four pricing schemes we have just discussed can be summarized in the following table.

	Integrated market	Segmented market
Linear pricing	uniform pricing	3rd degree
Nonlinear pricing	2nd degree	1st degree

- ▶ There are many many other pricing strategies and what pricing scheme is profit maximization depends on the specific situation that a monopolist is facing.