In this chapter, look for the answers to these questions:

- What is a perfectly competitive market?
- What is marginal revenue? How is it related to total and average revenue?
- How does a competitive firm determine the quantity that maximizes profits?
- When might a competitive firm shut down in the short run? Exit the market in the long run?
- What does the market supply curve look like in the short run? In the long run?

**Introduction: A Scenario**

- Three years after graduating, you run your own business.
- You must decide how much to produce, what price to charge, how many workers to hire, etc.
- What factors should affect these decisions?
  - Your costs (studied in preceding chapter)
- We begin by studying the behavior of firms in perfectly competitive markets.
Characteristics of Perfect Competition

1.

2.

3.

Because of 1 & 2, each buyer and seller is a

The Revenue of a Competitive Firm

Total revenue (TR)

Average revenue (AR)

Marginal revenue (MR):
**FIRMS IN COMPETITIVE MARKETS**

### MR = P for a Competitive Firm

- A competitive firm can keep increasing its output without affecting the market price.
- So, each one-unit increase in $Q$ causes revenue to rise by

### Profit Maximization

- What $Q$ maximizes the firm’s profit?
- To find the answer, “think at the margin.”
  - If increase $Q$ by one unit,
    - If $MR > MC$, then
    - If $MR < MC$, then

### Profit Maximization (continued from earlier exercise)

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</table>
MC and the Firm's Supply Decision

At $Q_a$,

At $Q_b$,

At $Q_1$,

P

MC

MR

Q

Costs

If price rises to $P_2$, then the profit-maximizing quantity rises to $Q_2$. The MC curve determines the firm's $Q$ at any price. Hence,

Shutdown vs. Exit

- Shutdown:

- Exit:

- A key difference:
A Firm's Short-run Decision to Shut Down

- Cost of shutting down:

- Benefit of shutting down:

- So, shut down if

- Divide both sides by $Q$.

- So, firm's decision rule is:

A Competitive Firm's SR Supply Curve

- If $P > AVC$, then firm produces $Q$ where $P = MC$.

- If $P < AVC$, then firm shuts down (produces $Q = 0$).

The Irrelevance of Sunk Costs

- Sunk cost:

- Sunk costs should be irrelevant to decisions; you must pay them regardless of your choice.

- $FC$ is a sunk cost: The firm must pay its fixed costs whether it produces or shuts down.

- So,
A Firm's Long-Run Decision to Exit

- Cost of exiting the market:

- Benefit of exiting the market:

- So, firm exits if

- Divide both sides by $Q$ to write the firm's decision rule as:

A New Firm's Decision to Enter Market

- In the long run, a new firm will enter the market if it is profitable to do so:

- Divide both sides by $Q$ to express the firm's entry decision as:

The Competitive Firm's Supply Curve

The firm's LR supply curve is
**Identifying a firm’s profit**

- Determine this firm’s total profit.
- Identify the area on the graph that represents the firm’s profit.

**A competitive firm**

- Costs, \( P \)
- \( MC \)
- \( ATC \)
- \( \$10 \)
- \( \$6 \)
- \( 50 \)

**Identifying a firm’s loss**

- Determine this firm’s total loss, assuming \( AVC < \$3 \).
- Identify the area on the graph that represents the firm’s loss.

**A competitive firm**

- Costs, \( P \)
- \( MC \)
- \( ATC \)
- \( \$5 \)
- \( \$3 \)
- \( 30 \)

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**Market Supply: Assumptions**

1) All existing firms and potential entrants

2) Each firm’s costs

3) The number of firms in the market is ___ in the short run due to ___ in the long run due to ___
The SR Market Supply Curve

As long as $P \geq AVC$, each firm will produce its profit-maximizing quantity.

Recall from Chapter 4: At each price, the market quantity supplied is the sum of quantities supplied by all firms.

Example: 1000 identical firms
At each $P$, market $Q_s = 1000 \times$ (one firm’s $Q^s$)

Entry & Exit in the Long Run

In the LR, the number of firms can change due to entry & exit.

If existing firms earn positive economic profit,

If existing firms incur losses,
The Zero-Profit Condition

- Long-run equilibrium:
  - The process of

- Zero economic profit occurs when

- Since firms produce where
  the zero-profit condition is

- Recall that MC intersects ATC at minimum ATC.

- Hence, in the long run,

Why Do Firms Stay in Business if Profit = 0?

- Recall, economic profit is revenue minus all costs – including

- In the zero-profit equilibrium,

The LR Market Supply Curve

In the long run, the typical firm earns zero profit.
SR & LR Effects of an Increase in Demand

![Graph showing the effects of an increase in demand on market and firm quantities.](image)

Why the LR Supply Curve Might Slope Upward

- The LR market supply curve is horizontal if:
  1. all firms have identical costs, and
  2. costs do not change as other firms enter or exit the market.

- If either of these assumptions is not true, then LR supply curve slopes upward.

1) Firms Have Different Costs

- As \( P \) rises, firms with lower costs enter the market before those with higher costs.
- Further increases in

  - Hence, LR market supply curve slopes upward.
  - At any \( P \),
    - For the marginal firm,
    - For lower-cost firms,
2) Costs Rise as Firms Enter the Market

In some industries, the entry of new firms is required to increase the market quantity supplied, so the supply curve is upward-sloping.

CONCLUSION: The Efficiency of a Competitive Market

Profit-maximization:

Perfect competition:

So, in the competitive eq’m:

Recall, MC is cost of producing the marginal unit. P is value to buyers of the marginal unit.

So,

In the next chapter, monopoly: pricing & production decisions, deadweight loss, regulation.