Organizing Production
Learning Objectives

- What a firm is and what economic problem firms face
- Distinguish between technological efficiency and economic efficiency
- Define and explain the principal–agent problem
- Describe and distinguish between the types of markets in which firms operate
- Explain why markets coordinate some economic activities and why firms coordinate others
The Firm and Its Economic Problem

A firm is an institution that hires factors of production and organizes them to produce and sell goods and services.

The Firm’s Goal

A firm’s goal is to maximize profit.

If the firm fails to maximize its profit, the firm is either eliminated or taken over by another firm that seeks to maximize profit.
The Firm and Its Economic Problem

**Accounting Profit**

Accounting Profit = Total revenue – Total cost

Accountants use Revenue Canada rules based on standards established by the accounting profession.

**Economic Accounting**

Economic profit = Accounting profit - Opportunity cost

Economists measure a firm’s profit to enable them to predict the firm’s decisions, and the goal of these decisions is to maximize economic profit.
The Firm and Its Economic Problem

A Firm’s Opportunity Cost of Production

A firm’s opportunity cost of production is the value of the best alternative use of the resources that a firm uses in production.

A firm’s opportunity cost of production is the sum of the cost of using resources

- Bought in the market
- Owned by the firm
- Supplied by the firm's owner
Economic Accounting: A Summary

Economic profit equals a firm’s total revenue minus its total opportunity cost of production. The example in Table 10.1 summarizes the economic accounting.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
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<tbody>
<tr>
<td>Total Revenue</td>
<td>$400,000</td>
</tr>
<tr>
<td>Cost of Resources Bought in Market</td>
<td></td>
</tr>
<tr>
<td>Wool</td>
<td>$80,000</td>
</tr>
<tr>
<td>Utilities</td>
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</tr>
<tr>
<td>Wages</td>
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</tr>
<tr>
<td>Computer lease</td>
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<tr>
<td>Bank interest</td>
<td>5,000</td>
</tr>
<tr>
<td></td>
<td>$230,000</td>
</tr>
<tr>
<td>Cost of Resources Owned by Firm</td>
<td></td>
</tr>
<tr>
<td>Economic depreciation</td>
<td>$25,000</td>
</tr>
<tr>
<td>Forgone interest</td>
<td>15,000</td>
</tr>
<tr>
<td></td>
<td>$40,000</td>
</tr>
<tr>
<td>Cost of Resources Supplied by Owner</td>
<td></td>
</tr>
<tr>
<td>Cindy’s normal profit</td>
<td>$45,000</td>
</tr>
<tr>
<td>Cindy’s forgone wages</td>
<td>55,000</td>
</tr>
<tr>
<td></td>
<td>$100,000</td>
</tr>
<tr>
<td>Opportunity Cost of Production</td>
<td>$370,000</td>
</tr>
<tr>
<td>Economic Profit</td>
<td>$30,000</td>
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</table>
The Firm and Its Economic Problem

The Firm’s Decisions

To maximize profit, a firm must make five basic decisions:

1. What to produce and in what quantities
2. How to produce
3. How to organize and compensate its managers and workers
4. How to market and price its products
5. What to produce itself and what to buy from other firms
The Firm and Its Economic Problem

The Firm’s Constraints

The firm’s profit is limited by three features of the environment:

- Technology constraints
- Information constraints
- Market constraints
Technology and Economic Efficiency

Technological Efficiency

- **Technological efficiency** occurs when a firm uses the least amount inputs to produce a given quantity of output.

- Different combinations of inputs might be used to produce a given good, but only one of them is technologically efficient.

- If it is impossible to produce a given good by decreasing any one input, holding all other inputs constant, then production is technologically efficient.
Technology and Economic Efficiency

Economic Efficiency

- **Economic efficiency** occurs when the firm produces a given quantity of output at the least cost.
- The economically efficient method depends on the relative costs of capital and labour.

The difference between technological and economic efficiency is that technological efficiency concerns the quantity of inputs used in production for a given quantity of output, whereas economic efficiency concerns the cost of the inputs used.
Technology and Economic Efficiency

An economically efficient production process also is technologically efficient.

- A technologically efficient process may not be economically efficient.

- Changes in the input prices influence the value of the inputs, but not the technological process for using them in production.
### TABLE 10.3  The Costs of Different Ways of Making 10 TVs a Day

(a) Wage rate $75 a day; Capital rental rate $250 a day

<table>
<thead>
<tr>
<th>Method</th>
<th>Inputs</th>
<th>Labour cost ($75 per day)</th>
<th>Capital cost ($250 per day)</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1</td>
<td>1,000</td>
<td>$75</td>
<td>$250,000</td>
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<tr>
<td>B</td>
<td>10</td>
<td>10</td>
<td>750</td>
<td>2,500</td>
</tr>
<tr>
<td>C</td>
<td>1,000</td>
<td>1</td>
<td>75,000</td>
<td>250</td>
</tr>
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<th>Total cost</th>
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<tbody>
<tr>
<td>A</td>
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<td></td>
<td>75,000</td>
<td>+ 250</td>
<td>75,250</td>
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</table>

(b) Wage rate $150 a day; Capital rental rate $1 a day

<table>
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<th>Capital</th>
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<td>+ 1</td>
<td>150,001</td>
</tr>
<tr>
<td>Method</td>
<td>Inputs</td>
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<td>Capital</td>
<td>Labor cost ($75 per day)</td>
<td>Capital cost ($250 per day)</td>
<td>Total cost</td>
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<table>
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<th>Capital</th>
<th>Labor cost ($1 per day)</th>
<th>Capital cost ($1,000 per day)</th>
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Information and Organization

A firm organizes production by combining and coordinating productive resources using a mixture of two systems:

a) Command systems

A command system uses a managerial hierarchy. Commands pass downward through the hierarchy and information (feedback) passes upward.

These systems are relatively rigid and can have many layers of specialized management

b) Incentive systems

An incentive system is a method of organizing production that uses a market-like mechanism to induce workers to perform in ways that maximize the firm’s profit.
Information and Organization

Mixing the Systems

- Most firms use a mix of command and incentive systems to maximize profit.

- They use commands when it is easy to monitor performance or when a small deviation from the ideal performance is very costly.

- They use incentives whenever monitoring performance is impossible or too costly to be worth doing.
The Principal–Agent Problem

The principal–agent problem is the problem of devising compensation rules that induce an agent to act in the best interests of a principal.

For example, the stockholders of a firm are the principals and the managers of the firm are their agents.

Coping with the Principal–Agent Problem

Three ways of coping with the principal–agent problem are

- Ownership
- Incentive pay
- Long-term contracts
Information and Organization

Ownership, often offered to managers, gives the managers an incentive to maximize the firm’s profits, which is the goal of the owners, the principals.

Incentive pay links managers’ or workers’ pay to the firm’s performance and helps align the managers’ and workers’ interests with those of the owners, the principals.

Long-term contracts can tie managers’ or workers’ long-term rewards to the long-term performance of the firm. This arrangement encourages the agents work in the best long-term interests of the firm owners, the principals.
Information and Organization

Types of Business Organization

There are three types of business organization:

- Sole proprietorship
- Partnership
- Corporation
Sole Proprietorships

- Are easy to set up
- Managerial decision making is simple
- Profits are taxed only once as owner’s income
- The owner’s entire wealth is at stake
- The firm dies with the owner
- The cost of capital and labour can be high
Information and Organization

Partnerships

- Are easy to set up
- Employ diversified decision-making processes
- Can survive the withdrawal of a partner
- Profits are taxed only once
- But achieving a consensus about managerial decisions difficult
- Owners’ entire wealth is at risk
- Capital is expensive
Corporation

- Limited liability for its owners
- Large-scale and low-cost capital that is readily available
- Professional management
- Lower costs from long-term labour contracts
- But complex management structure may lead to slow and expensive
- Profits taxed twice—as corporate profit and shareholder income.
Markets and the Competitive Environment

Economists identify four market types:

1. Perfect competition
2. Monopolistic competition
3. Oligopoly
4. Monopoly
Markets and the Competitive Environment

Perfect competition market

- Many firms and many buyers
- All firms sell an identical product
- No restrictions on entry of new firms to the industry
- Both firms and buyers are all well informed about the prices and products of all firms in the industry.

Examples include world markets in rice, wheat, corn and other grain crops.
Markets and the Competitive Environment

Monopolistic competitive market

- Many firms
- Each firm produces similar but slightly different products—called **product differentiation**
- Each firm possesses an element of market power
- No restrictions on entry of new firms to the industry
Markets and the Competitive Environment

**Oligopoly market**

- A small number of firms compete.
- The firms might produce almost identical products or differentiated products.
- Barriers to entry limit entry into the market.

**Monopoly**

- One firm produces the entire output of the industry.
- There are no close substitutes for the product.
- There are barriers to entry that protect the firm from competition by entering firms.

To determine the market structure of an industry, economists measure the extent to which a small number of firms dominate the market.
Markets and the Competitive Environment

Measures of Concentration

Economists use two measures of market concentration:

- The four-firm concentration ratio
- The Herfindahl–Hirschman index (HHI)
Markets and the Competitive Environment

Measures of Concentration

Economists use two measures of market concentration:

a) The Four-Firm Concentration Ratio

The four-firm concentration ratio is the percentage of the total industry sales accounted for by the four largest firms in the industry.

b) The Herfindahl–Hirschman Index

The Herfindahl–Hirschman index (HHI) is the square of percentage market share of each firm summed over the largest 50 firms in the industry.

The larger the measure of market concentration, the less competition that exists in the industry.