Chapter 8

Firms in the Global Economy: Export Decisions, Outsourcing, and Multinational Enterprises

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INTERNATIONAL ECONOMICS
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Preview

- Monopolistic competition and trade
- The significance of intra-industry trade
- Firm responses to trade: winners, losers, and industry performance
- Dumping
- Multinationals and outsourcing

Introduction

- When economies of scale exist, large firms may be more efficient than small firms, and the industry may consist of a monopoly or a few large firms.
  - Production may be imperfectly competitive in the sense that excess or monopoly profits are captured by large firms.
- Internal economies of scale result when large firms have a cost advantage over small firms, causing the industry to become uncompetitive.

Introduction (cont.)

- Internal economies of scale imply that a firm's average cost of production decreases the more output it produces.

- Perfect competition that drives the price of a good down to marginal cost would imply losses for those firms because they would not be able to recover the higher costs incurred from producing the initial units of output.

- As a result, perfect competition would force those firms out of the market.

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Introduction (cont.)

- In most sectors, goods are differentiated from each other and there are other differences across firms.

- Integration causes the better-performing firms to thrive and expand, while the worse-performing firms contract.

- Additional source of gain from trade: As production is concentrated toward better-performing firms, the overall efficiency of the industry improves.

- Study why those better-performing firms have a greater incentive to engage in the global economy.

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The Theory of Imperfect Competition

- In imperfect competition, firms are aware that they can influence the prices of their products and that they can sell more only by reducing their price.

- This situation occurs when there are only a few major producers of a particular good or when each firm produces a good that is differentiated from that of rival firms.

- Each firm views itself as a price setter, choosing the price of its product.

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Monopoly: A Brief Review

- A **monopoly** is an industry with only one firm.
- An **oligopoly** is an industry with only a few firms.
- In these industries, the marginal revenue generated from selling more products is less than the uniform price charged for each product.
  - To sell more, a firm must lower the price of all units, not just the additional ones.
  - The marginal revenue function therefore lies below the demand function (which determines the price that customers are willing to pay).

8-7

Monopoly: A Brief Review

- Assume that the **demand curve** the firm faces is a straight line $Q = A - B(P)$, where Q is the number of units the firm sells, P the price per unit, and A and B are constants.
- **Marginal revenue** equals $MR = P - Q/B$.
- Suppose that **total costs** are $C = F + c(Q)$, where F is fixed costs, those independent of the level of output, and c is the constant marginal cost.

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## Fig. 8-1: Monopolistic Pricing and Production Decisions
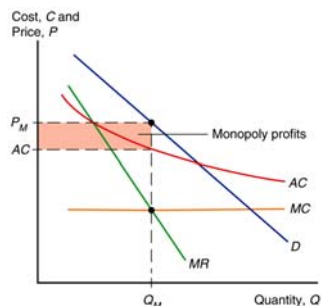
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Monopoly: A Brief Review (cont.)

- **Average cost** is the cost of production (*C*) divided by the total quantity of production (*Q*).

$$AC = C/Q = F/Q + c$$

- **Marginal cost** is the cost of producing an additional unit of output.

- A larger firm is more efficient because average cost decreases as output *Q* increases: internal economies of scale.

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Fig. 8-2: Average Versus Marginal Cost
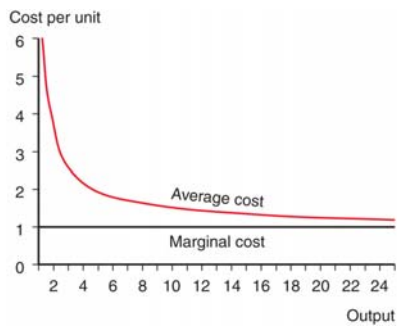
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Monopoly: A Brief Review (cont.)

- The profit-maximizing output occurs where marginal revenue equals marginal cost.
  - At the intersection of the *MC* and *MR* curves, the revenue gained from selling an extra unit equals the cost of producing that unit.

- The monopolist earns some monopoly profits, as indicated by the shaded box, when *P > AC*.

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Monopolistic Competition

- **Monopolistic competition** is a simple model of an imperfectly competitive industry that assumes that each firm
  1. can differentiate its product from the product of competitors, and
  2. takes the prices charged by its rivals as given.

8-13

Monopolistic Competition (cont.)

- A firm in a monopolistically competitive industry is expected to sell
  - **more** as total sales in the industry increase and as prices charged by rivals increase.
  - **less** as the number of firms in the industry decreases and as the firm's price increases.
- These concepts are represented by the function:

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Monopolistic Competition (cont.)

$$Q = S[1/n - b(P - \overline{P})]$$

- Q is an individual firm's sales
- S is the total sales of the industry
- n is the number of firms in the industry
- b is a constant term representing the responsiveness of a firm's sales to its price
- P is the price charged by the firm itself
- $\overline{P}$ is the average price charged by its competitors

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Monopolistic Competition (cont.)

- Assume that firms are symmetric: all firms face the same demand function and have the same cost function.
  - Thus all firms should charge the same price and have equal share of the market $Q = S/n$
  - Average costs should depend on the size of the market and the number of firms:

    $AC = C/Q = F/Q + c = n\ F/S + c$

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## Monopolistic Competition (cont.)

$$AC = n(F/S) + c$$

- As the number of firms n in the industry increases, the average cost increases for each firm because each produces less.

- As total sales S of the industry increase, the average cost decreases for each firm because each produces more.

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Fig. 8-3: Equilibrium in a Monopolistically Competitive Market
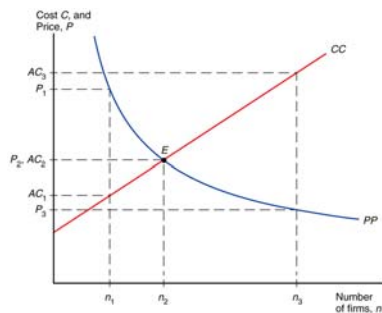
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Monopolistic Competition (cont.)

- If monopolistic firms face linear demand functions, $Q = A - B(P)$,
  - where A and B are constants.
- When firms maximize profits, they should produce until marginal revenue equals marginal cost:

$$MR = P - Q/B = c$$

- As the number of firms n in the industry increases, the price that each firm charges decreases because of increased competition.

8-19

Monopolistic Competition (cont.)

- At some number of firms, the price that firms charge (which decreases in n) matches the average cost that firms pay (which increases in n).
  - At this long-run equilibrium number of firms in the industry, firms have no incentive to enter or exit the industry.

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Monopolistic Competition (cont.)

- If the number of firms is greater than or less than the equilibrium number, then firms have an incentive to exit or enter the industry.
  - Firms have an incentive to exit the industry when price < average cost.
 - Firms have an incentive to enter the industry when price > average cost.

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Monopolistic Competition and Trade

- Because trade increases market size, trade is predicted to decrease average cost in an industry described by monopolistic competition.
  - Industry sales increase with trade leading to decreased average costs: $AC = n(F/S) + c$
- Because trade increases the variety of goods that consumers can buy under monopolistic competition, it increases the welfare of consumers.
  - And because average costs decrease, consumers can also benefit from a decreased price.

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Fig. 8-4: Effects of a Larger Market
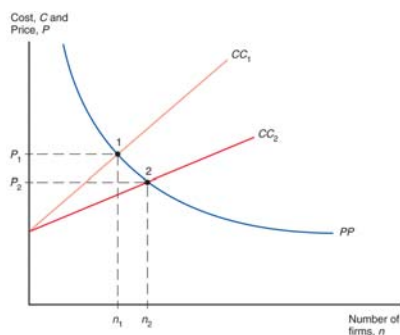
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## Monopolistic Competition and Trade (cont.)

- As a result of trade, the number of firms in a new international industry is predicted to increase relative to each national market.
  - But it is unclear if firms will locate in the domestic country or foreign countries.
- Integrating markets through international trade therefore has the same effects as growth of a market within a single country.

8-24

Fig. 8-5: Equilibrium in the Automobile Market

Price per auto, in thousands of dollars

(a) Home — CC, PP curves intersect at n = 6, price 10. Number of firms, n (1–12)

(b) Foreign — CC, PP curves intersect at n = 8, price ~8. Number of firms, n (1–12)
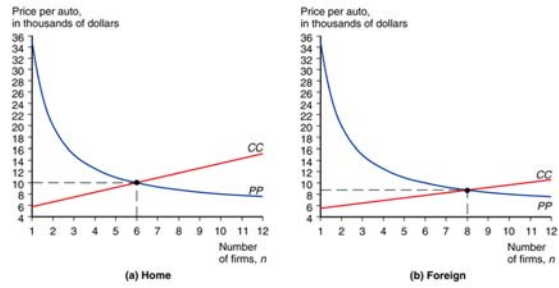
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Fig. 8-5: Equilibrium in the Automobile Market (cont.)
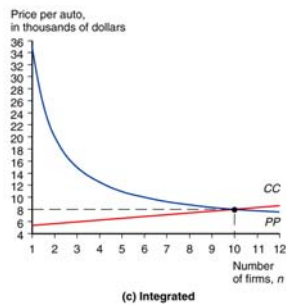
Price per auto, in thousands of dollars

(c) Integrated — CC, PP curves intersect at n = 10, price ~8. Number of firms, n (1–12)

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Table 8-1: Hypothetical Example of Gains from Market Integration

TABLE 8-1 Hypothetical Example of Gains from Market Integration			
	Home Market, Before Trade	Foreign Market, Before Trade	Integrated Market, After Trade
Industry output (# of autos)	900,000	1,600,000	2,500,000
Number of firms	6	8	10
Output per firm (# of autos)	150,000	200,000	250,000
Average cost	$10,000	$8,750	$8,000
Price	$10,000	$8,750	$8,000

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Monopolistic Competition and Trade (cont.)

- Product differentiation and internal economies of scale lead to trade between similar countries with no comparative advantage differences between them.
  - This is a very different kind of trade than the one based on comparative advantage, where each country exports its comparative advantage good.

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The Significance of Intra-industry Trade

- **Intra-industry trade** refers to two-way exchanges of similar goods.
- Two new channels for welfare benefits from trade:
  - Benefit from a **greater variety**
  - Gains from lower prices (**pro-competitive effect**).
- A smaller country stands to gain more from integration than a larger country.

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The Significance of Intra-industry Trade (cont.)

- About 25–50% of world trade is intra-industry.
- Most prominent is the trade of manufactured goods among advanced industrial nations, which accounts for the majority of world trade.
  - For the United States, industries that have the most intra-industry trade—such as pharmaceuticals, chemicals, and specialized machinery—require relatively larger amounts of skilled labor, technology, and physical capital.

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Table 8-2: Indexes of Intra-Industry Trade for U.S. Industries, 2009

TABLE 8-2	Indexes of Intra-Industry Trade for U.S. Industries, 2009
Metalworking Machinery	0.97
Inorganic Chemicals	0.97
Power-Generating Machines	0.86
Medical and Pharmaceutical Products	0.85
Scientific Equipment	0.84
Organic Chemicals	0.79
Iron and Steel	0.76
Road Vehicles	0.70
Office Machines	0.58
Telecommunications Equipment	0.46
Furniture	0.30
Clothing and Apparel	0.11
Footwear	0.10

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Firm Responses to Trade

- Increased competition tends to hurt the worst-performing firms — they are forced to exit.
- The best-performing firms take the greatest advantage of new sales opportunities and expand the most.
- When the better-performing firms expand and the worse-performing ones contract or exit, overall industry performance improves.
  - Trade and economic integration improve industry performance as much as the discovery of a better technology does.

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Fig. 8-6: Performance Differences Across Firms

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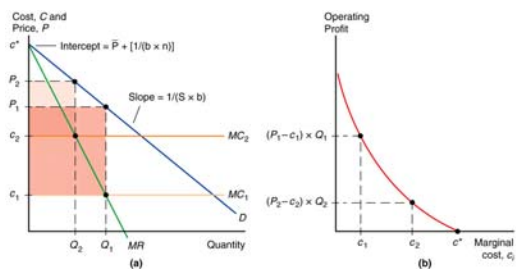
Fig. 8-7: Winners and Losers from Economic Integration
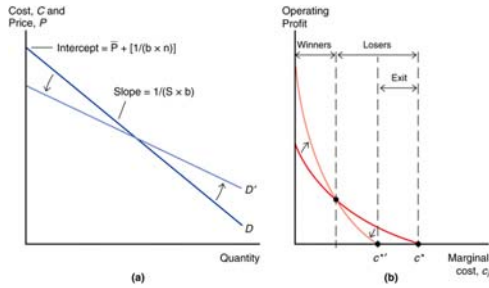
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Trade Costs and Export Decisions

- Most U.S. firms do not report *any* exporting activity at all — sell only to U.S. customers.
  - In 2002, only 18% of U.S. manufacturing firms reported any sales abroad.
- Even in industries that export much of what they produce, such as chemicals, machinery, electronics, and transportation, fewer than 40 percent of firms export.
- A major reason why trade costs reduce trade so much is that they drastically reduce the number of firms selling to customers across the border.
 - Trade costs also reduce the volume of export sales of firms selling abroad.

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Trade Costs and Export Decisions (cont.)

- Trade costs added two important predictions to our model of monopolistic competition and trade:
  - Why only a subset of firms export, and why exporters are relatively larger and more productive (lower marginal costs).
- Overwhelming empirical support for this prediction that exporting firms are bigger and more productive than firms in the same industry that do not export.
  - In the United States, in a typical manufacturing industry, an exporting firm is on average more than twice as large as a firm that does not export.
  - Differences between exporters and nonexporters are even larger in many European countries.

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Table 8-3: Proportion of U.S. Firms Reporting Export Sales by Industry, 2002

TABLE 8-3	Proportion of U.S. Firms Reporting Export Sales by Industry, 2002
Printing	5%
Furniture	7%
Apparel	8%
Wood Products	8%
Fabricated Metals	14%
Petroleum and Coal	18%
Transportation Equipment	28%
Machinery	33%
Chemicals	36%
Computer and Electronics	38%
Electrical Equipment and Appliances	38%

Source: A. B. Bernard, J. B. Jensen, S. J. Redding, and P. K. Schott, "Firms in International Trade," *Journal of Economic Perspectives* 21 (Summer 2007), pp. 105–130.

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Fig: 8-8: Export Decisions with Trade Costs

(a) Domestic (Home) Market

(b) Export (Foreign) Market
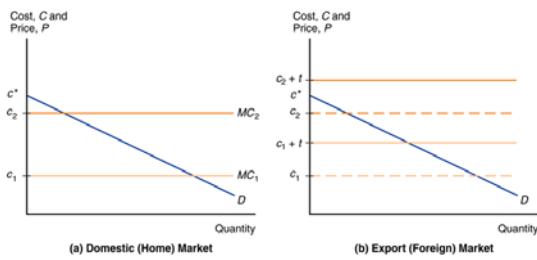
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Summary

1. Internal economies of scale imply that more production at the firm level causes average costs to fall.

2. With monopolistic competition, each firm can raise prices somewhat above those on competing products due to product differentiation but must compete with other firms whose prices are believed to be unaffected by each firm's actions.

3. Monopolistic competition allows for gains from trade through lower costs and prices, as well as through wider consumer choice.

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Summary (cont.)

4. Monopolistic competition predicts intra-industry trade, and does not predict changes in income distribution within a country.

5. Location of firms under monopolistic competition is unpredictable, but countries with similar relative factors are predicted to engage in intra-industry trade.

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