Chapter 8
Firms in the Global Economy: Export Decisions, Outsourcing, and Multinational Enterprises

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

- Internal economies of scale result when large firms have a cost advantage over small firms, causing the industry to become uncompetitive.
- Internal economies of scale imply that a firm’s average cost of production decreases the more output it produces.
Introduction (cont.)

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

Introduction (cont.)

- 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.

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.
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).

Monopoly: A Brief Review (cont.)

- 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.

Fig. 8-1: Monopolistic Pricing and Production Decisions

![Diagram showing monopolistic pricing and production decisions](image-url)
Monopoly: A Brief Review (cont.)

- **Average cost** is the cost of production (C) divided by the total quantity of production (Q).
  \[ AC = \frac{C}{Q} = \frac{F}{Q} + c \]
- **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.

---

Fig. 8-2: Average Versus Marginal Cost

---

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 \( P > AC \).
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.

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:

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

- \( Q \) 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
- \( \bar{P} \) is the average price charged by its competitors
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:
    \[ AC = \frac{C}{Q} = \frac{F}{Q} + c = \frac{nF}{S} + c \]

Monopolistic Competition (cont.)

\[ AC = n\left(\frac{F}{S}\right) + c \]

- 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.

Fig. 8-3: Equilibrium in a Monopolistically Competitive Market
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: 
  \[ MR = P - Q/B = c \]

Monopolistic Competition (cont.)

- As the number of firms \( n \) in the industry increases, 
  the price that each firm charges decreases due to increased competition. 
  \[ P = c + 1 > (b*n) \]
- Each firm’s markup over marginal cost 
  \[ P - c = 1 > (b*n) \]
  decreases with the number of competing firms.

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.
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.

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.

Fig. 8-4: Effects of a Larger Market
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.

Gains from an Integrated Market: A Numerical Example

- Suppose that $b = 1/30,000$, fixed cost $F = $750,000,000 and a marginal cost of $c = $5,000 per automobile.
- The total cost is $C = 750,000,000 + (5,000*Q)$.
- The average cost is therefore $AC = (750,000,000/Q) + 5,000$.

Gains from an Integrated Market: A Numerical Example (cont.)

- Suppose there are two countries, Home and Foreign.
- Home has annual sales of 900,000 automobiles; Foreign has annual sales of 1.6 million.
- The two countries are assumed (for now) to have the same costs of production.
Gains from an Integrated Market: A Numerical Example (cont.)

- The integrated market supports more firms, each producing at a larger scale and selling at a lower price than either national market does on its own.
- Everyone is better off as a result of the larger market with integration:
  - Consumers have a wider range of choices, and
  - Each firm produces more and is therefore able to offer its product at a lower price.

Fig. 8-5: Equilibrium in the Automobile Market

![Graph showing equilibrium in the automobile market]

Fig. 8-5: Equilibrium in the Automobile Market (cont.)

![Graph showing equilibrium in the automobile market (cont.)]
Table 8-1: Hypothetical Example of Gains from Market Integration

<table>
<thead>
<tr>
<th></th>
<th>Home Market, Before Trade</th>
<th>Foreign Market, Before Trade</th>
<th>Integrated Market, After Trade</th>
</tr>
</thead>
<tbody>
<tr>
<td>Industry output (4 of autos)</td>
<td>900,000</td>
<td>1,000,000</td>
<td>2,500,000</td>
</tr>
<tr>
<td>Number of firms</td>
<td>6</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>Output per firm (4 of autos)</td>
<td>150,000</td>
<td>200,000</td>
<td>250,000</td>
</tr>
<tr>
<td>Average cost</td>
<td>$10,000</td>
<td>$15,000</td>
<td>$20,000</td>
</tr>
<tr>
<td>Price</td>
<td>$10,000</td>
<td>$15,000</td>
<td>$20,000</td>
</tr>
</tbody>
</table>

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.

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 at a lower price.
  - Firms consolidate their production and take advantage of economies of scale.
- A smaller country stands to gain more from integration than a larger country.
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.

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

<table>
<thead>
<tr>
<th>Industry</th>
<th>Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metalworking Machinery</td>
<td>0.97</td>
</tr>
<tr>
<td>Inorganic Chemicals</td>
<td>0.97</td>
</tr>
<tr>
<td>Power-Generating Machines</td>
<td>0.86</td>
</tr>
<tr>
<td>Medical and Pharmaceutical Products</td>
<td>0.85</td>
</tr>
<tr>
<td>Scientific Equipment</td>
<td>0.84</td>
</tr>
<tr>
<td>Organic Chemicals</td>
<td>0.79</td>
</tr>
<tr>
<td>Iron and Steel</td>
<td>0.76</td>
</tr>
<tr>
<td>Road Vehicles</td>
<td>0.70</td>
</tr>
<tr>
<td>Office Machines</td>
<td>0.58</td>
</tr>
<tr>
<td>Telecommunications Equipment</td>
<td>0.46</td>
</tr>
<tr>
<td>Furniture</td>
<td>0.30</td>
</tr>
<tr>
<td>Clothing and Apparel</td>
<td>0.11</td>
</tr>
<tr>
<td>Footwear</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Firm Responses to Trade: heterogeneity among firms

- 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.
Firm Responses to Trade: heterogeneity among firms

- The different performance of firms in the same industry and country, cannot be explained by previous model where we assumed that firms in the same sector/country were identical.
- Let’s utilize the same monopolistic competition model we utilized to explain intra-industry trade with one modification: assume there are low cost firms and high cost firms. These have different marginal costs: 
  \[ c_1 < c_2 \]
- Next graph (a) represents the common demand curve (and the corresponding marginal revenue curve) and the two different marginal cost curves.

---

Fig. 8-6: Performance Differences Across Firms

- Firms set their production level in correspondence to the point were MR=MC
- More competitive firms’ price \( p_1 \) is lower then less competitive ones \( p_2 \) – who are able to stay on the market because they sell a differentiated product.
- Operating profit is profit gross of fixed costs (they are sunk and identical for all firms):
  \[ \Omega_i = (p_i - c_i)Q_i \]
- The shaded areas in graph (a) represent operating profits
- Firms with marginal costs higher than \( c^* \) are too inefficient to stay in the market. Call \( c^* \) the cutoff point.
Firm Responses to Trade: heterogeneity among firms

- Assume, as in the Krugman monopolistic competitive model, that the country opens up to international trade. Again we model it with an increase in $S$. We also know that after trade is allowed $n$ increases, $p$ goes down.
- This changes affect both the slope and the vertical intercept of the demand curve.
- This will decrease the cutoff point.
- In the new equilibrium there will be the most efficient firms that will increase $\Pi$ (the winners) and the other will reduce $\Pi$ (some stay in the market and some will be expelled) (the losers).

Fig. 8-7: Winners and Losers from Economic Integration

Trade Costs and Export Decisions

- Another characteristic common to many countries, is that the number of firms reporting some exporting activity is very small.
- In the US, 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.
- This can be explained introducing trade costs in our model. 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.
Trade Costs and Export Decisions

- Assume now that a firm must incur an additional cost $t$ for each unit of output it sells abroad. Now firms will set different prices in the two markets (the MC to sell in the two markets is different due to the introduction of trade costs).

- Two results:
  a) Some firms will not export
  b) The exporters are the most efficient firms

Fig: 8-8: Export Decisions with Trade Costs
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.

Exporters are more efficient: the Italian case

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Average Size (in millions of dollars)</th>
<th>Value Added Per Employee (in millions of dollars)</th>
<th>Costs of Labor Per Employee (in millions of dollars)</th>
<th>Investment Per Employee (in millions of dollars)</th>
<th>Profit Margin (in percentage)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exporting</td>
<td>300</td>
<td>50</td>
<td>20</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Non-exporting</td>
<td>50</td>
<td>10</td>
<td>5</td>
<td>2</td>
<td>2</td>
</tr>
</tbody>
</table>

Dumping

- Dumping is the practice of charging a lower price for exported goods than for goods sold domestically.
- Dumping is an example of price discrimination: the practice of charging different customers different prices.
- Price discrimination and dumping may occur only if
  - imperfect competition exists: firms are able to influence market prices.
  - markets are segmented so that goods are not easily bought in one market and resold in another.
Dumping (cont.)

- Dumping can be a profit-maximizing strategy:
  - A firm with a higher marginal cost chooses to set a lower markup over marginal cost.
  - Therefore, an exporting firm will respond to the trade cost by lowering its markup for the export market.
  - This strategy is considered to be dumping, regarded by most countries as an "unfair" trade practice.

Protectionism and Dumping

- A U.S. firm may appeal to the Commerce Department to investigate if dumping by foreign firms has injured the U.S. firm.
  - The Commerce Department may impose an "anti-dumping duty" (tax) to protect the U.S. firm.
  - Tax equals the difference between the actual and "fair" price of imports, where "fair" means "price the product is normally sold at in the manufacturer's domestic market."

Protectionism and Dumping (cont.)

- Next, the International Trade Commission (ITC) determines if injury to the U.S. firm has occurred or is likely to occur.
- If the ITC determines that injury has occurred or is likely to occur, the anti-dumping duty remains in place.
  - [http://www.usitc.gov/trade_remedy/731_ad_701_cvd/index.htm](http://www.usitc.gov/trade_remedy/731_ad_701_cvd/index.htm)
Protectionism and Dumping (cont.)

- Most economists believe that the enforcement of dumping claims is misguided.
  - Trade costs have a natural tendency to induce firms to lower their markups in export markets.
  - Such enforcement may be used excessively as an excuse for protectionism.

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.

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.
6. Dumping may be a profitable strategy when a firm faces little competition in its domestic market and faces heavy competition in foreign markets.