1 Standard Trade Theory and Specialization

Home and Foreign produce machines and food. The relative price of machinery $P_M/P_F$ is 1 in the initial world-trade equilibrium.

- Suppose Home exports machinery and imports food. Draw the trade line (isovalue curve) and according indifference curves for Home. Depict a point of optimal consumption for Home.

- Now suppose Home imports machinery and exports food. Draw the according indifference curves for Home and depict a point of optimal consumption for Home.

- Return to the case of Home being a machinery exporter. The relative world-market price of machinery $P_M/P_F$ rises to 2. How do production and consumption change? Is an increase in the terms of trade unambiguously beneficial? Would your answer be different if Home were a machinery importer so that its terms of trade fell?

- Home is a machinery exporter. Machinery production is capital-intensive and Home’s capital endowment increases. Use a relative-supply-relative-demand diagram to show how Home’s terms of trade respond.

2 Standard Trade Theory and the Effect of Tariffs

Home and all foreign trading partners produce machinery and food. Home is a small open economy and has a comparative advantage in machinery production.

- Home subsidizes its machinery exports. How are Home’s terms of trade affected if Home is a small open economy? How is Home’s welfare affected?

- Foreign also subsidizes its imports so that internal (domestic) relative prices are the same as world-market relative prices. How are Home’s terms of trade affected? Does it matter whether Home is a small or large economy? What is the effect on Home welfare?
3 Monopolistic Competition and Intraindustry Trade

Monopolistic chair makers produce with a total cost function
\[ TC = F + c \cdot Q_C, \]
where \( F = 500,000 \) and \( c = 100 \).

- What are the average and marginal cost functions of a chair maker?

Each of \( n \) chair makers faces residual demand of
\[ Q^d_C = S \cdot [1/n - b \cdot (P_C - \bar{P}_C)], \]
where \( S = 50,000 \), \( b = 1/1,000 \) and \( \bar{P}_C \) is average equilibrium price.

- What are marginal revenues? [Hint: You may use the formula in the textbook. Otherwise, reformulate demand so that \( P_M = P_M(Q^d_M) \) and derive total revenue; differentiate total revenue with respect to quantity.]

- Graph the average-cost-variety (CC) and the price-variety (PP) schedules for this industry in a diagram that shows price, average cost and the number of firms (varieties).

- Find the number of firms (varieties) in this industry in the absence of trade. What is price in a symmetric autarky equilibrium?

- Chairs can be traded with other countries at not cost. Using the average-cost-variety (CC) and the price-variety (PP) schedules above, show how equilibrium price and the equilibrium number of firms change after trade.

- How could you measure the gains from trade? Explain briefly.

4 Monopolistic Competition and Dumping

A machinery monopolist produces with a total cost function
\[ TC = F + \frac{c}{2} \cdot (Q_M)^2, \]
where \( c = 1/150 \). You may suppose that \( F = 0 \).

- What are the monopolist’s average and marginal cost functions?

Demand for machines at Home is
\[ Q^d_M = S - Sb \cdot P_M, \]
where \( S = 50,000 \) and \( b = 1/1,000 \). World demand is perfectly elastic at a world-market price of \( P^*_M = 500 \).

- What are the monopolist’s marginal revenues? [Hint: You may use the formula in the textbook. Otherwise, reformulate demand so that \( P_M = P_M(Q^d_M) \) and derive total revenue; differentiate total revenue with respect to quantity.]
• The monopolist chooses to export at the world-market price $P_M^* = 500$. Determine total output, domestic sales and exports in a suitable graph and show that the monopolist’s best strategy is dumping on the world market.

• Use the graph to show that domestic consumers suffer from high monopoly price. [Hint: Consumer surplus is the area below the demand curve. Draw it before and after dumping.]

• Free trade in machinery exposes the domestic monopolist to perfect competition at $P_M^* = 500$. Show that Home consumers are better off after trade, while the monopolist is worse off. [Hint: Consumer surplus is the area below the demand curve. Identify consumer rents before and after free trade.]

• Can the monopolist remain in business if $F > 0$.

5 International Labor Mobility

Home and Foreign produce output from labor and capital. In the absence of labor mobility, the equilibrium wage in Home exceeds the wage in Foreign.

• Graph the labor demand curves for Home and Foreign in a suitable diagram and show that labor mobility increases Home’s total labor supply, while reducing Home’s wage. Graph the converse effects for Foreign.

• Show how rents to capital owners change in Home and Foreign with migration.

• Does labor mobility increase overall welfare in Home? In Foreign?