



International Trade

3.2 The Production Frontier with Increasing Costs

3.2A. Constant opportunity costs vs. increasing opportunity costs

- (1) Constant opportunity costs: Regardless of the level of output, the nation must give up the same amount of one commodity to produce each additional unit of another commodity. → Production frontier is a straight line.
- (2) Increasing opportunity costs: the nation must give up more and more of one commodity to release just enough resources to produce each additional unit of another commodity. → Production frontier is concave from the origin.

3.2 The Production Frontier with Increasing Costs

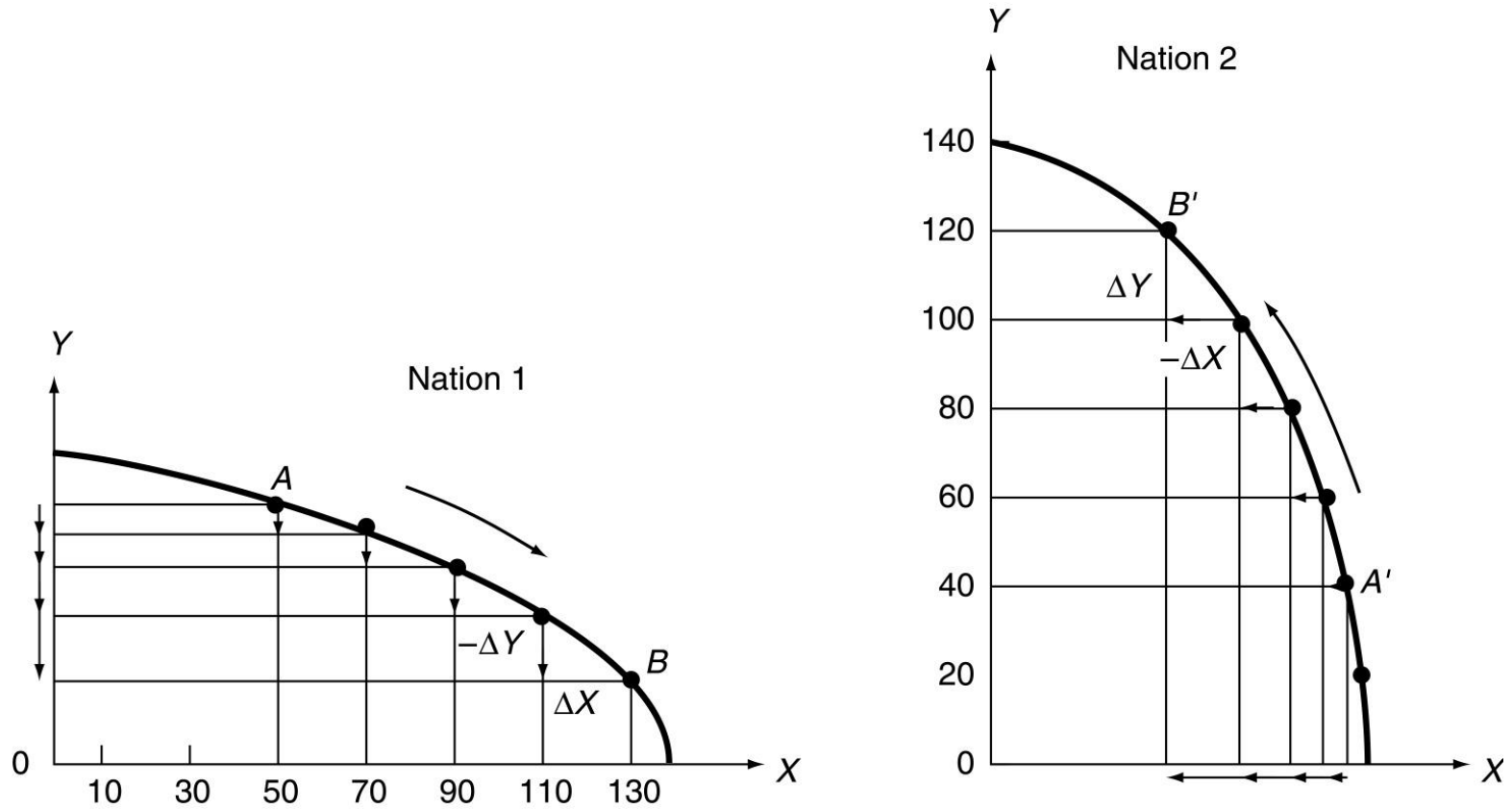


Figure 3.1. Production Frontiers of Nation 1 and nation 2 with Increasing Costs

3.2 The Production Frontier with Increasing Costs

3.2B. The Marginal Rate of Transformation (MRT)

- MRT of X for Y refers to the amount of Y that a nation must give up to produce each additional unit of X.
 - = the opportunity cost of X.
 - = the slope of the production frontier at the point of production.
- With increasing opportunity costs, the MRT (i.e., the slope of the production frontier) increases, as the production point moves from A to B.
 - e.g., $MRT = 1/4$ at point A.
 - $MRT = 1$ at point B.

3.2 The Production Frontier with Increasing Costs

3.2C. Reasons for Increasing Opportunity Costs and Different Production Frontiers

- Reasons for Increasing opportunity costs:
 - (1) factors of production are not homogeneous.
 - (2) factors of production are not used in the same fixed proportion or intensity in the production of all goods.
- Examples:
- Reasons for different production frontiers:
 - (1) different factor endowments
 - (2) different technologies in production

3.3 Community Indifference Curves

- Recall: (individual) indifference curve
- ✓ Definition: a curve that shows the various combinations of two goods that yield equal satisfaction to an individual consumer.
- ✓ Characteristics:
 - (1) downward sloped
 - (2) convex from the origin
 - (3) a higher curve refers to a higher level of satisfaction
 - (4) difference curves do not cross each other.

3.3 Community Indifference Curves

- Community indifference curve:
 - ✓ Definition: a curve that shows the various combinations of two goods that yield equal satisfaction to the community or nation.
 - ✓ Characteristics:
 - (1)
 - (2)
 - (3)
 - (4)

3.3 Community Indifference Curves

3.3A. Illustration of Community Indifference Curves

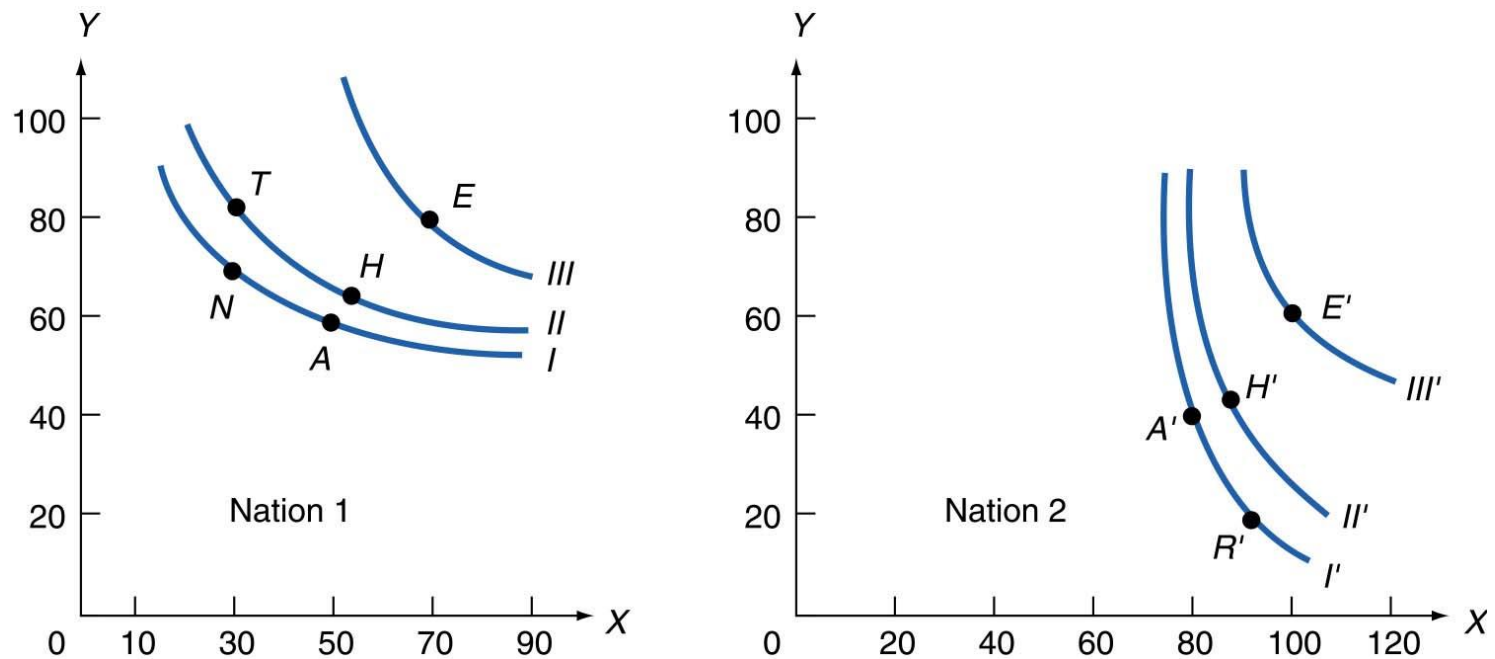


Figure 3.2. Community Indifference Curves for Nation 1 and nation 2.

3.3 Community Indifference Curves

3.3B. The Marginal Rate of Substitution (MRS)

- MRS of X for Y in consumption refers to the amount of Y that a nation could give up for one extra unit of X and still remain on the same indifference curve.
= the slope of the community indifference curve.
- The MRS (i.e., the slope of the community indifference curve) decreases as the consumption point moves from N to A.
e.g., MRS at point N.
MRS at point A.

3.3 Community Indifference Curves

3.3C. Some difficulties with community indifference curves

- A difference income distribution would result in a new set of indifference curves, which might intersect previous indifference curves.
- Explain!
- With compensation principle, we can still assume that the indifference curves do not intersect each other.

3.4 Equilibrium in Isolation

- In the absence of trade (or autarky), a nation is in equilibrium when it reaches the highest indifference curve possible given its production frontier.
- i.e., A nation is in equilibrium at the point where a community indifference curve is tangent to the nation's production frontier.

3.4 Equilibrium in Isolation

3.4A. Illustration of Equilibrium in Isolation.

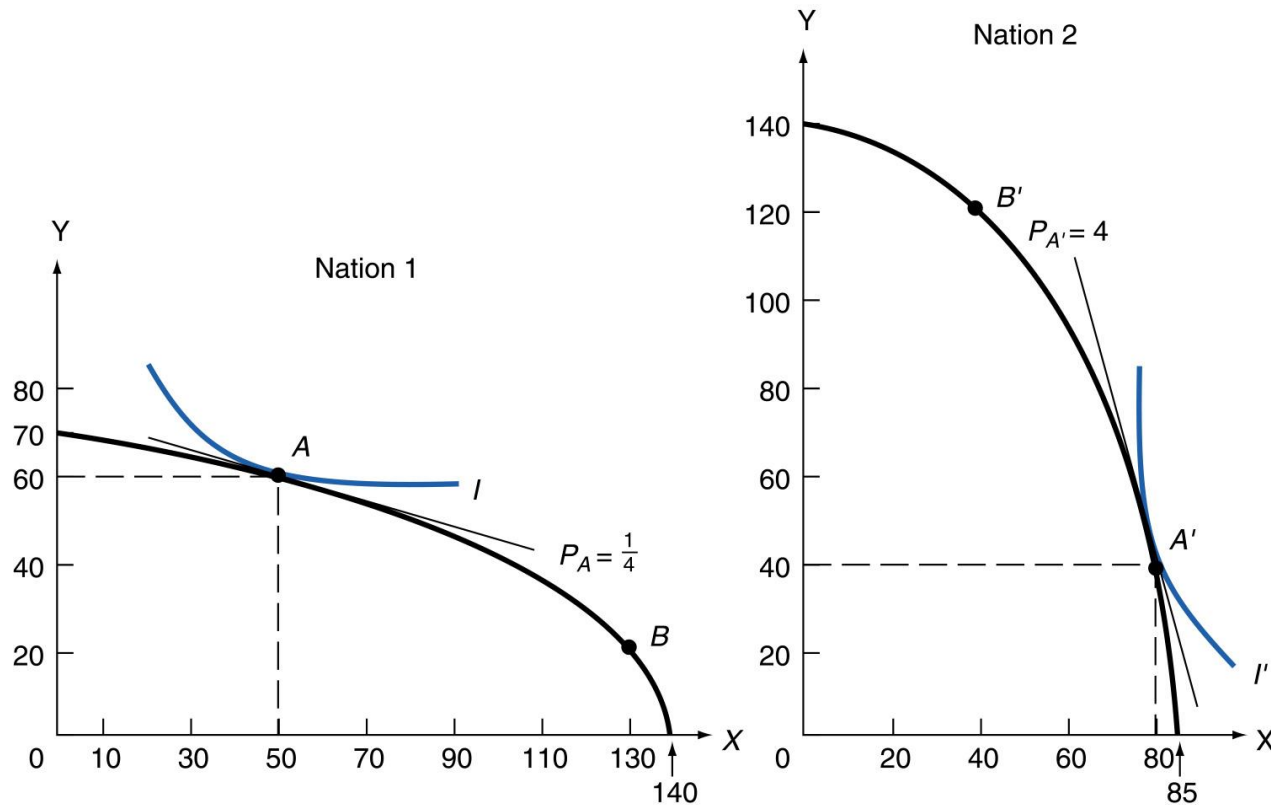


Figure 3.3. Equilibrium in Isolation.

3.4 Equilibrium in Isolation

3.4B. Equilibrium-Relative Commodity Prices and Comparative Advantage

- The equilibrium relative prices before trade:

$$\text{Nation 1: } (P_X/P_Y) = P_A = 1/4$$

$$\text{Nation 2: } (P_X/P_Y)' = P_{A'} = 4/1$$

$$\text{i.e., } (P_X/P_Y) < (P_X/P_Y)'$$

⇒ Nation 1 has a comparative advantage in good X and
Nation 2 has a comparative advantage in good Y.

3.5 The Basis for and the Gains from Trade with Increasing Costs

3.5A. Illustrations

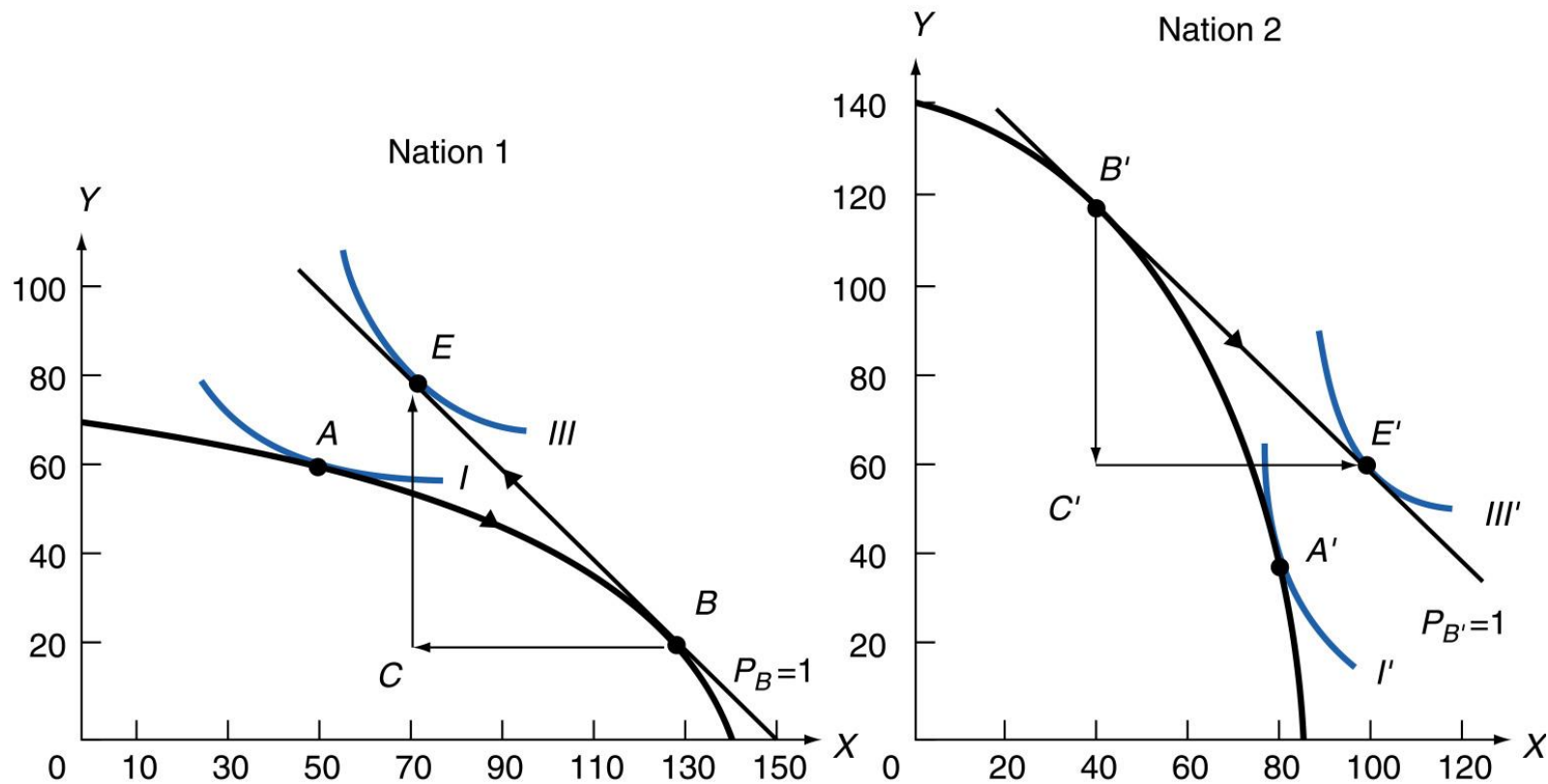


Figure 3.4. The Gains from Trade with Increasing Costs

3.5 The Basis for and the Gains from Trade with Increasing Costs

3.5B. Equilibrium-Relative Commodity Prices with Trade

- is the common relative price in both nations at which trade is balanced.

$$\text{i.e., } (P_X/P_Y)_e = (P_X/P_Y) = (P_X/P_Y)'$$

$$\text{i.e., in Figure 3.4, } P_e = P_B = P_B' = 1$$

3.5C. Incomplete Specialization

- Under constant costs, both nations specialize completely in the production of the good of their CA.

3.5 The Basis for and the Gains from Trade with Increasing Costs

3.5E. The Gains from Exchange and from Specialization

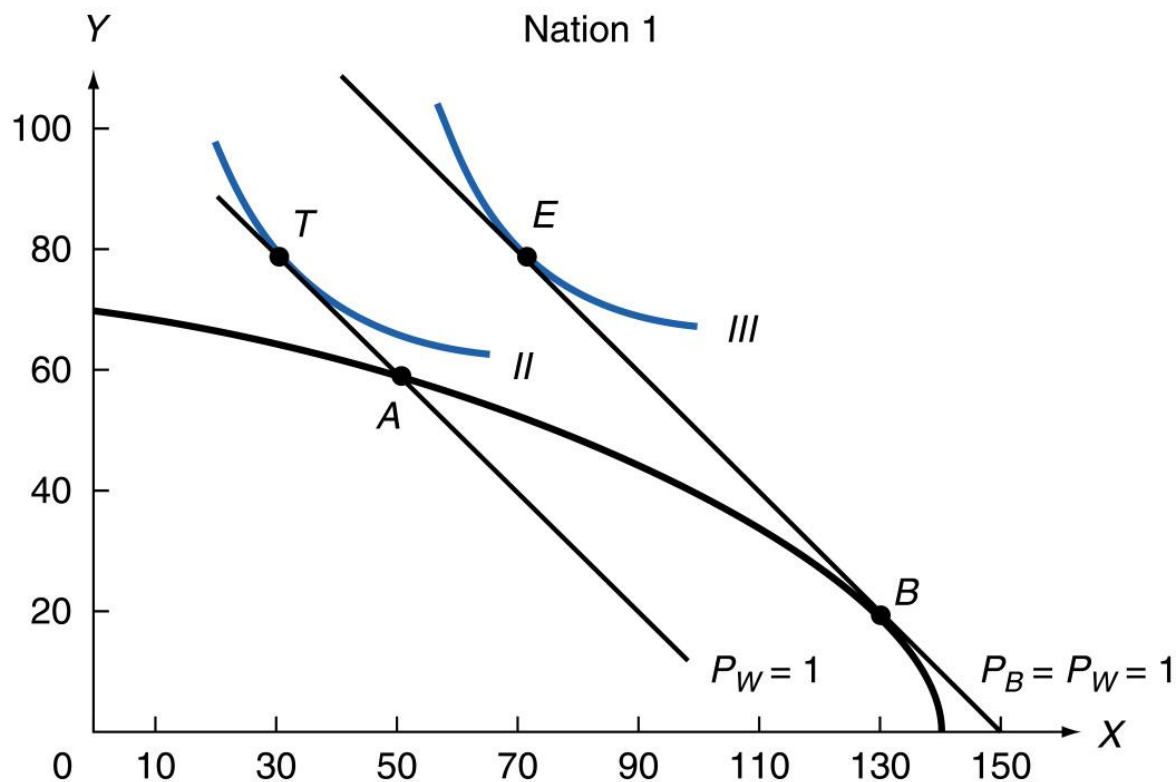


Figure 3.5. The Gains from Exchange and from Specialization

3.6 Trade Based on Differences in Tastes

- The difference in pretrade-relative commodity prices between Nation 1 and Nation 2 (i.e. the comparative advantage of a nation) is based on the difference in the production frontiers and indifference curves in the two countries.
- Thus, either the production frontiers or indifference curves can affect the pretrade-relative commodity prices (i.e. the comparative advantage of a nation).

3.6 Trade Based on Differences in Tastes

3.6A. Illustration of Trade Based on Differences in Tastes

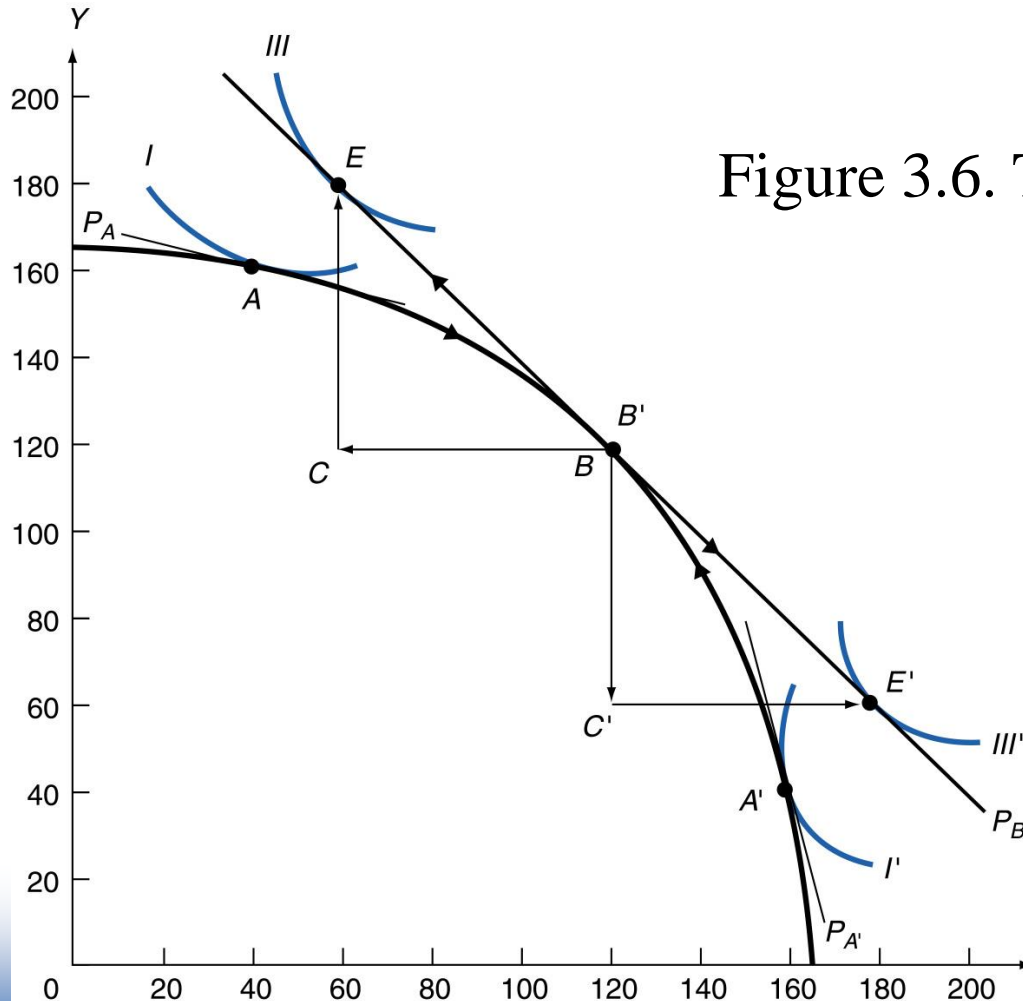
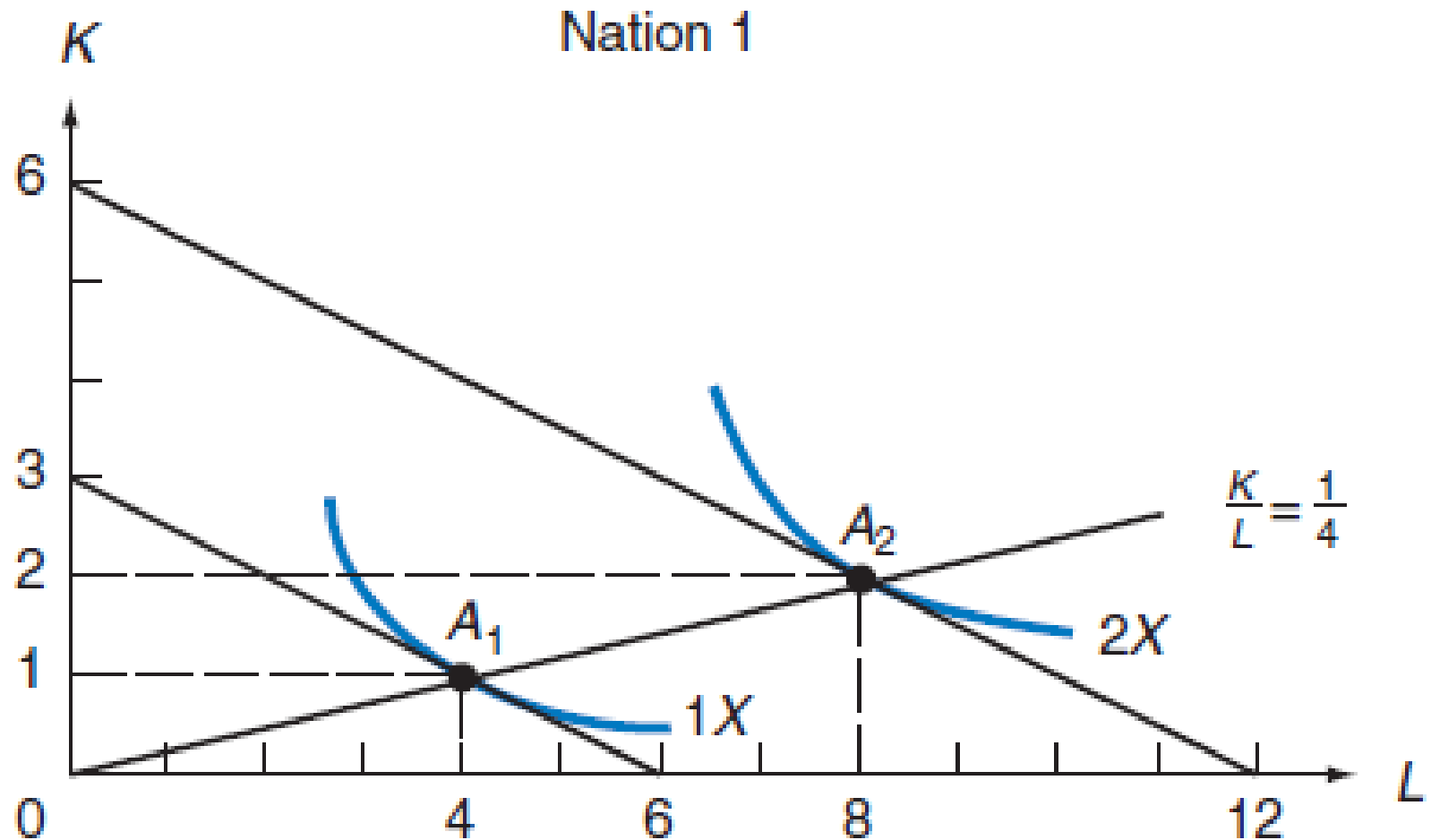


Figure 3.6. Trade Based on Differences in Tastes

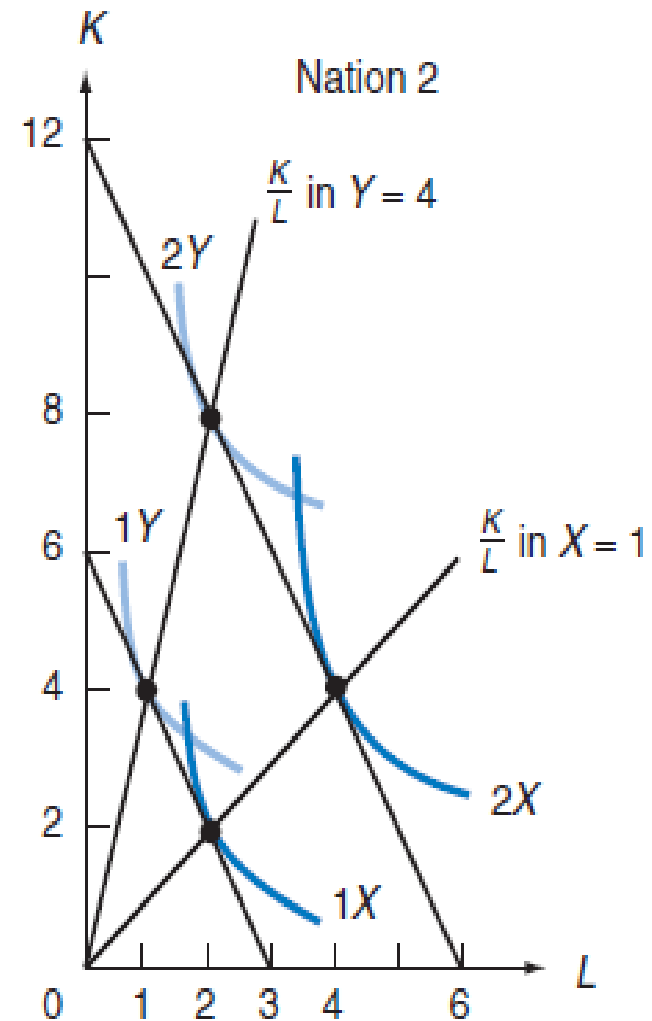
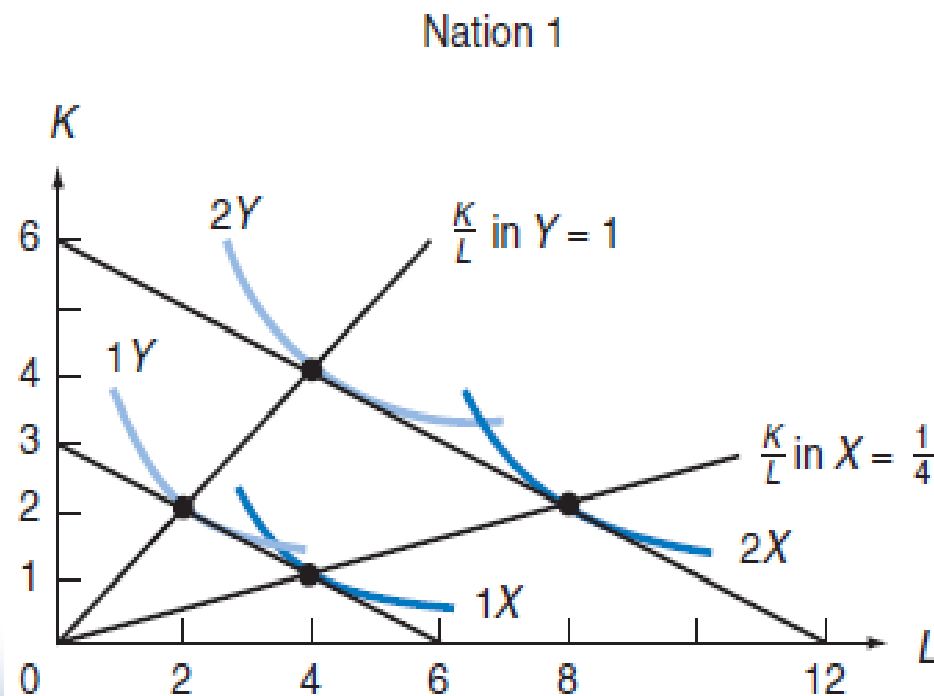
THANK YOU



A3.1: Production Functions, Isoquants, Isocosts, and Equilibrium



A3.2 Production Theory with Two Nations, Two Commodities, and Two Factors



A3.3 Derivation of the Edgeworth Box Diagram and Production Frontiers

