Chapter 2
The Gains from Trade

■ Chapter Organization

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■ Chapter Summary

This chapter outlines the exchange model of international trade. This simple model of trade abstracts from concerns about technologies, skills and factor endowments to focus on a basic motivation of trade: differing endowments of final goods. Despite its simple structure, the model highlights several concepts common to all trade models such as the gains from trade, the effects of trade upon goods' prices, and the notion of balanced trade. The chapter concludes with an introduction to some of the arguments against free trade, which later chapters deal with in greater detail.

Section 2.1 involves a discussion of indifference curves and budget constraints. Although this is a review for most students, it generally merits covering since it plays a central role in much of the analysis in the first half of the text.

Section 2.2 introduces the transformation curve (production-possibilities schedule). Similar to section 2.1, this should be a review for most students, but deserves to be covered since it critical in understanding the material covered in the first half of the text. The production possibilities schedule introduces the ideas of attainable production, efficient production and increasing opportunity costs. Appendix A supplements some of this material as it concerns the shape of the production possibilities schedule.

Section 2.3 examines the gains resulting from trade. Figures 2.5 and 2.6 illustrate the gains from trade for a country. If relative prices differ in autarky, there will be mutual gains from trade at a price intermediate to the autarky price ratios. The autarky price ratios reflect consumer's MRS at their endowments. Therefore, any difference in tastes or endowments will lead to autarky price differences. The latter part of this section discusses how the gains from trade can be assessed when the transformation curve is bowed out and an international trading equilibrium is attained that coaxes each country to produce more of the good which has become higher priced. The concepts of comparative advantage and comparative costs are introduced a basis for mutually beneficial trade. The discussion of differences in production possibilities provides a natural introduction to trade based upon technology differences (chapter 4) and differences in resource endowments (chapter 5).

Section 2.4 provides an introduction to some of the disagreements over free trade. Students should be familiar with many of the arguments for protectionism as a result of the recent debate over NAFTA and angry protests at meetings of the World Trade Organization. Among the issues addressed here is the consideration that the previous analysis of the gains from trade applies to countries and not individuals. Therefore, at the individual level there will be both winners and losers from a move towards free trade, whereas at the aggregate level, the country as a whole must benefit. This section also serves as an introduction to trade policy, the subject of Part III of the text.

Appendix A expands upon many of the ideas introduced in Section 2.3 related to the gains from trade. The basic idea of this section is that trade equates marginal rates of substitution across countries, and therefore free trade is efficient. The box diagram in figure 2.A.1 provides an analysis of the mutual gains from trade in a framework different from that in Section 2.1. Note that deviations from free trade will lead to gains for one country at the expense of the other. This leads naturally into a discussion concerning the debate over free trade, the subject of Section 2.4.

Appendix B abstracts from production to illustrate the substitution and income effects of a change in world prices. Note that the size of the income effect depends upon both the size of the price change and the volume of trade.

Appendix C provides an offer curve analysis of many of the issues discussed in the chapter. This material may be particularly useful in reinforcing the discussion related to changes in the terms-of-trade and the case of inelastic import demand discussed in Section 3.5.

The supplement to chapter 2 (at the back of the text) outlines the equations of exchange equilibrium. This is important material since it introduces much of the notation used in later supplements and develops the equivalence between balanced trade and market clearing.

Key concepts introduced in this chapter include:
- the production possibilities schedule
- comparative advantage
- the mutual gains from trade
- differences in endowments and tastes as a basis for trade
- the determination of world prices under free trade
- the trade triangle and balanced trade
- gains from trade as a result of changes in production patterns

■ Suggested Answers to Textbook Questions

1. (a) The endowment in Figure 2.5 shifts towards the vertical axis by 10 percent. The country can then trade along a line parallel to CED (as the world prices have not changed). This should lead to the result that both imports and exports decline (i.e., the trade triangle will be smaller).

    (b) An analysis similar to the one above should reveal that both imports and exports decrease.

2. This situation will not lead to a lack of trade. It will be analogous to the endowment being at point G in Figure 2.5.

3. (a) tastes similar across countries, transformation schedules differ
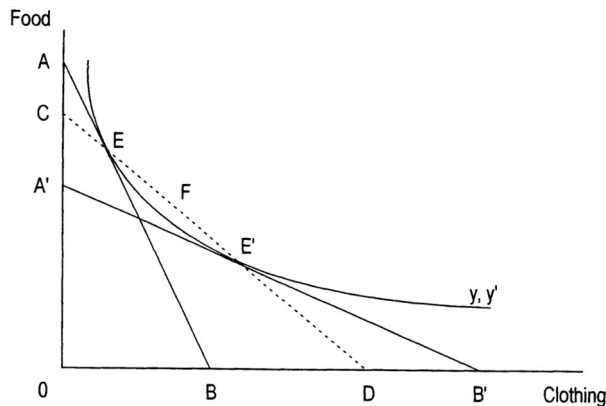
    E represents the home endowment, and E′ the foreign endowment. The countries share common tastes, represented by the common indifference curve, labeled y′ y′. The autarky price ratios for the home and foreign country are given by AEB and A′E′B′ respectively. The countries can trade at world prices represented by the dotted line CEFE′D. Along this line in the region EFE′ both countries will gain from trade. The home country will be importing clothing and exporting food.

    (b) transformation curves are the same across countries, tastes differ

4. (a) Consider that consumption of a given good is equal to production minus exports. In autarky, exports are zero, and thus production equals consumption. If a good is exported with trade and production cannot change, then there must be less available for domestic consumption.

    (b) Consumption is production minus exports. If production rises more than exports as a result of trade, then consumption must rise also.

    (c) see figure 2.7
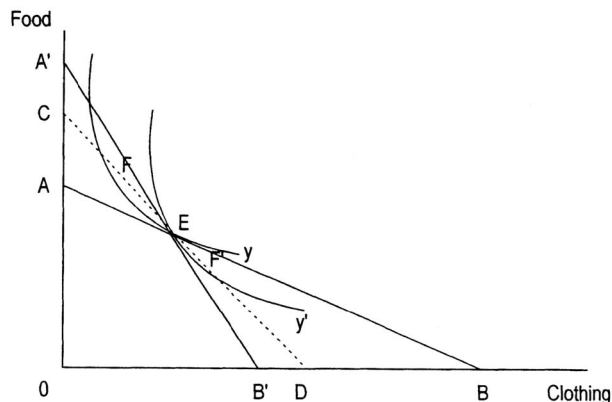
The common endowment is given by E. Countries differ in their preferences as represented by the different indifference curves, y and y′. The autarky price ratios are given by AEB for the home country and A′E′B′ for the foreign. At an intermediate price ratio such as CED, home can gain by exporting clothing and importing food (to reach a point such as F), whereas the foreign country does the opposite (to obtain consumption at a point such as F′).

5.
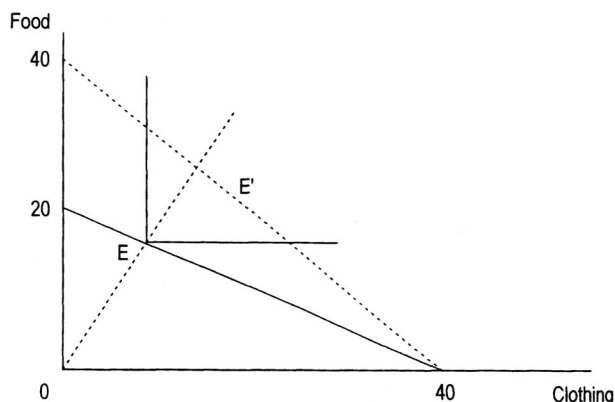
(a) The production possibilities schedule for this economy is the downward sloping straight line of 20 and horizontal intercept of 40. The indifference curves are right-angled with the corners lying along the dotted line through the origin. In autarky, consumers will then consume at point E. This can be found by finding the intersection of the PPF, represented by $Q_f = 20 - (1/2)Q_c$ and the ray along which the corners of the indifference curves lie, represented by $Q_f = 2Q_c$ This should yield $Q_f = 16$ and $Q_c = 8$.

(b) In autarky, the relative price of food will be given by the inverse of the slope of the PPF, which will be equal to 2.

(c) If the price of clothing doubles with trade, the relative price of food falls to 1. This will cause the economy to shift all production into clothing, and they will then trade along the dotted line that intersects both the horizontal and vertical axis at a value of 40 (which represents a relative price of food equal to 1). They will trade along this line until they reach the line where $Q_f = 2Q_c$ This point, E′, corresponds to $Q_f = 80/3$ and $Q_c = 40/3$.

(d) The country is obviously better off with trade in that they are consuming more of both goods. However, they are not consuming twice as much of both goods.

6.
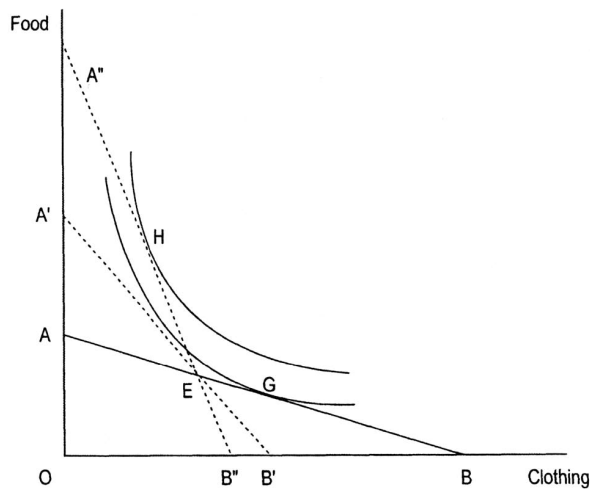
In this diagram the autarky endowment is E with autarky prices for this individual of AEB. The individual is then selling food to their fellow citizens and is consuming at G in autarky. After trade, if the price of food falls to A′EB′ this individual will be worse off. However, if the price of food falls a great deal to A″EB″, the individual can import food and export clothing from their fellow citizens to reach consumption at a point such as H. They will then obtain greater utility than at G.

■ Multiple Choice Questions

Questions 1 through 5 concern Figure 2.5
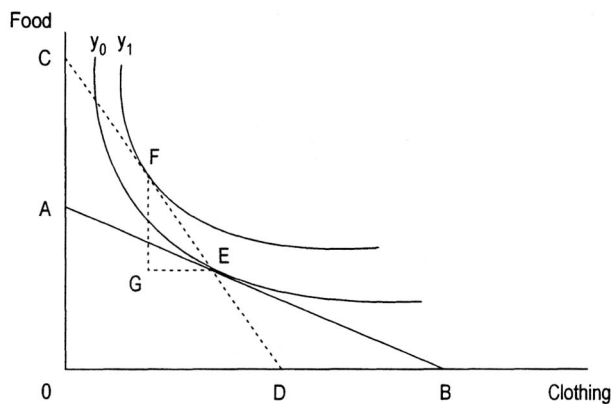
The country has endowment at E. It faces autarky prices AEB. It can trade at relative prices represented by CED. After trade, the country has consumption represented by point F.

1.   Exports for this country are represented by

   (a) FG.
   (b) EG.
   (c) OD.
   (d) FE.
   (e) OA.

   Answer: (b)

2.   Imports for this country are represented by

(a) FG.
(b) EG.
(c) OD.
(d) FE.
(e) OA.

Answer: (a)

3.   If the world price of food fell, the country would generally

(a) export food.
(b) import less food.
(c) export more clothing.
(d) export less clothing.
(e) not change imports or exports.

Answer: (d)

4.   With trade, the market value of exports is

(a) greater than the value of imports.
(b) less than the value of imports.
(c) equal to zero.
(d) equal to the value of imports.
(e) equal to the value of the endowment.

Answer: (d)

5.   If this country were to lose 10 percent of its clothing endowment it would

(a) export more clothing, import less food.
(b) export more clothing, import more food.
(c) export less clothing, import more food.
(d) not change imports or exports.
(e) export less clothing, import less food.

Answer: (e)

Questions 6–10 concern a situation where 2 countries have identical preferences, but country A has an endowment with more food and less clothing than B.

6.   Under autarky, the relative price of food will be

(a) higher in B.
(b) higher in A.
(c) the same in both countries.
(d) 1.
(e) Not enough information is given.

Answer: (a)

7. Under autarky, country B

    (a) consumes more food than A.
    (b) consumes the same amount of food as A.
    (c) consumes no food.
    (d) consumes less food than A.
    (e) consumes the same amount of food as country A does clothing.

    Answer: (d)

8. With free trade between countries with equal incomes,

    (a) country B consumes no food.
    (b) country A consumes no clothing.
    (c) the value of A's clothing imports will be greater than B's food imports.
    (d) both consume exactly the same.
    (e) relative prices differ across countries.

    Answer: (d)

9. With free trade, country A will

    (a) import clothing.
    (b) produce no clothing.
    (c) consume no clothing.
    (d) export clothing.
    (e) consume less clothing than is in its endowment.

    Answer: (a)

10. If country B's clothing endowment increases,

    (a) world demand for clothing falls.
    (b) A's autarky relative price of food rises.
    (c) B's autarky relative price of clothing increases.
    (d) world prices are the same in free-trade equilibrium.
    (e) the world price of clothing in free-trade equilibrium falls.

    Answer: (e)

11. In free trade equilibrium,

    (a) domestic demand equals domestic supply for all goods in all countries.
    (b) world demand equals world supply for all goods.
    (c) domestic demand exceeds domestic supply for goods that are exported.
    (d) world demand exceeds world supply for goods that are imported.
    (e) world demand equals world supply only for goods not traded.

    Answer: (b)

12. The slope (in absolute value) of the budget line represents

    (a) the relative price of one good in terms of another good.
    (b) how much of one good a consumer must give up to get one unit of the other good.
    (c) the equilibrium proportion in which the two goods are consumed.
    (d) all of the above.
    (e) nothing.

    Answer: (d)

13. Two countries produce different varieties of the same two goods, food and clothing. If there is zero net trade in clothing, there must also be

    (a) zero net trade in food.
    (b) zero gross trade in food.
    (c) high gross trade in food.
    (d) high gross trade in clothing.
    (e) zero gross trade in clothing.

    Answer: (a)

Questions 14–15 concern the following scenario:

There are two commodities, food and clothing. In autarky an individual is a net seller of food. His country opens up to trade and the price of food drops. He remains a net seller of food.

14. He receives no compensation. How does opening up to trade change welfare in the country?

    (a) He and his country (net) are worse off than before opening up to trade.
    (b) He is worse off, but his country is better off than before opening up to trade.
    (c) Everyone in the country is better off than before opening up to trade.
    (d) He is better off, but his country is worse off than before opening up to trade.
    (e) We cannot tell who benefits and who is hurt by opening up to trade.

    Answer: (b)

15. All net sellers of food receive enough compensation to keep them at the same level of welfare. How does opening up to trade change welfare in the country overall?

    (a) The country is better off (net) and net sellers of clothing are better off than before opening up to trade.
    (b) The country is worse and net sellers of clothing are worse off than before opening up to trade.
    (c) The country is better off (net) and net sellers of clothing are worse off than before opening up to trade.
    (d) The country is worse off (net) and net sellers of clothing are better off than before opening up to trade.
    (e) The country cannot afford to compensate all of the net food sellers.

    Answer: (a)

16. In a world with many countries and only food and clothing, if countries all have the same endowments but different tastes,

    (a) there will be no trade as endowments are all the same.
    (b) the country with the lowest autarky relative price for food will import food in free trade equilibrium.
    (c) the country with the highest autarky relative price for food will import food in free trade equilibrium.
    (d) the country with the highest autarky relative price for clothing will export clothing.
    (e) the pattern of trade cannot be determined as there are many countries.

    Answer: (c)

17. If a country experiences an improvement in technology,

    (a) indifference curves shift outwards.
    (b) indifference curves shift inwards.
    (c) the production possibilities frontier shifts outwards.
    (d) the production possibilities frontier becomes bowed inwards.
    (e) the production possibilities frontier shifts inwards.

    Answer: (c)

18. Efficient consumption in autarky

    (a) must be at a point below the production possibilities frontier.
    (b) requires tangency between indifference curves and the production possibilities frontier.
    (c) requires that a country produce only one good.
    (d) requires indifference curves and the production possibilities frontier to cross.
    (e) is not affected by changes in tastes.

    Answer: (b)

19. In autarky, a preference shift towards food

    (a) will result in a country producing less food and more clothing.
    (b) will result in a country producing more food and more clothing.
    (c) will result in a country producing more food and less clothing.
    (d) will result in a country producing less food and less clothing.
    (e) does not affect the amount of food or clothing produced.

    Answer: (c)

20. If the relative world price of food is lower than the autarky price,

    (a) trade will lead to no change in food production.
    (b) trade will lead to increased food production.
    (c) trade will lead to decreased food production.
    (d) there will be no gains from trade.
    (e) trade will lead to the country exporting food.

    Answer: (c)

21. A sharply bowed-out production possibilities frontier embodies

    (a) the law of decreasing costs.
    (b) the fact that the consumers marginal utility of consumption decreases as they consume more of a good.
    (c) the fact that the costs of obtaining an extra unit of a good increase as more of that good is produced.
    (d) the fact that the country in question is in autarky.
    (e) the variety of goods a country can produce

    Answer: (c)

22. A country that has a comparative advantage in clothing production

    (a) has a production possibilities frontier that lies outside the PPF of all other countries.
    (b) must have better technology for making clothing than all other countries.
    (c) will import clothing with trade.
    (d) has the lowest relative autarky price for clothing.
    (e) may have poorer clothing producing technology than some other countries.

    Answer: (e)

23. In autarky, a country produces a number of varieties of an aggregate good. Trade will

    (a) increase the number of varieties produced.
    (b) increase production of all varieties, but keep the same number of varieties.
    (c) decrease production of all varieties, but keep the same number of varieties.
    (d) decrease the number of varieties produced.
    (e) decrease production of some varieties, increase production of others, but keep the same number of varieties.

    Answer: (d)

24. All of the following are sources of gains from trade except

    (a) increased product variety in consumption.
    (b) production of goods in which a country has a comparative advantage.
    (c) concentration of production in fewer varieties of goods.
    (d) allowing a country to produce beyond its PPF.
    (e) learning about new technology from abroad.

    Answer: (d)