Solutions to Study Guide Questions

Chapter 1: Solutions to Questions

1. a) In general those good and services that are exported are those that can be sold at a price that is lower than that of importing nations by at least the amount of transportation costs. If transportation costs are greater than price differences between countries then trade cannot take place. Goods with low transportation costs relative to price differences are consumer durables, steel, oil, textiles and clothing. Services with low transportation costs are most financial services and online education. Examples of goods with high transportation costs relative to price differences include houses, haircuts, and land and so are non-tradeables.
b) Countries both export and import automobiles, beer, cheese, children's toys. The simplest explanation for exporting and importing the same type of good, but differentiated in some way, e.g. parmesan cheese and brie, is variety. If Italy and France both export cheese to each other, then both nations have a wider variety of cheese.

2. a) Although self-sufficiency might mean immunity from disturbances emanating from abroad, it also means a lower average standard of living. Inexpensive foreign goods that could be imported would have to be produced by higher-cost domestic producers. Also, goods that could be produced more cheaply at large quantities will be expensive if each nation is self sufficient and so each producing a small quantity of the good.
b) If you were self-sufficient, then almost all of the goods that you now have would be unavailable in your lifetime. Consider the cost of providing your own air travel rather than buying it from commercial airlines or the cost of providing your own autos rather than buying them from auto manufacturers, etc.

3. a) The subject of resistance to trade is one of the subjects considered in the text, but even without extensive analysis, one can identify special-interest groups that would oppose trade. If you are a high-cost domestic producer of goods, then you will not welcome imports from more efficient, low-cost foreign producers. Inexpensive imports will compete away business from higher-cost domestic industries, resulting in lower profits, plant closings, and downsizing. Similarly, if you are a domestic worker employed in a high-cost production industry that competes with imports, then you will oppose less-expensive imports from abroad. Environmentalists may oppose trade if it means expansion of domestic export industries that pollute or increased imports from nations with lax environmental policies. Similarly, imports from nations using child labor will be opposed by socially conscious domestic organizations. The anti-globalization movement blames expanded trade and other effects of increased international integration for increased unemployment, pollution, poor working conditions and poverty among certain groups.
b) Export firms and owners of resources that supply such firms would favor globalization. Increased exports would generally mean higher wages and employment for domestic workers in export sectors. Consumers, although generally not often a vocal special-interest group, will gain from increased international trade in goods and services. Imports can provide lower-priced consumer goods and add to the variety of goods produced domestically. Increased trade may also produce gains for workers in export industries as exports increase with international trade.

4. a) The value of exports plus import, T=$105b.
b) The value of exports plus imports increases from $105b to 115.5, an increase of 10%. Trade increases by the same proportion as the increase in GDP.

5. See Section 1.5 of *International Economics*.

Chapter 2: Solutions to Questions

1. a) Nation 1 has the absolute advantage in computers because a laborer can produce more in in a day Nation 1 than in Nation 2. Nation 2 has the absolute advantage in autos.

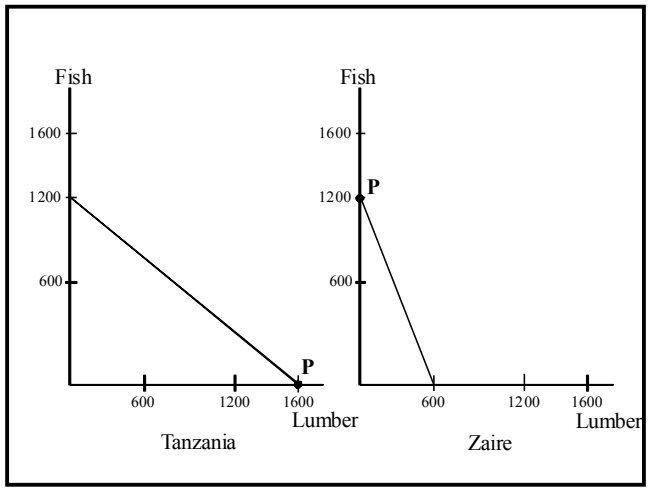
b)

Changes in Production from Reallocating One Unit of Labor

	Nation 1	Nation 2	World
Change in Production of Autos	**-2**	**+4**	**+2**
Change in Production of Computers	**+6**	**-4**	**+2**

c) No. Nation 1 can gain by exporting 4 of its new computers for 4 autos, leaving it with 2 more autos and 2 more computers, but Nation 2 will be no better off than before reallocation and trade.
d) No. If Nation 1 exports its 6 new computers for 2 autos, it will be no better off than before reallocation and trade. Nation 2, however, would gain by exporting 2 autos for 6 computers.
e) Yes. If Nation 1 exports 4 computers for 2 autos, Nation 1 will have 2 more computers than before reallocation and as many autos. If Nation 2 exports 2 autos for 4 computers, Nation 2 will have 2 more autos than before reallocation and as many computers.
f) The terms of trade determine the distribution of the gains from trade. In part c, all of the gains went to Nation 1. In part d, all of the gains went to Nation 2. In part e, both nations gained. The numbers provided suggest that if the terms of trade are in between the two terms of trade given in c and d that both nations could gain.
g) In Nation 1 the opportunity cost of 2 autos is 6 computers. This can be written as $(\Delta C/\Delta A)_1=6/2=3$. One auto costs 3 computers in Nation 1. In Nation 2 the opportunity cost of 4 autos is 4 computers. This can be written as $(\Delta C/\Delta A)_2=4/4=1$. One auto costs 1 computer in Nation 2.
h) The opportunity cost of a computer is just the inverse of the opportunity cost of an auto, so the opportunity costs for a computer in each nation is $(\Delta A/\Delta C)_1=1/3$ and $(\Delta A/\Delta C)_2= 1$.
i) Based on opportunity cost, Nation 2's opportunity cost for autos is less than Nation 1's opportunity cost for autos, so Nation 2 has the comparative advantage in autos. Nation 1 has a lower opportunity cost for computers than does Nation 2, so Nation 1 has the comparative advantage in computers. The comparative advantage in each good is the same as the absolute advantage in each good for this case. (In general if one nation has an absolute advantage in one good and another nation has an absolute advantage in the other good, then absolute advantage and comparative advantage are identical in a two-nation, two-good model.)

2. a) Tanzania has the absolute advantage in both goods because output per labor day is higher for both goods in Tanzania.
b) In order to produce 8 units of Lumber, Tanzania must switch one laborer from Fish, which will cause a loss of 6 Fish. Thus, the opportunity cost of a unit of Lumber is $(\Delta F/\Delta L)_{TANZ} = 3/4$. In Zaire, $(\Delta F/\Delta L)_{ZAIRE} = 2$.
c) Based on opportunity cost, Tanzania has the comparative advantage in Lumber and Zaire has the comparative advantage in Fish.
d) Multiplying output per labor by total labor gives the total amount of production possible for each good, which are the endpoints of the ppf, as shown in the diagram.
e) It is in the interest of the two countries for each to completely specialize in this case. If opportunity costs are constant,



then Tanzania will continue to have a comparative advantage no matter how much is produced. Tanzania should produce only Lumber (if there is demand for that much Lumber). Similarly, Zaire should produce only Fish. (If demand is not sufficient to buy all of a product produced by a nation, then that nation will produce some of the other product to satisfy demand. See Question 6 where demand and production costs are considered.)
f) See the ppf diagram used to answer part d.

3. a) i) The cost of 6 Fish is 8 units of Lumber.
ii) $(\Delta F/\Delta L)_{TANZ}=3/4$.
b) No, because that is what is possible domestically in Tanzania.
c) No, because Tanzania could give up 8 units of Lumber domestically and gain 6 Fish.
d) Yes, because they can get one more than they could get domestically by giving up 8 units of Lumber.
e) $(\Delta F/\Delta L)_{\text{Terms of Trade}} > (\Delta F/\Delta L)_{TANZ}$
f) $(\Delta F/\Delta L)_{ZAIRE} = 2/1$.
g) Zaire will produce Fish. Domestically Zaire could give up 2 Fish for 1 Lumber, so more than 1 Lumber will have to be available through trade to make trade worthwhile. For $\Delta F=2$, ΔL must be greater than 1, so

$$(\Delta F/\Delta L)_{\text{Terms of Trade}} < (\Delta F/\Delta L)_{ZAIRE}.$$

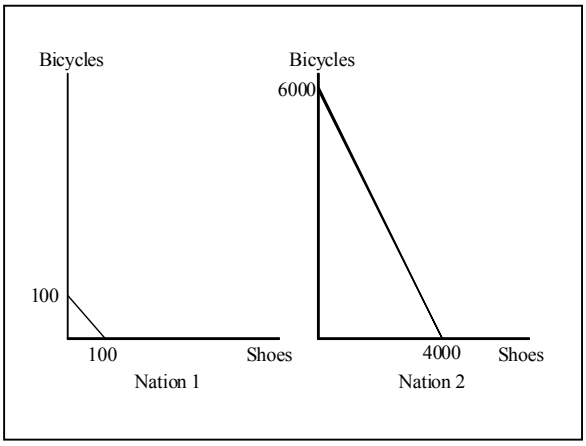
h) From e and g, the terms of trade must lie in between the opportunity costs of each country in order for both countries to gain from trade.

4. a) **Price of Wine and Cheese in France and the U.S.**

	France	U.S.
Price of Wine (in euros)	**8**	**10**
Price of Cheese (in euros)	**2**	**4**

b) Yes, France's productivity is lower in both goods, but with the given wage rates, France's prices are lower in both goods. (With a one-to-one exchange rate, the above prices are the same when measured in Euros or measured in dollars.)
c) Residents of both France and the U.S. will find Wine and Cheese cheaper in France. The high demand for France's Wine and Cheese will increase the demand for labor in France and decrease the demand for labor in the U.S. As a consequence, wages will increase in France relative to the U.S., so prices will increase in France relative to the U.S. The high demand for both goods in France will occur until the U.S. becomes competitive in at least one good, which will be Wine, the good in which the U.S. has the comparative advantage. (If prices increase in France by, say, 50%, then France will still hold an advantage in Cheese, but U.S. would now hold the advantage in Wine.)
d) With prices and wages held constant, the high demand for French Wine and Cheese will mean a high demand for the euro, which will cause an appreciation of the euro. If the euro becomes more expensive, then the dollars necessary to buy Wine and Cheese in France will increase relative to the U.S. The euro will appreciate until the U.S. becomes competitive in at least one good, which as in part c will be in Wine.
e) The fallacy does not recognize that wages, prices, and exchange rates will adjust until each nation will be competitive in the good in which it has the comparative advantage.

5. a) See diagram (not drawn to scale.)
b) Although Nation 2 has more than twice as many laborers as Nation 1, they produce more than twice as many of both goods, so Nation 2 has a higher standard of living.



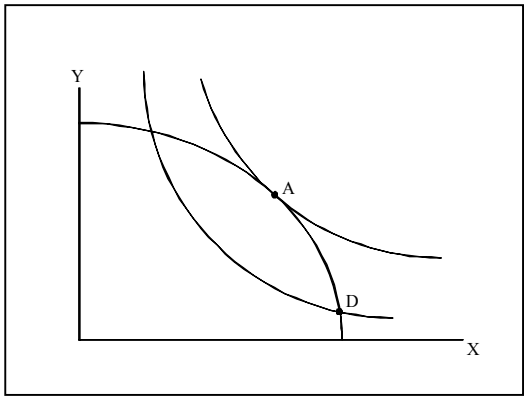
c) The opportunity cost of Shoes in Nation 1 is 1. The opportunity cost of Shoes in Nation 2 is 3/2. Nation 1 has a comparative advantage in Shoes. The opportunity cost of Bicycles is just the inverse of the opportunity cost of Shoes.
d) Yes. The opportunity costs of the goods differ between the two nations, so mutually beneficial trade can occur.
e) No. If a laborer in Nation 2 can produce 30 units of Shoes per day or 30 Bicycles per day, then the opportunity costs for the two goods would be identical, and there would be no possibility of mutually beneficial trade based on comparative advantage.

6. a) $(\Delta Y/\Delta X)_{Nation1}=1/2 < (\Delta Y/\Delta X)_{Nation2}=3/1$, so Nation 1 has the comparative advantage in good X.
b) Linear ppfs indicate that opportunity cost does not change as production changes.
c) Q_1 of good X becomes available at a price of X (relative to Y) of ½. Nation 1 can produce good X at a cost of ½, but Nation 2 can only do so at a price of 3, so at a price of ½, Nation 1 will produce up to 200 units. $Q_1=200$. More of X is available only if the price increases to 3/1, at which Nation 2 can now produce X. Nation 2 can produce another 50 units of X, so $Q_2=250$, made up of 200 units from Nation 1 and 50 units from Nation 2.
d) At D_a, Nation 1 produces 120 units of good X and 40 units of good Y (verify the point on the ppf for Nation 1). Nation 2 produces no units of good X and 150 units of good Y.
e) For D_b, the quantity demanded for good X is Q_1 and the equilibrium price is between ½ and 3, so Nation 1 will satisfy the demand for Q_1 and produce 200 units of good X and no units of good Y. Nation 2 will produce no units of good X and 150 units of good Y.
f) For D_c, demand is beyond what both nations together can produce of good X and the price is above 3, so Nation 1 produces 200 units of good X and Nation 2 produces 50 units of good X. Neither nation produces good Y.

7. a) Yes, Figure 2.4 shows for the time period considered that an increase in output per U.S. worker relative to output per U.K. worker is associated with an increase in U.S. export performance relative to U.K. export performance.
b) Training, education, and the tools with which labor has to work affect the productivity of workers. The importance of complementary resources is introduced systematically in Chapter 5. In addition to resources, the state of society is important in determining productivity. A politically unstable and/or violent society is not conducive to the creation and application of skills and tools.

Chapter 3: Solutions to Questions

1. a) At point D in the figure the $MRT_{Y/X}>MRS_{Y/x}$ because the slope of the ppf (in absolute value) exceeds the slope of the indifference curve (in absolute value).
b) From the diagram, moving up the ppf from point D to greater production of Y and less production of X will move the economy toward the optimum—point A.
c) In moving from point D to point A the ppf gets flatter, so the $MRT_{Y/X}$ decreases, and the indifference curve gets steeper, so the $MRS_{Y/X}$ gets larger. At point A, $MRT_{Y/X} = MRS_{y/X}$.

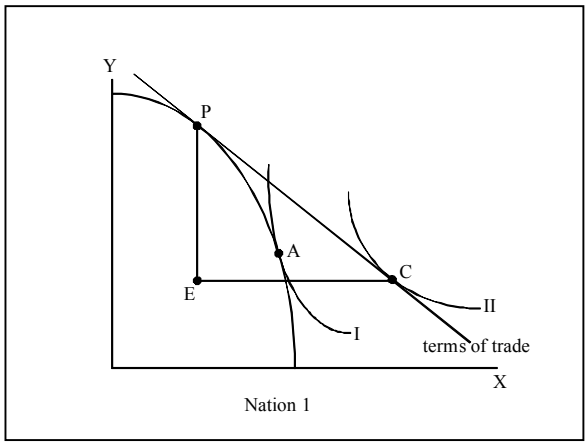


2. a) The steepness of the tangent at point A for Nation 1 exceeds the steepness of the tangent at point A' for nation 2, so $(P_X/P_Y)_1>(P_X/P_Y)_2$.
b) Both will gain if the terms of trade lie in between the domestic price ratios, or

$(P_X/P_Y)_1 > (P_X/P_Y)_{terms\ of\ trade} > (P_X/P_Y)_2$.

c) The price of X (relative to the price of Y) will be lower internationally than domestically (and so the price of Y relatively higher internationally than domestically), so Nation 1 will buy X from abroad and specialize in and export good Y.

d) The terms of trade price line is flatter than Nation 1's price line at autarky (the tangency at point A), as shown in the accompanying diagram. After trade, production occurs at point P and consumption occurs at point C. To get from producing at P to consuming at C, Nation 1 will export the quantity of Y equal to distance PE and import the quantity of X equal to distance EC.

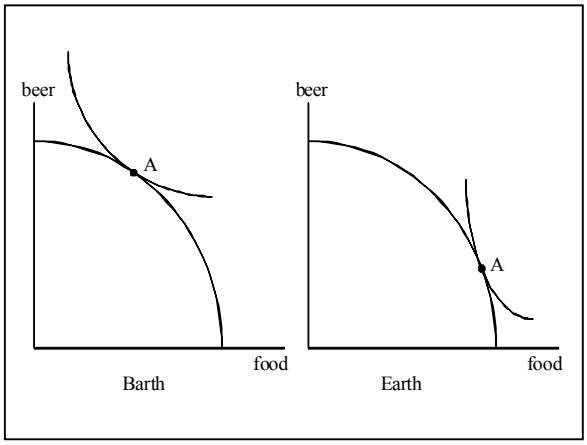


e) The gains from trade is represented by the increase in community welfare from the highest indifference curve attainable at autarky (indifference curve I) to the highest attainable along the terms of trade line (indifference curve II). Thus, the gains from trade are II-I.

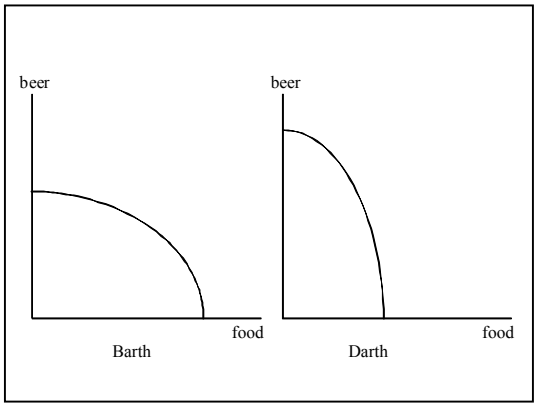
3. a) The ppfs will be identical as shown in the accompanying diagram.

b) The autarky points in the diagram indicate that Barthlings consume more beer than Earthlings and Earthlings consume more food than Barthlings.

c) Yes, beer will be cheaper on Earth and food will be cheaper on Barth. Trade will take place only if the price differences are greater than the costs of transporting beer and food between Earth and Barth.

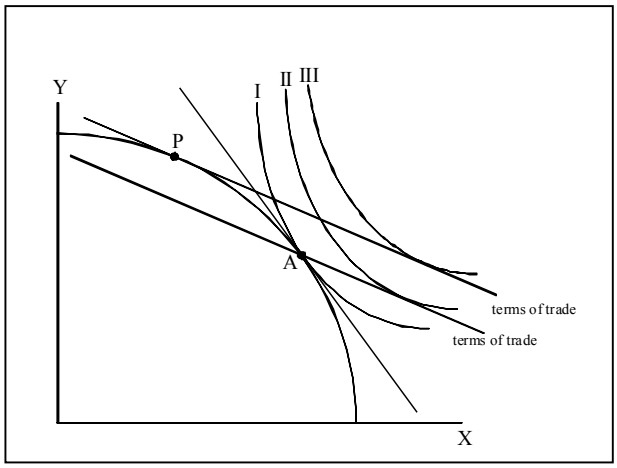


4. a)



b) Yes, if preferences are identical, then beer will be cheaper on Darth relative to Earth, and food will be cheaper on Earth relative to Darth. With a difference in relative prices, trade could take place.

5. a) China: Office and Telecom Equipment
b) Japan: Automotive products
c) Korea: Office and Telecom Equipment
d) Europe: Chemicals
e) United States: Chemicals



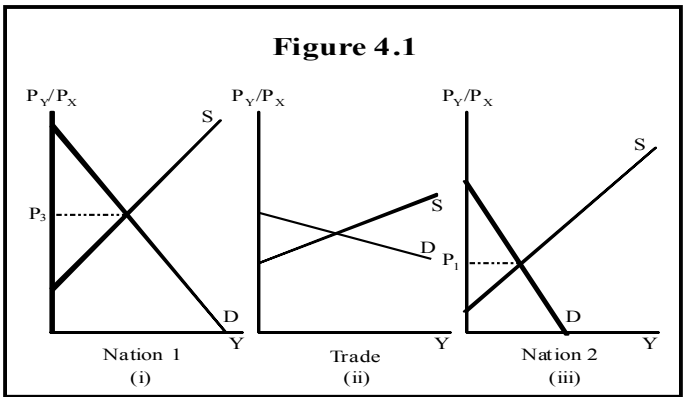
6. a) The gain is a gain from exchange at different relative prices. This is shown in the accompanying figure. Note that indifference curve II is attainable, despite production remaining at point A, the pre-trade equilibrium point. [But, this is not the best the nation could do – see part b)].
b) If the level of production is chosen such that there is a tangency between the terms of trade line and the ppf, then community indifference curve III is possible.
c) Incomplete specialization is more likely in the standard model in this chapter, which rests on increasing costs. As more is produced, the opportunity cost of production increases. Increased production for export narrows and then eliminates the price advantage, which is quite likely to occur before complete specialization occurs. (Complete specialization occurs when a nation produces only one good.)

7. a) It is assumed that changes in production occur *along* the ppf, an implicit assumption that full employment is restored. The basic free-trade model is a long-run model in which it is assumed that those laborers replaced by imports have time to relocate and find jobs in the expanding export industry.
b) In the short run, production may occur below the ppf due to unemployment of workers and other resources displaced by imports. In the long run, labor and other resources can relocate, re-train and find jobs in the expanding export industry.

Chapter 4: Solutions to Questions

1. a) Nation 1 has the higher relative price for Good Y (P_3>P_1), so Nation 1 will import (demand) goods from Nation 2, and Nation 2 will export (supply) goods to Nation 1. In Nation 1, the demand for imports is the excess domestic demand starting at prices of P_3 and below. At P_3, excess domestic demand is zero, so the demand for imports is zero. At prices below P_3 there is excess demand because the domestic quantity demanded is larger and the domestic quantity supplied is smaller. As the price gets lower the excess quantity demanded increases, so the quantity demanded for imports is larger at lower prices. In Nation 2, the quantity supplied of exports increases above P_1 as the domestic quantity supplied increases and the domestic quantity demanded decreases.

Figure 4.1



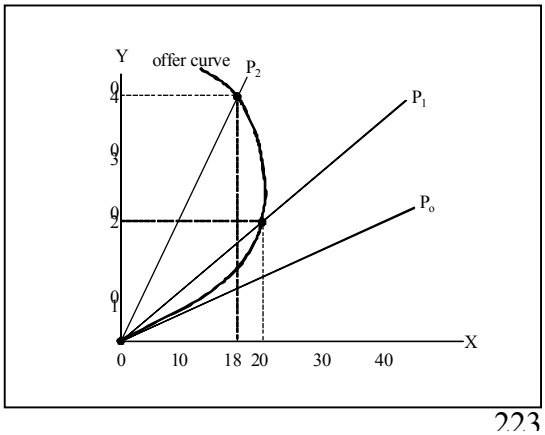
b) Yes. With a downward-sloping demand curve for imports curve beginning at P_3, and an upward-sloping supply of exports curve beginning at P_1, the equilibrium international price ratio must lie in between P_3 and P_1.
c) Nation 2 has the comparative advantage in good Y because it has a lower relative domestic price before trade.
d) Flatter, because as price falls, the quantity demanded of imports increases more than domestic quantity demanded increases because the quantity demanded of imports reflects an increasing quantity demanded at lower prices *and* a decreased domestic quantity supplied at lower prices. Import demand tends to be price sensitive.
e) At P_3, there is no import demand from Nation 1, but there is an export supply from Nation 2, so there is an excess supply of goods on the international market. This will force prices down to a level between P_1 and P_3.

2. a) If the demand for tomatoes in tomato-exporting Italy increases, then the supply of exports to the international market decreases (shifts to the left). This will cause the international equilibrium relative price to increase and the equilibrium quantity traded to decrease.
b) If the demand for tomatoes in tomato-importing Greece increases, then the demand for imports will increase, causing an increase in the equilibrium international price of tomatoes and an increase in the equilibrium quantity traded.
c) Crop failure in exporting Italy will shift the domestic supply curve of Italy to the left, also shifting the supply of exports to the left. The result is a higher equilibrium international price and a lower equilibrium quantity traded.
d) Crop failure in importing Greece will shift the domestic supply curve in Greece to the left, shifting the demand for imports to the right. The equilibrium international price will increase and the equilibrium quantity traded will increase.
e) If the domestic supply curves of tomatoes are unaffected, then less domestic demand in exporting Italy will cause the supply of exports to increase, and less domestic demand in Greece will cause the demand for imports to decrease. It's not clear what will happen to the equilibrium quantity traded, but both shifts will decrease the equilibrium international price of tomatoes.
f) A tax on production of tomatoes in Italy will shift the domestic supply curve to the left, which will decrease the supply of exports, causing the equilibrium price to increase and the equilibrium quantity traded to fall.
g) A decrease in the supply of tomatoes in Greece, the importing country, will increase the demand for imports. A decrease in the supply of tomatoes of Italy, the exporting country, will decrease the supply of exports. The equilibrium price will definitely increase, but the change in the equilibrium quantity traded is indeterminate.

3. a) It's best to start at the pre-trade equilibrium. According to the graph, this occurs at P_0, where domestic production and demand are identical. Thus at P_0, there are no goods offered in trade, so mark a point at the origin along P_0 in the accompanying diagram.

If the price moves to P_1, exports of X of bc=20 are offered for imports of Y of ab=20. In the diagram mark a point along P_1 at X=20,Y=20.

At P_2 exports of X of ef=18 are offered for imports of Y of de=40, so mark a point along P_2 in the diagram at X=18, Y=40. This traces out the offer curve. Notice the offer curve cannot intersect P_0, the pre-trade domestic equilibrium price. If it did, it would suggest a desire to export and import at P_0 which couldn't happen if the international relative price is equal to the domestic relative price.



b) Good X is exported and Good Y is imported. This draws your attention to the general shape of

the offer curve. The outside of the bend of the offer curve is towards the axis of the good that is exported.
c) At P_1 the country exports (supplies) 20 units of X and imports (demands) 20 units of Y.
d) Yes, the indifference curve attainable at P_2 exceeds that attainable at P_1 (see Fig. 4.2). An increase in the price of the export good relative to the price of the import good—an increase in the terms of trade, given a ppf, improves a nation's welfare.

4. a) First establish that Nation 1 exports Good X and imports Good Y, while Nation 2 exports Good Y and imports Good X. (Check the "bend" of the offer curve, as in the answer to Question 3b above.) Along P_4, Nation 1's desired export of X is less than the Nation 2's desired imports of X. Thus, at P_4, there is an excess demand for Good X. Also, along P_4, the amount that Nation 2 wants to export of Y is greater than the amount that Nation 1 wants to import of Y. Thus, at P_4, there is an excess supply of Good Y.
b) An excess supply of Good Y and excess demand for Good X means that the price of Good X will increase relative to the price of Good Y.
c) An increase in the price of good X relative to the price of good Y will mean P_4 will rotate up to a line like P_5.
d) At P_5, there is equilibrium because the amount that each nation wants to export equals the amount that the other nation wants to import.

5. a) If Nation 1's tastes shift towards good X (and away from Y), then at P_1 (or any other initial price), the amount of X offered for export for a given Y will decrease. Thus, Nation 1's offer curve will shift up and to the left.
b) If there is technical advance in the production of good X, then at P_1, the amount of X offered for a given Y will increase. Nation 1's offer curve will shift down and to the right.

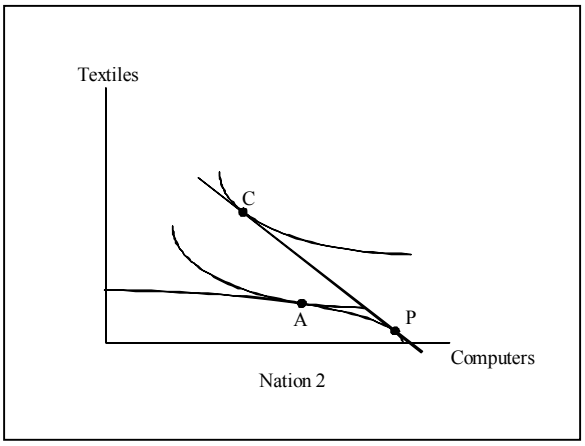
6. a) Draw Nation 1's and Nation 2's offer curves. Shifting Nation 1's offer curve up and to the left will produce a higher price line so P_X/P_Y on the world market will increase, and the amount of X exported will decrease.
b) A shift down and to the right of Nation 1's offer curve will produce a lower price line. On the world market P_X/P_Y will decrease and the amount of X exported will increase.

Chapter 5: Solutions to Questions

1. a) Textile production uses more units of capital in producing one unit of output.
b) In Textile production the capital to labor ratio is 10/10=1, and in Computer production the ratio is 8/2=4. Although textile production uses more capital, Computer production is capital intensive because it uses more capital relative to labor.
c) Textiles use more units of labor.
d) In Textile production the labor to capital ratio is 10/10=1, and in Computer production the ratio is 2/8=.25. Textile production uses more labor relative to capital, so Textile production is relatively labor intensive.

2. a) First, from Question 1, the production of Computers is relatively capital intensive and the production of Textiles is relatively labor intensive. The capital-abundant country will be more efficient at producing Computers and the labor-abundant country will be more efficient at producing Textiles. From Fig 5.4, the slope of Nations 2's ppf is lower (in absolute terms) than the slope of the Nation 1's ppf. (A lower slope means a lower opportunity cost of the good measured on the horizontal axis.) This means that Computers are cheaper in Nation 2. Thus, Nation 2 must be the capital–abundant country. (Alternatively, it can be seen that Nation 1 can produce more of both Textiles and Computers than can Nation 2, but its advantage is much greater in Textile production.
b) No. Abundance is a relative term. The capital-abundant country is the one that has more capital *relative* to labor. In this case, Nation 1's ppf is further out than Nation 2's ppf, so Nation 1

likely has more absolute capital and labor than Nation 2, although Nation 2 is relatively capital abundant.



3. a) From previous chapters, we know that the terms of trade will lie in between the two countries' domestic pre-trade price ratio. In this case, the terms of trade will be flatter than Nation 1's ppf and steeper than Nation 2's ppf. This is shown in the accompanying figure for Nation 2. A is the pre-trade point, P is the production point after trade, and C is the consumption point after trade. Nation 2 will specialize in the production of Computers, exporting them in exchange for imports of Textiles. (Draw the distance for the quantity exported and for the quantity imported.)
b) Before trade, the economy of Nation 2 was producing at point A. After trade, the economy is producing at point P. Both points are on the ppf, indicating full employment. In the short run this is quite unlikely. Much more likely is unemployment of Textile workers who will, in time, find employment in the production of Computers. This is the source of much resistance to trade. Although there may be long-run benefits to trade, there may be short-run losses as some industries shrink and lay off workers before they are employed by the expanding industries.

4. a) Nation 2 is the capital-abundant, or labor-scarce country, so w/r will be higher in Nation 2.
b) Nation 1 has a comparative advantage in the production of Textiles. In Nation 1, trade will lead to a contraction of the capital-intensive Computer industry and an expansion of the labor-intensive Textile industry. As the Computer industry contracts, it will release more capital relative to labor than is used by the Textile industry. There will be an excess supply of capital and an excess demand for labor, which will cause w/r to increase (w increases and r falls).
c) Both will have the same w/r after trade. There is a direct relationship between the price of products and the relative wage (w/r). Because trade equalizes product prices (at the terms of trade), it will equalize w/r.
d) No. Although both countries may have the same wage rates and returns to capital (absolute factor-price equalization), there are a number of factors that will cause per capita incomes to differ. There may be more laborers in one country relative to capitalists. Suppose each laborer earns $10,000 and each capitalist earns $20,000. The country with more capitalists will have a higher average per capita income. Also, labor may work more hours in one country, and more members of the family may work in one country.

5. a) The Leontief paradox occurs when a country exports a product that uses intensively the factor in which it is *not* abundant and imports a product that uses intensively the factor in which it *is* abundant. Nation 1 is labor rich, so the H-O model would predict that Nation 1 would export Textiles. If Nation 1 exports Computers then it is an example of the Leontief Paradox.
b) If resource categories are expanded to include classifications of labor (including human capital), natural resources, and capital, then we may find that Nation 1 is exporting Computers that require a great deal of human capital. Nation 1 may not be labor-abundant, but human-capital abundant, but with only labor and capital as resource categories, human capital was classified as labor. This explanation is consistent with the spirit of the H-O model because it relies on factor abundance and factor intensity.
c) Another possible explanation is that although Nation 1 is labor abundant, the population of Nation 1 may have a very high demand for Textiles. If the demand is high enough, it will cause the price of Textiles to be high enough to eliminate its comparative advantage due to resource considerations. Although this is quite plausible, the H-O model assumes that demand patterns are very similar across countries.

6. a) England's ppf is flatter, indicating a lower opportunity cost of Corn. Because England is land rich, Corn must be the land-intensive good.
b) England. If demand is no higher for one good than another in both countries (same demand patterns), then cost will determine comparative advantage, and England has a lower opportunity cost for Corn.
c) Yes, comparative advantage is in the product that uses the abundant factor intensively.

7. a) Landlords in England will promote trade with Ireland. England has a comparative advantage in Corn. As Corn is traded its price will increase, which will increase the demand for land. As the price of land increases, landlords' incomes will increase.
b) By the factor-price equalization theorem, they will be the same.
c) English landlords will gain, English labor will lose, and total English income will increase because there are gains from trade.
d) Irish landlords will lose, Irish labor will gain, and total Irish income will increase because there are gains from trade.

Chapter 6: Solutions to Questions

1. a) Pick a point on the ppf in Figure 6.2 and by moving in either direction, you can show that successively less of one good is foregone to produce one more unit of the other good, as more and more of the other good is produced. As production increases of either good, the opportunity cost of producing the good falls, indicating economies of scale.
b) Neither. The opportunity cost of Good Y and Good X are identical, so relative prices are identical.
c) If Nation 1's community indifference curves shift so as to create a higher production of Good X, then the P_X/P_Y will fall in Nation 1 and be lower than that for Nation 2. Nation 1 will have a comparative advantage in the production of Good X and as it produces more for export its advantage will increase until Nation 1 completely specializes in the production of Good X, exporting excess domestic supply to Nation 2. Nation 2 will completely specialize in the production of Good Y, exporting excess domestic supply to Nation 1.
d) With economies of scale for two products, either nation can have the comparative advantage in either product, so comparative advantage is not "natural" or innate to any nation. If either nation begins to produce more of a product, it will, due to economies of scale, acquire a comparative advantage in that product.

2. a) If the only relevant aspect of intra-industry trade were product differentiation, then what is not explained is why nations simply do not produce all of the product variety demanded by its citizens.
b) If there are economies of scale, then a nation cannot produce a small amount of all varieties of products at a low cost because the production of each product would be relatively small. It is efficient for each nation to produce a large quantity of one or a few varieties of products in order to exploit economies of scale, and then trade the products to other nations specializing in other differentiated products.

3. a) If France and Macedonia are quite different with respect to factor endowments, then trade will be of the H-O inter-industry type trade. Trade will be based on different w/r ratios, and trade will cause both absolute and relative factor prices to move towards equality. Thus one group (labor or capital) will be hurt in each nation, producing a special-interest group opposed to trade.
b) If Macedonia and Croatia have similar endowments, then trade will more likely be intra-industry trade. It is less likely that trade will cause an excess supply or demand for labor and capital in either country because trade is not based on different factor endowments, but on economies of scale and product differentiation. Thus expanding and contracting industries do not necessarily have different amounts of labor, so there is less likelihood of excess demand or supply or capital and labor causing wage rates or rental rates to change.

For example, if Macedonia and Croatia trade a differentiated product like liqueur, then Macedonia may produce less of one type of liqueur (due to imports from Croatia) and more of another (due to exports to Croatia). Labor and capital will move from the production of one type of liqueur to another. The capital and labor requirements will probably be similar, so there will be little effect on the demand for capital and labor.

4. a) Trade between the dissimilar North and South will tend to be inter-industry trade, as predicted by the H-O theory.
b) Trade between the similar countries of the North will tend to be intra-industry trade, based on product differentiation and economies of scale.

5. $T_{autos} = 1 - |X-IM|/(X+M) = 1 - 0 = 1.$
$T_{wheat} = 1 – (252/252) = 0.$
$T_{aircraft} = 1 – (320/320) = 0.$
$T_{beer} = 1 – (90/270) = 2/3.$

6. Comparative advantage has shifted. The research and development of the technology for audio equipment and computers occurred in countries with an abundance of human capital, so these countries initially produced and exported these goods. In time the production of these goods became standardized requiring assembly, and the comparative advantage moved to countries where there is an abundance of labor capable of assembling products (skilled and semi-skilled labor).

7. a) Cheese is a highly differentiated product (many varieties), so we would expect countries to export and import different kinds of cheeses, producing a relatively high index of intra-industry trade.
b) Wheat is relatively homogeneous, its production depending upon the presence of abundant arable land. It is unlikely that a country would both export and import homogenous wheat so the index of intra-industry trade can be expected to be very low relatively.
c) Common sand, like wheat, is homogeneous, so a relatively low index of intra-industry trade is expected.
d) Children's toys are subject to endless variations. The index of intra-industry trade can be expected to be relatively high.

8. Intra-industry trade is explained primarily by product differentiation and economies of scale. When economies of scale exist, comparative advantage is acquired by that nation that expands production first. Who expands production first depends upon historical developments. For example, due to WWII the U.S. significantly increased the product of aircraft, which brought a number of cost advantages due to economies of scale.

9. Outsourcing reduces costs by locating production of inputs where it is the cheapest, often because of increasing returns to scale. Although outsourcing also transfers jobs abroad, domestic labor in the long run will move to where it is relatively more productive, producing a more optimal allocation of resources. Although there may be costs, there must be a net gain in income.

Chapter 7: Solutions to Questions

1. a) If the capital stock increases, with no change in the labor force, then the production of the capital-intensive good, Good X, will increase by more than the labor-intensive good, Good Y. This is described by diagram (ii) of Fig.7.6.
b) This is just the opposite of part a. The labor increases, but the capital stock does not, so Good Y increases more than Good X. This is shown in diagram (iv) of Fig.7.6.
c) With labor and capital increasing by the same proportion, the production of both goods will increase by the same proportion, as in diagram (i) of Fig.7.6.

d) With technical progress only in Good X, the maximum possible production of Good X will increase, but the maximum possible production of Good Y will not change, as in diagram (iii) of Fig.7.6.
e) Equal technical progress in both goods will shift out the ppf proportionately, as in diagram (i) of Fig.7.6.

2. a) If capital increases more than labor, then labor's marginal productivity will increase as each laborer will have more capital with which to work. Both total income and per-capita income will increase.
b) Although total income will increase with more factor supplies, the labor force increases more than the capital stock so each laborer has less capital. Labor's marginal productivity will fall, so each laborer will earn less. There are more laborers each earning a bit less, but on balance total income increases.
c) If there are constant returns to scale, then total income will increase by the same proportion as the increase in factor supplies. With income increasing by the same rate as the labor force, per-capita income will be the same.
d) Total income will increase with technical progress in the production of good X. The labor force has not changed so per-capita income will increase.
e) Total income will increase with technical progress in the production of goods X and Y. With an unchanged labor force, per-capita income will increase.

3. The statement is not necessarily true. If the ppf shifts outward due to an increase in the labor force and capital stock by 10%, then income per laborer has not changed. Total income is increased, but each member of the population is no better off than before. If, however, technical progress shifted out the ppf, or an increase in capital shifted the ppf out, then a country would be better off.

4. Production is trade neutral because both exports and imports production grow by 10%, the same as the increase in production. Consumption increases by 10% for both importables and exportables so consumption is trade neutral. Net, the effect of growth is trade neutral, so imports and exports increase by the same proportion as output.

5. Growth causes the production of exportables to increase (with no change in importables production), so the production effect of growth is protrade. Consumption of the importable good increases (with no change in importable production), so the consumption effect of growth is also protrade. The net effect of growth is protrade, so exports and imports increase proportionately more than output.

6. a) Balanced technical progress means that production of both goods increases by the same percentage, so the production effect is trade neutral. Trade-neutral consumption means that the additional consumption generated by the additional income increases consumption of both goods by the same proportion. Trade-neutral production and consumption is trade neutral. (This is essentially the same as Question 4.)
b) Technical progress in the exportable commodity is protrade. Consumption is also protrade, so the net effect is protrade.
c) If technical progress occurs in the exportable good, then production is protrade. Consumption is neutral, so the net effect of the technical progress is protrade.
d) Technical progress in the importable commodity is antitrade. If consumption is antitrade, then the net effect is antitrade.
e) The Rybczynski Theorem states that at given relative prices, the production of the labor-intensive goods (exportables) will increase while the production of the capital-intensive goods will decrease. Production will be protrade. With trade-neutral consumption, the net effect is protrade.

7. a) If there is an increase in one factor of production, the ppf will shift out more for the product that uses that factor intensively. In Fig.7.7 (see Question 7 for Fig. 7.7), the ppf shifts out more for Good Y, so the factor used intensively in Y must have grown. The Rybczynski Theorem says that production of Y will increase and production of X will decrease. In Fig.7.7, the production of Y has increased and the production of X has decreased. Note that the line tangent to the ppf, whose slope measures relative goods prices, has not changed, which is a condition for the Rybczynski Theorem to hold.

b) Production is protrade because production of the exportable good (good Y) increases more than the production of the importable good (Good X). Indeed, the production of good X decreases.

c) Yes. In order for consumption to be protrade, the change in consumption of the importable good must exceed the change in consumption of the exportable good. In this case consumption of the exportable good remains constant (no additional consumption) and consumption of the importable good increases.

d) If consumption of Good Y does not change, as assumed, then the new equilibrium is as shown in Fig.7.8. Note that the indifference curves are drawn tangent such that Good Y is exported, and the new higher indifference curve indicates no change in the consumption of Good Y.

e) If this is a small country, then the foreign offer curve will be linear. From Fig.7.8 it can be seen that more exports are offered for more imports at the given relative price, so the offer curve for this country shifts upward, as shown in Fig.7.9.

Figure 7.8

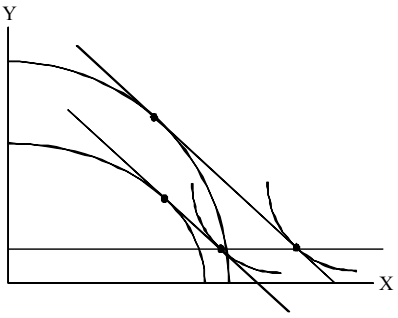
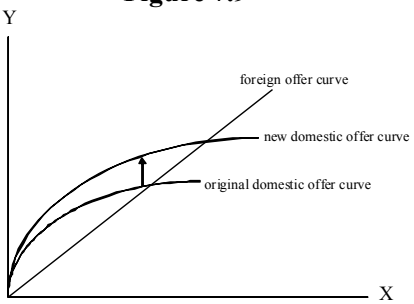


Figure 7.9



8. a) With balanced neutral technical progress (equal progress in production of both goods), production will expand with no change in the labor force. Per-capita income will increase, so the wealth effect will be welfare enhancing.

b) Balanced neutral technical progress has a trade-neutral production effect. As consumption increases, the demand for the exportable (normal) good increases, while the demand for the importable good will decrease. The consumption of exportables does increase more than the consumption of importables, so consumption is antitrade. The increase in the demand for exportables relative to importables suggests that the price of exportables will increase relative to importables, so the terms of trade turn in favor of the nation, improving welfare.

9. a) If there is neutral technical progress in the production of the exportable good, then the welfare effect of the progress will be welfare enhancing as in Question 1e. Neutral technical progress in the production of the exportable good is protrade. If consumption is trade neutral, then, net, the consumption and production effects will be protrade. The volume of trade will expand and the price of the export good will fall relative to the price of the import good. The terms of trade will turn against the country, which will, to some degree, offset the welfare effect. The net effect cannot be determined.

b) The welfare effect is welfare enhancing. With trade-neutral consumption and antitrade production, the net effect is antitrade. The supply of the importable good increases, with which

neutral consumption changes, which means the price of the importable good falls relative to the exportable good. The terms of trade move in favor of the nation.

Chapter 8: Solutions to Questions

1. a) It cannot be determined. If the import tariff were an ad-valorem tariff of 20%, then the world price faced by domestic producers and consumers would be increased by $2, as shown. If the import tariff were a specific tariff of $2, then the world price faced by domestic producers and consumers would also be increased by $2, as shown.
b) The tariff is $2 per unit.
c) It is partial equilibrium analysis because only Industry X is being considered. If the analysis were general equilibrium, then other industries in the country would have to be considered simultaneously.
d) Although the price of Good X faced by domestic producers and consumers is higher by the amount of the tariff, the world price is unaffected at $10.
e) The tariff has increased the price faced by domestic consumers by $2. Because the country is small, the tariff is completely passed on to domestic consumers with no effect on the world price.
f) The price of domestic production increases. As a result of the tariff, domestic consumers begin to substitute out of imports into the domestically produced Good X. As domestic producers increase production to satisfy that demand, the price of domestic production increases (moving up the domestic supply curve, S_x) until the price equals $12.
g) It is the demand by domestics, which includes the demand by domestics for both domestic and foreign goods.

2. a) The consumption effect is -10 (new consumption of 130 minus old consumption of 140).
b) The production effect is 20 (100-80).
c) The trade effect is new imports minus old imports or 30-60 = -30. The tariff has caused a reduction in imports of 30, made up of the decline of domestic consumption of 10 from part a and the increase in domestic production of 20 from part b.
d) The revenue effect is $60. The tariff is $2 and the quantity of imports is 30.

3. a) The welfare cost of the tariff to consumers is the reduction in consumers' surplus. In Fig. 8.1, the reduction in consumers' surplus is the area under the demand curve between the price of $10 and $12. This is made up of a rectangle with length 130 and width of $2, and a triangle with a height of $2 and a base of 10. The area of the rectangle is $260, and the area of the triangle is $20/2 = $10, so the loss of consumers' surplus is $270.
b) The welfare benefit of the tariff to producers is the increase in producers' surplus. In Fig. 8-1, this is the area above the S_x curve between $10 and $12. This area is made up of a rectangle with area $160 ($2·80) and a triangle with area $20 ($2·20/2), for a total increase in producers' surplus of $180.
c) The total dollar value of the benefits includes not only the $180 increase in producers' surplus, but also the increase in tariff revenues of $60 (see question 2, part d), for total benefits of $240. The total dollar costs are $270, the decrease in consumers' surplus.
d) The total net benefit of the tariff is total benefits minus total costs, or -$30. The tariff causes a negative net benefit (a net cost) of $30. This is just what the deadweight losses are.
e) Region b has an area of $2·20/2 = $20, and region d has an area of $2·10/2 = $10, for a total of $30, confirming the $30 net cost found in part d.

4. The effective rate of protection is the percent change in domestic value added, which is given as equation (8-1) in the *International Economics* text to be

$$g = [t - a_i t_i]/[1 - a_i].$$

The symbol g is the effective rate of protection, t is the (nominal) tariff on the finished good, a_i is the cost of imported inputs as a fraction of the price of the final good, and t_i is the (nominal) tariff on the imported good.

a) With no imported inputs, a_i=0 and t_i=0. The effective rate of protection becomes g=.1. If there are no imported inputs, then the nominal tariff on the finished good is the same as the effective rate of protection.
b) For a_i=.5, t_i=.1, and t=.1, g = [.1-(.5)(.1)]/[1-.5] = .1. If the tariff rate on finished goods and imported inputs are equal, then the effective rate of protection is equal to the equivalent tariff rates. This can be seen more generally by making t = t_i in the expression for g above, and then showing that g = t.
c) For a_i=.5, t_i =.2, and t=.1, g = [.1-(.5)(.2)]/[1-.5] = 0. This is just the point that the effective rate of protection idea intends to make. When imported inputs face a tariff, the effective rate of protection may be much less than what appears from just observing the tariff on finished goods.
d) For a_i=.7, t_i=.2, and t=.1, g = [.1-(.7)(.2)]/[1-.7] = -.1333. In this case imported inputs make up such a large part of the price of a good that the tariff rate of 20% on imported inputs actually causes harm to the domestic industry, despite the 10% tariff on the finished good.

5. a) With the quantity of Y measured on the vertical axis, and the quantity of X measured on the horizontal axis, the slope of the price line is P_X/P_Y. An import tariff on Good X will, by making X more expensive to domestic producers and consumers, make the price line steeper. Thus, before the tariff, the relative price of Good X must be that shown by the flatter price line P_1.
b) The relative price of Good X to domestic producers and consumers after the import tariff is the steeper line, P_2.
c) From a national perspective, the relative price of Good X at which the country trades is shown as P_1'. From a national perspective, the relative price is unchanged because P_1' and P_1 have the same slope. This means that this importing country is a small country. Goods arrive at the border at the same world price as before the import tariff, so this country can still trade at the pre-import relative price. The tariff is imposed after the goods reach the country, increasing the relative price of Good X to domestic consumers and producers.
d) The quantity of Good Y exported is the distance bc and the quantity of good X imported is the distance ce.
e) The country collects revenues of de. The **country** trades along P_1', but domestic producers and consumers trade along P_2. The difference between the world relative price faced by the country and the relative price faced by domestic producers and consumers is the tariff.
f) It is assumed that tariff revenues are in some way returned to the private sector (government programs, lower taxes, outright subsidies, etc.). This return of tariff revenues to the private sector means that domestic producers and consumers still trade according to the relative price indicated by P_2, but do so along a price line to the right of P_2 (P_2'). The price line moves to the right by the amount of the tariff revenues returned (de), much like a budget constraint for an individual shifting to the right as a result of an increase in income.
g) Two conditions are fulfilled at the intersection of lines P_1' and P_2'. The country faces the same world price as before the tariff, so trade must occur along P_1'. Domestic producers and consumers face higher relative prices as a result of the tariff, so trade must occur along P_2'. Both can occur only at the intersection of the two price lines.
h) The net effect is a reduction in national welfare from that indicated by community indifference curve II to that indicated by community indifference curve I.

6. a) The import tariff on Good X causes an expansion of capital-intensive Industry X and a contraction of labor-intensive Industry Y. If Industry X expands, then it requires more capital relative to labor than is released by the labor-intensive Industry Y. Thus, the expansion of Industry X will cause a relative increase in the demand for capital and a relative decrease in the demand for labor. Shifting up the demand curve in the market for capital shown in Fig. 8-3 produces an increase in the equilibrium nominal return to capital.
b) The relative decrease in the demand for labor will shift down the demand curve in the market for labor shown in Fig. 8-3, producing a decrease in the equilibrium nominal wage rate.
c) If the only two goods are X and Y, then labor spends its income on goods X and Y. If the nominal wage rate declines, but the price of X increases (due to the tariff) and the price of Good Y remains the same, then the real wage rate has declined.

d) Goods X and Y are consumed in some proportions by capitalists. If the price of Good Y is unchanged and the return to capital increases, then capitalists are better off to the extent that they buy Good Y. For that part of the budget spent on Good X, the analysis is a bit more difficult. If the price of Good X increases by some percentage due to the tariff, then the average cost of production will also increase by this amount in competitive markets in the long run. The average cost of production is due to the cost of labor (w) and the cost of capital (r). If the nominal cost of labor falls, then for the cost of Good X to increase, the cost of capital must increase by more than the price of Good X. If r increases by more than the price of Good X, then capitalists are better off even if they buy only Good X. (Note that this analysis assumes that there are not big changes in the amounts of capital and labor used in the production of Good X.) In conclusion, if capitalists buy Good Y they will be better off in real terms, and if they buy Good X they will be better off in real terms. Therefore, no matter what proportions of income are spent on goods X and Y by capitalists, they will be better off in real terms.
e) The Stolper-Samuelson Theorem states that "...an increase in the relative price of a commodity (for example, as a result of a tariff) raises the return or earnings of the factor used intensively in the production of the commodity" (Section 8.4c of *International Economics*). In this case, the tariff increased the price of Good X, which is capital intensive, and the real return to capital increased. Thus, the effect on capital described in part d is consistent with the Stolper-Samuelson Theorem. The analysis in parts c and d can be considered an intuitive explanation of the Stolper-Samuelson Theorem.
f) A tariff reduces national welfare (income). The effect of the increasing real return to capital must have a smaller effect than the decreasing real wage of labor.

7. a) Nation 1 exports good X and imports good Y. As a result of a tariff on good X, Nation 1's offer curve will shift to the left. This indicates that for some given amount of exports, more imports are wanted to make up for the tax.
b) The shift of the offer curve shifts the equilibrium terms of trade line (P_x/P_Y) to the left indicating a higher price of good X relative to good Y. The terms of trade have moved in favor of Nation 1 and against Nation 2.
c) Nation 1's offer curve will shift to the left and Nation 2's offer curve will shift to the right. The effect on the terms of trade will tend to be offsetting. The effect is to leave the terms of trade unaffected but the volume of trade lower so that both nations are worse off.
8. a) Country 2 in Fig. 8-5 must be a large country because a shift of its offer curve (such as from 2 to 2') changes the world price (from P_w to P_w').
b) If Country 2 were a small country, then a shift of its offer curve would leave the world price unaffected, which would occur only if the offer curve labeled "1" were a straight line.
c) At P_w, Country 2 exports 0G units of Good Y in exchange for imports of 0H units of Good X.
d) Prior to the tariff, Country 2 was willing to exchange 0K units of Good Y for imports of KA units of Good X. After the tariff, import duties will be collected at the border, so in Country 2, the effect will be to require more imports by the amount of the tariff. If the tariff, measured in units of Good X, is distance AB, then the offer curve will shift to the right by the horizontal distance AB.
e) The post-tariff equilibrium occurs at point B, where the new world price is P_w'. Exports are OK, and imports are KB. Of the imports of KB, AB is the amount collected in tariffs. (Of the amount spent on imports, not all goes to buy goods; some goes to pay for the tariff.) The tariff rate is AB/KA.
f) The new equilibrium world price as a result of the tariff is P_w'. Domestically, the relative price will be this world price plus the tariff. The tariff is AB, so the price facing domestics will be P_1. Alternatively, the amount imported is 0L at the new world price P_w', but some of that must be turned over as tariff revenues. The tariff revenue, measured in units of good X, is AB so only KA of imports is received by consumers.
g) At the old world price of P_w, KD could be imported for exports of OK.
h) If tariff revenues purchase Good X, then after the tariff, KA+AB = KB can be imported for exports of OK.
i) More of Good X can be imported after the tariff (if import revenues are used to buy Good X), reflecting the lower price of imports caused by the large country imposing a tariff on the imports of the rest of the world.

j) No. Although there is a lower price of imports for Country 2, domestics face higher prices for Good X and so export less and import less. (Exports fall from 0G to 0K and imports fall from 0H to 0L.) This lower volume of trade must be balanced against the lower world price produced by the import tariff. The optimum tariff argument points out that a large country should pursue a tariff only if the benefits of the lower price exceed the loss of reduced trading volume.
k) Country 1 is definitely worse off. Not only is Country 1 receiving a lower price for its exports, but it is also exporting less.
l) Because Country 1 is worse off as a result of the tariff, Country 1 may try to retaliate against country 2 by imposing a tariff on its own imports of Good Y from Country 2. This retaliation is an important qualification to the optimum tariff argument.

9. It's best to graph the situation. Draw an upward-sloping supply curve and a downward-sloping demand curve and draw a world price of $42 below the intersection of the supply and demand curves, and indicate the quantity consumed (demanded) and produced on the horizontal axis. Now raise the price by $4 (the tariff) to $46 and indicate the new quantities supplied and demanded.
a) The loss of consumer surplus is the sum of the rectangle with dimensions 52 and $4 and the triangle with a base of 8 and a height of $4. The area of the rectangle is $208 and the area of the triangle is $16, for a total reduction in consumer surplus of $224.
b) The welfare loss is the sum of the two usual triangles. One has a base of 6 and height of $4. The other has a base of 8 and a height of $4. The two areas are $12 and $16, for a total welfare loss of $28.
c) Zero. The optimum tariff argument only holds for a large country. This is a small country because the world price is unaffected by the tariff.

Chapter 9: Solutions to Questions

1. a) The quota raises the price of the import good from $7.00 to $8.50, so importers will be willing to pay $1.50 for the right to sell one unit of the import. The license allows an importer to buy and sell 10 units, so each license will be bid up to $15.
b) Imports will be 4,000 units, so 400 licenses will be sold. At $15 each, license revenues will be $6,000. (This is equivalent to the revenues that could be raised with a tariff if the tariff raised the price from $7.00 to $8.50.)
c) The welfare cost is equivalent to the deadweight loss of a tariff, and is represented by the area of the small triangle under the supply curve plus the area of the small triangle under the demand curve. The area of the triangle under the supply curve is $1,500 (one-half of 2,000 units × $1.50) and the area under the demand curve is $1,500, so the total welfare cost is $3,000.
d) The welfare cost now includes not only the deadweight triangles ($3,000), but also the lost license revenue of $6,000. The total welfare loss is $9,000.
e) A VER provides domestic protection, but its cost is higher than a quota. However, a VER may be more successful because some benefit is conferred on the foreign exporting country, and a VER is negotiated with foreign countries. A quota is unilaterally imposed. Because a VER is mutually agreed upon and foreign producers do get some gains, a VER may not invite retaliation, and so be more successful than a quota, which may invite retaliation.
f) A tariff that raises the price from $7.00 to $8.50 will produce imports of 4000, so the tariff per unit would be $1.50 per unit of the good imported.
g) If domestic demand falls in the case of a quota, then the price at which supply equals demand will be lower. The decrease in quantity will come from domestic producers. Thus, a decrease in demand will result in lower prices and lower quantity for domestic producers. In the case of a tariff, the price is unaffected, so domestic producers will be unaffected. The quantity decrease will come from imports. Domestic producers facing declining demand would prefer a tariff. Draw diagrams showing the effects of decreased demand in both the quota and tariff cases. (Note that for domestic demand *increases*, domestic producers would prefer a quota to a tariff.)

2. a) If both produce, both will incur losses, according to the table. This may occur because production by both may drive down prices in foreign markets. If only one produces, then there is a profit of 2 for the producer and no effect on the non-producer. If neither oligopolist produces then neither is affected.
b) If E produces, then E will either lose 1 or earn 2, depending upon what A does. If E does not produce, then E will earn zero no matter what A does. Since zero is greater than -1, but less than 2, it is not clear what E will do. There is no dominant strategy for E.
c) The payoffs are symmetrical, so the analysis is identical to that for E in part b.
d) If A moves first and produces, then E will choose not to produce, which produces a gain of zero, which is better than the loss of 1 associated with producing if A produces. Whichever firm moves (produces) first wins.
e) If the subsidy for producing is any amount greater than 1, then E will choose to produce because producing will always be superior to not producing, no matter what A does. With a subsidy of any amount greater than 1, producing will be a dominant strategy for E.
f) Yes, if the subsidy to E is only slightly greater than 1, then E will produce and A will not produce. The gain from doing so is 2, which exceeds the subsidy, if it is only slightly greater than 1.
g) E will enter the market, but the gain will only be 2, which is less than the subsidy of 3. The gain of 2 will cost taxpayers 3. The point is to recognize that nations may not gain from subsidizing firms in similar situations if they do not know the precise gain possible from entering the market.
h) If each nation begins to offer subsidies, based on a known payoff of 2, then the subsidy will be bid up to 2, at which there is no net gain from the subsidy. Even if nations do know the precise gains possible, subsidies will be bid up until the net gain is zero.

3. a) The total amount of production at the price floor of $2.50 is 700,000 units. This exceeds the world price of $2.00, so 700,000 × $0.50 = $350,000 will be the total tax collections necessary to fund the program.
b) The increase in producers' surplus is the area above the supply curve, between $2.00 and $2.50, up to a quantity of 700,000 units. The area is equal to 400,000 × $0.50, plus the remaining triangle, which has an area of one-half of 300,000 × $0.50. This produces a total increase in producers' surplus of $275,000.
c) Consumers' surplus falls by the area under the demand curve between $2.00 and $2.50 from 0 to 200,000. This area is equal to 100,000 x $.50 plus the remaining triangle, which has an area of one-half of 100,000 x $0.50. This produces a total decrease in consumers' surplus of $75,000.
d) Producers' surplus has increased by $275,000, consumers' surplus has fallen by $75,000, and taxes are increased by $350,000, for a total net less of $150,000.
e) The costs are widely distributed across the population (taxpayers and consumers), so the loss per person will be rather small. The gains, on the other hand, are concentrated among a relatively small number of wheat growers. Although the costs are large, they are small per person, while the small gains can be large per person. An individual faced with the possibility of a significant gain will be more vocal than an individual faced with only a small loss.

4. a) Dumping is not necessarily motivated by the intent to damage the foreign market, Dumping can simply be the attempt to sell off excess inventories due to lack of demand at the current price. Dumping could also be a form of price discrimination due to higher price elasticities of demand in the market with the higher price. In either case, the sale of goods at lower prices produces a distinct benefit to consumers.
b) Not necessarily. Although local producers will be hurt, consumers will gain. If a country is a net importer (demand exceeds production), then the monetary benefits to domestic consumers will exceed the monetary loss to domestic sellers.
c) Predatory dumping is motivated by the attempt to drive out local producers. Claims of predatory dumping should be looked upon skeptically for a number of reasons. First, in order for predatory dumping to be successful, foreign producers must be willing to incur larger losses than domestic producers. Otherwise domestic producers could match the low price and drive out foreign producers. Second, even if domestic producers leave the market, what is to insure that they do not re-enter the market once foreign dumpers raise the price, presumably the point of

driving out local producers? Third, outright purchase of domestic producers by foreign firms is a less confrontational tactic, and does not necessitate losses in order to be successful.
d) Not necessarily. Dumping does hurt producers, but there are gains to consumers. The gains to consumers from dumping may exceed the losses to producers. Anti-dumping legislation can be also costly in terms of the cost of the regulators as well as the possible political costs.

5. This claim of dumping should be rejected. The gains from trade rest on the ability of some nations to produce and sell at a price lower than what is possible in other nations. Accepting this claim of dumping is tantamount to rejecting the comparative advantage argument.

6. a) Although the historical circumstances surrounding GATT are complex, the story would not be complete without reference to the inter-war years and the desire to promote the peace. During the inter-war years, trade was used as a tool to promote domestic employment at the expense of employment of other nations. Of course, other nations retaliated and the general level of economic activity fell. It was also recognized that the gains from international trade might promote better contact and relations between nations.
b) The increase in nontariff barriers is probably best explained by the success of GATT in lowering tariff barriers.
c) First, the Uruguay Round emphasized, more than previous rounds, the importance of reducing nontariff barriers. Second, nontariff barriers are more complex than and not as apparent as tariffs. This possibly extended the duration of the Uruguay round.

7. The auto industry in the U.S. is a highly organized industry because there are few producers and so may be able to successfully use the strength of its organization to exert pressure on elected representatives. In addition the auto industry is relatively geographically concentrated so that workers' interests can more easily be represented at the voting booth.

The U.S. textile industry, like the auto industry, is geographically concentrated. Foreign textile exporters are also located in nations with little economic and political power so they cannot easily resist trade protection from more powerful importing nations. In addition, the textile industry uses relatively unskilled labor, and so is subject to significant import competition.

Chapter 10: Solutions to Questions

1. The gains from the removal of non-tariff trade barriers (.2% of GDP) and the gains from the removal of production barriers (2.2% of GDP) are the traditional gains associated with removing tariffs, quotas, etc. These gains rest on the benefits of allowing trade to occur according to comparative advantage.

The gains in the EU from economies of scale (1.65%) occur because rather than each nation protecting an industry at small inefficient levels, industries are allowed to satisfy foreign markets and so produce at higher levels of output, allowing them to realize economies of scale. France may, for example, lose its automobile industry, but gains because Germany's automobile industry can expand to provide autos at a lower cost than could be provided by two smaller industries. Similarly, resources in France may be reallocated away from the auto industry to another industry in which economies of scale can be realized for the benefit of France and other nations that will consume the product.

The gains from intensified competition (1.25% of GDP) are gains from reductions in monopoly power, produced by more competition between industries in Europe.

2. A free trade area is one in which members have free trade with each other, but each member maintains its own trade policies with respect to the rest of the world. If there is considerable trade between nations in a free trade area, then unique trade policies may result in behavior seeking to avoid those policies. Suppose, for example, Canada, Mexico and the United States form a free trade area, with Canada having very low tariffs against other nations relative to the tariffs that Mexico and the U.S. levy on other nations.

A U.S. importer may first import goods into Canada and then ship them to the U.S. in order to avoid U.S. tariffs. Such trade will be expensive to prohibit, especially if there is

considerable trade between Canada and the United States. To solve this problem, common trade policies may be adopted, moving the agreement from a free trade area to a common market.

3. a) Neighboring countries are often natural trading partners due to the low transportation costs. With low transportation costs, very small differences in comparative advantage can be exploited. Additionally, neighboring countries often share a history and culture that can ease the negotiations process. Familiarity can also enhance trade because each nation is familiar with the demand patterns of other countries, making it easier to produce products for those countries.
b) The WTO is a large multilateral organization that often moves slowly because of the extensive negotiations that must occur between its many members. An agreement between a neighboring country is much cheaper to negotiate.

4. a) Prior to the formation of the customs union, a tariff is applied to all imports. Since S_m+T is lower than S_n+T, imports will come from future members. At a price of S_m+T, domestic production will be Q_3, domestic consumption will be Q_6, and imports will equal the difference between Q_6 and Q_3.
b) After formation of the customs union, members' price will fall to S_m, and the price from non-members will remain at S_n+T. Imports will continue to be from members at the new lower price. Domestic production will be Q_1, domestic consumption will be Q_8, and imports will equal the difference between Q_8 and Q_1.
c) The customs union will be trade creating because it will not cause a substitute of the source of imports. Imports will come from future members before formation of the customs union and from members after formation of the customs union.
d) Yes, there will necessarily be gains from the formation of the customs union, because no trade is diverted from non-members as a result of the formation of the customs union. The gains are the triangles equal to the deadweight losses associated with a tariff.

5. a) – d) In this case non-members' price plus tariff is lower than members, so all imports will come from non-members. After the formation of the customs union, the price (without the tariff) of members is still below the price of non-members with the tariff. The customs unions will have no effect on the price at which imports will occur. The customs union will have no effect on domestic production, consumption, or imports. Domestic production before and after the customs union is Q_2, domestic consumption is Q_7, and imports are the difference between Q_7 and Q_2. The formation of the customs union produces no welfare changes because it has no effect on price.

6. a) Prior to formation of the customs union the lowest price (plus tariff) is S_n+T, at which domestic production is Q_3, domestic consumption is Q_6, and imports equal Q_6-Q_3. All imports come from future non-members.
b) After formation of the customs union, the lowest price available is S_m, at which domestic production is Q_2, domestic consumption is Q_7, and imports are Q_7-Q_2. All imports come from members.
c) The customs union in this case is trade diverting because the formation of the customs union reduces trade from non-members, although it increases trade from members.
d) There will not necessarily be gains from the formation of this customs union. There will be the usual efficiency gains from a lower price equal to the triangles below S and D. (One triangle has a base of Q_3-Q_2 and a height of S_n+T-S_m. The other triangle has a base of Q_7-Q_6 and a height of S_n+T-S_m. Locate these on the diagram in Figure 10.3.) However, in addition to the usual efficiency gains from the lower price, there will be a loss equal to part of the former tariff revenues. This loss is equal to the rectangle with length Q_7-Q_3 and width S_n+T-S_m. (Locate this rectangle in Figure 10.3, and review the analysis by which this is identified as a loss that may offset the efficiency gains.)

7. As nations form into a customs union, they can act collectively and function like a large country and so will be tempted to use tariffs to change the terms of trade. (Recall the optimum tariff argument from Chapter 8.) If nations are organized into customs unions then each customs union may attempt to impose tariffs on other unions, the net effect of which will be to reduce world

trade, increase the price of all traded goods, and produce no benefits for any one country or union.

Chapter 11: Solutions to Questions

1. a) Very simply, primary goods have both lower supply and demand price elasticities. This means when supply shifts, or when demand shifts, the excess supply or demand requires a larger price change to produce a new equilibrium. Visually, when the supply and demand curves are steep, a shift in either one will cause a larger price change than when the curves are flat.
b) As growing conditions change, the supply curve shifts. Although the price will change considerably, the quantity change will be in the opposite direction, offsetting some of the effect on total export earnings. As business cycle conditions change in other nations, the demand for goods in developing countries will change. As demand shifts, both price and quantity move in the same direction, producing substantial changes in export earnings. Thus, fluctuations in the business cycle in other countries will produce greater export earnings instability.
c) The export good should be added to its buffer stock when there is excess supply of the good. This will keep the price of the good from falling on world markets. When there is excess demand the good should be sold from the buffer stock in order to keep its price from increasing on world markets. This promotes stable prices through time, which makes planning easier at both the production level and at the national policy level.
d) Measurement of export instability has shown that although there is greater export price instability for developing nations, that level of instability is rather small. In addition, this instability has not had much effect on development. These findings question the expense of maintaining and administering buffer stocks.

2. a) The commodity terms of trade is $N = (P_X/P_M)100$, so for 1992 the commodity terms of trade is $N_{1992} = (108.7/102.1)100 = 106.46$. Making the same substitutions for 1993 and 1994 produces:

$$N_{1993} = (104.5/99.9)100 = 104.60, \text{ and}$$
$$N_{1994} = (107.4/105.3)100 = 101.99.$$

b) There was deterioration in the commodity terms of trade for Mauritius from 1992–94. The price of exports relative to the price paid for imports fell, suggesting that Mauritius received less imports for each *unit* of exports.
c) The income terms of trade are expressed as $I = (P_X/P_M)\ Q_X$. Substituting from the table in Question 3 produces

$$I_{1992} = (108.7/102.1)100 = 106.46$$
$$I_{1993} = (104.5/99.9)104.2 = 109.00, \text{ and}$$
$$I_{1994}\ (104.5/99.9)105.1 = 109.94.$$

If the 1992 income terms of trade is set to 100, and the 1993 and 1994 adjusted accordingly (dividing by 106.46 and multiplying the result by 100), then the income terms of trade index for those years will be

$$I_{1992} = 100$$
$$I_{1993} = 102.39$$
$$I_{1994} = 103.27.$$

d) Although the commodity terms of trade fell from 1992–94, the income terms of trade improved. The reduction in export prices relative to import prices was more than compensated for by an increase in the quantity exported.

3. a) There are two reasons why the terms of trade might be expected to fall over time for developing countries. On the supply side, it is the inability of weak labor groups in developing countries to appropriate their productivity gains. Instead, productivity gains are passed along to buyers in the form of lower prices. On the demand side, as income grows in the world, demand increases for services and manufactured goods, but exhibits little increase for the primary products produced by developing nations. (The income elasticity of demand is higher for services and manufactured goods than for many primary products.)

b) The commodity terms of trade is expressed as $N = (P_X/P_M)100$ and the income terms of trade is expressed as $I = (P_X/P_M)Q_X$. Technical change in the export sector will increase production (Q_x) and decrease price (P_x). If the quantity change is proportionately larger, then the income terms of trade will increase while the commodity terms of trade will fall.
c) As in part b, an increased supply of labor will cause Q_x to increase and P_x to decrease as wages fall. If the increase in Q_x exceeds the decrease in P_x, then the income terms of trade will increase and the commodity terms of trade will fall.
d) No. In the case of increased supply of labor, the amount earned with exports increases, but the improved ability to import is spread over more people. (In the case of technical change, the increase in the income terms of trade is an improvement because the population is unchaged.)

4. a) The long-run experience has been negative. Although ISI may be useful in promoting employment and industrialization in the short run, the use of the policy in the long run creates the demand for additional imported inputs to support the industrial base. Additionally, the need for skilled labor becomes a constraint after the initial easy phases of ISI have been completed.
b) ISI attempts to replace imported goods with domestic production. If the goods were initially imported, then other nations have the comparative advantage in these goods. Export-oriented growth relies on a nation's comparative advantage, and so makes better use of a nation's resources. Export-oriented growth is less likely to get bogged down by the necessity for imported inputs, and the necessary labor is available in the domestic market.

5. a) Trade can contribute to economic development by promoting the use of nation's best resources (comparative advantage), resulting in the general gains from trade. In addition, as resources change, trade will reward those that resources exhibit the greatest increases in productivity.
b) A nation with a comparative advantage in unskilled labor may become a nation that relies on its advantage in unskilled labor rather than promoting training and development that may produce even larger incomes in the future.

6. The IMF imposes austerity measures (import reduction, slow wage growth, lower inflation, etc.) in order to obviate the need for further emergency lending. A nation with continued high imports would need to finance those imports with further borrowing. High wages and inflation also reduce export competitiveness producing trade deficits and the need for further borrowing.

These measures are often viewed as harsh because they are imposed on a nation when it is at is weakest. A nation that borrows due to financial need cannot easily bear imposed reductions in imports and wages.

7. a) No, Case Study 11-6 notes that poorest of the developing nations have been "left behind and marginalized by globalization, and they were poorer (i.e., their average real per capita income was lower) in the year 2000 than in 1980."
b) No, the causes of deep poverty in the world, especially in Sub-Saharan Africa, include climate, war, and AIDS.

Globalization has narrowed the income gap between the globalized developing nations and the developed nations. The gap between the non-globalizers and the rest of the world has increased. As stated in Case Study 11-6 of the *International Economics* text, "What globalization can be blamed for is not spreading the benefits of increased efficiency and openness that come with globalization more evenly and equitably to all nations."
c) According to the World Bank (Case 11-6) globalization has been partially responsible for reducing the number of the very poor (those who earn less than $1 per day) by 650 million from 1981 to 2005. There have been further reductions in poverty over the past five years, with most of the reductions occurring in India and China.

Chapter 12: Solutions to Questions

1. a) The United States is abundant in capital relative to Mexico, so the U.S. will export capital-intensive goods to Mexico according to the Heckscher-Ohlin model of trade. If, however, the movement of goods are restricted, then US MNCs may locate capital in Mexico in order to sell capital-intensive goods in Mexico. Both trade in products and movement of factors can represent the endowments of countries.
b) Mexico is labor rich relative to the United States, so labor will move to the United States, either embodied in goods, or in the actual movement of humans.
c) The movement of capital from the U.S. to Mexico will raise the returns to capital in the U.S. and lower the return to capital in Mexico until (risk-adjusted) returns are equalized. The movement of labor from Mexico to the U.S. will raise wages in Mexico and lower wages in the U.S. until wages are equalized.
d) According to the factor-price equalization theorem, trade in goods will equalize both absolute and relative factor prices. Thus, trade will increase the wage rate in Mexico and decrease it in the United States until wages are equalized. Similarly, the return to capital will decrease in Mexico and increase in the United States until the returns are equalized.

2. a) In competitive markets, real wages will reflect the (marginal) productivity of labor. If real wages are not equal, then productivities are not equal. If labor moves from low to high wage areas, then they are moving to where productivity is higher. The movement to higher productivity areas means an increase in world production. The same argument applies for the movement of capital from low return areas to high return areas.
b) Labor in the United States will lose as the wage rate is driven down by the increased supply of labor. This may create greater income inequality because the type of labor most likely to lose in the U.S. is already poor unskilled labor. In Mexico the wages of unskilled workers will increase, so income inequality is likely to decrease.

3. a) There is the fear by the home country that MNCs provide jobs abroad that would otherwise have gone to local citizens. There is also the fear that technological know-how will be transferred abroad, resulting in a loss of any technically based competitive edge.
b) The basic fear on the part of host countries is dependency. MNCs have no allegiance to the host country so their influence in the host country's economic, cultural and political spheres may not necessarily be in the host country's interest.
4. MNCs have a number of advantages over firms in local markets. One is sheer size. Sheer size brings political clout, monopoly power, economies of scale, and the ability to locate stages of production in those nations where the cost of production is lower. The vast information network of MNCs also allows for superior methods of distribution, advertising, and control. The ability to engage in transfer pricing may also allow MNCs to pay lower tax rates than local firms.

5. a) No. If the only motivation for foreign portfolio investment is return, then funds will simply flow towards the nation with the higher return. There will only be a one-way movement of capital.
b) Diversification allows financial investors to lower risk without affecting the rate of return. Diversification requires funds to spread over many markets. As new wealth is created each year, the diversification of new funds will flow to all countries simultaneously.

6. Firms want to hire laborers with experience because they want to avoid the costs of training inexperienced workers. The fear is that workers, once trained, may leave for other jobs. The firm will lose the training costs and a trained laborer and other firms will gain a trained labor without having to fund the training costs.

If each firm does this, then the result is a labor force that has fewer skills because there is no incentive for firms to train them. The same principle applies to nations. Nations will not invest heavily in public education and training if trained labor soon leaves for other nations—brain drain. The result is a world with fewer skills than necessary for the jobs that exist.

7. To the extent that trade in products is a substitute for the movement of factors, freer trade with Mexico will reduce Mexican migration to the U.S. and the movement of U.S. capital to Mexico. If Mexico cannot realize gains from selling their labor-intensive products to the U.S., then that unskilled labor has an incentive to move to the U.S. to realize their advantage. Similarly if the U.S. cannot export their capital-intensive products to Mexico, then cheap capital from the US will locate in Mexico.

Chapter 13: Solutions to Questions

1. a) If the U.S. exports (credit) are to be paid for in three months, then the U.S. firm is extending a short-term loan to France—a short-term financial outflow (debit). The entry is:

	Credit (+)	Debit (-)
Exports	$500	
ST Financial Flow (outflow)		$500

b) The imports (debit) by the U.S. from the U. K. are paid for by buying pounds from a U.K. bank. The U.K. bank willingly acquires dollars, a claim on U.S. goods, so the bank is lending to the United States—a short-term financial inflow (credit). The entry is:

	Credit (+)	Debit (-)
Imports		$400
ST Financial Flow (inflow)	$400	

c) If you spent $300 in the United Kingdom, then someone in the United Kingdom has accepted U.S. dollars. As in part b), this is short-term financial inflow. The actual expenditures are recorded as "tourist services" (debit), and the holding of funds by someone in the United Kingdom is recorded as a short-term financial inflow.

	Credit (+)	Debit (-)
Tourist Services		$300
ST Financial Flow (inflow)	$300	

d) This is unilateral transfer provided to another nation (debit), and the other nation willingly holds the dollars, a short-term financial inflow (credit).

	Credit (+)	Debit (-)
Unilateral Transfer		$200
ST Financial Flow (outflow)	$200	

e) The stock purchase is a long-term financial outflow (debit). The sale of Euros by a U.S. bank represents a reduction in foreign assets held, a short-term financial inflow (credit).

	Credit (+)	Debit (-)
LT Financial outflow		$100
ST Financial inflow	$100	

f) The purchase of short-term assets in the United States by a foreigner is short-term financial inflow (credit). The purchase of dollars from a U.S. bank means the U.S. bank acquires pounds, a foreign asset—a short-term financial outflow (debit).

	Credit (+)	Debit (-)
ST Financial inflow	$50	
ST Financial outflow		$50

2. a)

U.S. Balance of Payments

Account	Credit (+)	Debit (-)
Merchandise Exports	$500	
Merchandise Imports		$400
Tourist Services		$300
Unilateral Transfers		$200
Long-Term Financial Flow		$100
Short-Term Financial Flow	$500	
Balance	$1000	$1000

b) The balance of trade is in surplus by $100 (Merchandise Exports minus Merchandise Imports).
c) The balance of trade in goods and services in this example includes Merchandise Exports, Merchandise Imports, and Tourist Services. These activities net out to a deficit of $200.
d) The current account in this example includes the balance of trade in goods and services (part c), plus Unilateral Transfers. These balances net out to a deficit of $400.
e) The financial account includes both short-term and long-term movements of financial capital, which nets out to a surplus of $400.
f) The entire balance of payments balances. The financial account is in surplus by the exact amount that the current account is in deficit. This will always be the case because total credits and debits must equal.

3. a) It is meaningless to speak of a balance of payments deficit or surplus if *all* account balances are included in the balance of payments. When all accounts are included, the net balance must always net to zero.
b) It is meaningful to speak of a balance of payments deficit or surplus if the balance of payments is defined to include all *autonomous* flows. In a fixed exchange rate system autonomous flows need not net to zero. The balance for all autonomous flows is that which must be financed by official financial flows. Note that the total value of autonomous and official flows will still net to zero. (In a floating exchange rate system, the exchange rate moves to equalize all autonomous inflows and outflows, so the autonomous flows will always net to zero.)

4. The financial account in Questions 1 and 2 is in surplus by $400. This means that foreigners have acquired *new* claims on the United States by, net, $400. Thus the United States has increased its foreign indebtedness by, net, $400. This increased debt represents the financing of the current account deficit.

5. a) The international investment position of the United States, measured in either historical, replacement, or market terms, turned from positive to negative beginning around 1985. This means the United States went from being a net creditor nation to a net debtor nation relative to the rest of the world. This change in the international investment position of the United States reflects the large current account deficits beginning in the 1980s, requiring financial inflows.
b) The benefit of such inflows is that the U.S. can support consumption and investment levels higher than it could have without such financial inflows.
c) Financial inflows occur in anticipation of a rate of return. If the financial inflows financed productive investment in plant and equipment with substantial returns, then the returns that will be paid to foreigners can be easily paid. If, however the financial inflows financed consumption, then it could represent a considerable future burden (much like borrowing for a vacation now, only to find the repayment a drain on day-to-day living in the future.) In addition, an abrupt withdrawal of funds by foreigners could produce a financial crisis, with pressures on both the exchange rate and the interest rate.

Chapter 14: Solutions to Questions

1. a) The U.K. firm could buy euros in the forward market now.
b) The U.S. bank could sell euros in the forward market now.

c) The security will deliver dollars in one year, so the Canadian investor could sell dollars in the forward market now. (Although regular forward markets do not exist for one year, they can be negotiated through commercial banks.)
d) Japanese yen are owed so the U.S. firm could buy Japanese yen in the forward market now.
e) No forward transaction is necessary. When the yen debt comes due, the U.S. importer will be receiving yen, which can be used to pay the debt. The U.S. importer has already received the dollars by borrowing yen and converting to dollars. The point of the question is to show how borrowing can be used in the same way as the forward market.

2. a) The pound has two different prices. Arbitragers will exploit the difference, buying pounds in Bonn and selling them in Tokyo, profiting by five cents per pound. Buying in the cheap market will force the price up and selling in the high-price market will force the price down, until the prices are equalized in the two markets.
b) Pounds can be acquired directly in New York for $1.45 per pound. Alternatively, euros can be bought in London for $.20 per euro and then used to buy pounds in Paris. If $1.40 is used to buy euros in London, then 7 euros can be bought. The 7 euros can then buy one pound in Paris. It is five cents cheaper to go through London and Paris to get pounds than buying them directly in New York.
c) It is a disequilibrium situation because it will set off buying and selling until the prices change. Arbitragers will buy euros in London and pounds in Paris for $1.40 per pound and sell them in New York for $1.45 per pound. The buying in London and Paris will drive up prices there, and the selling in New York will drive the prices down there, until the cost of acquiring a pound is the same everywhere.

3. If it is expected that the dollar cost of a yen will increase, then you could simply convert dollars to yen now and wait for the price increase. This method requires a consideration of the difference in interest rates. Getting out of the dollar now means foregoing the interest rate paid on dollars and receiving the interest rate paid on yen deposits.

Alternatively, yen could be bought in the forward market. If the price of yen does increase, then they can be bought at the previously low forward price and sold at the new higher price. The advantage in using the forward market is, except for a small good-faith deposit, no funds need to be used.

Finally, an option to buy yen could be purchased. If the yen does increase in value, then the option can be exercised, buying yen at the low option price, and selling it at the new higher price. The advantage of using the option market is that the option need not be exercised unless it is to the speculator's advantage. An option contract need not be exercised while a forward contract must be honored. The disadvantage is the option has a price of its own, while a forward contract has no cost.

4. a) Uncovered interest parity is expressed as $i = i^* + [E(SR)-SR]/SR$. Covered interest parity is expressed as $i = i^* + [FR-SR]/SR$. The two are equivalent except that FR replaces E(SR). Thus if both equalities hold, then

$$FR = E(SR).$$

This says that the current forward rate equals what the spot rate is expected to be in the future (both being expressed for the same time horizon).
b) The direct cause is simply that a difference will lead to speculation that will eliminate the difference. For example, suppose that FR > E(SR). Speculators will sell now in the forward market, expecting to buy the currency to satisfy the forward contract at a lower price in the future. Selling at the high FR will cause it to fall. This will continue until there is no possibility of profit, which occurs when FR = E(SR).
c) The equality between FR and E(SR) is unlikely to hold because it is risky. Speculators may not be willing to sell at FR, expecting to buy at a lower SR in the future, unless the difference is large enough to compensate for the risk undertaken. FR and E(SR) will differ by a risk premium called the "exchange-risk premium."

5. a) The dollar value of the yen, $/¥, is explained by the supply of yen and the demand for yen. If interest rates in Japan increase, then there will movement from dollar deposits to yen deposits. Less yen will be supplied to the market and more yen will be demanded in the market. The supply curve shifts left and the demand curve shifts right, both causing an increase in the dollar value of the yen.
b) Lowered incomes in the U.S. will reduce U.S. imports from Japan (and other nations) because U.S. residents will consume fewer goods in general. This will reduce the demand for yen, shifting the demand curve down, causing the dollar value of the yen to fall.
c) If Japan increases its imports in response to fewer import barriers, the supply of yen to buy dollars will increase. As the yen supply curve shifts to the right, the dollar value of the yen will fall.
d) If U.S. inflation increases, then U.S. consumers will shift some purchases to Japan, and Japan will shift purchases away from the United States because U.S. goods now are more expensive than goods from other nations. The supply of yen will fall and the demand for yen will increase. Both shifts have the effect of increasing the dollar value of the yen (appreciation of the yen).

6. a) In order to keep the dollar value of the yen from increasing, the United States must sell yen, depleting its reserves of yen.
b) In order to keep the dollar value of the yen from falling, the United States must buy yen, increasing its reserves yen.
c) Same as part b.
d) Same as part a.

7. The domestic (assumed to be the U.S.) interest rate exceeds the return from investing in a foreign asset, including the gain or loss from covering in the forward market. Funds will flow to the U.S. so the dollar cost of foreign currency in the spot market, SR, will fall. As SR falls, [FR-SR]/SR will increase. There will also be fewer forward sales (reduced supply) of the forward currency so FR will increase, also causing [FR-SR]/SR to increase. This will continue until

$$i = i^* + [FR-SR]/SR.$$

In addition to the effects on the spot and forward rates, the movement of funds to the United States will cause i to fall and i* to increase, which also moves the inequality towards equality.

Summarizing, if $i > i^* + [FR-SR]/SR$, then the movement of funds will cause interest rates and currency rates to change until there is equality of i and $i^* + [FR-SR]/SR$.

8. a) Assuming that IBM realizes its profits/losses in dollars, IBM risks a depreciation of the yen. If the dollar value of a yen falls (depreciation), then when the yen receipts are converted to dollars, they will yield a lower amount of dollars.
b) IBM can sell the expected yen proceeds in the forward market on a continual basis. If it is expected that one million yen will be received in each month for some number of months in the future, then IBM can sell yen in the forward market each month. IBM still will be exposed to risk, however, for the forward rate can change from month to month. To eliminate that risk, IBM would have to sell yen on the forward market for next month, the following month, etc. all in the current period.
c) IBM can agree to swap yen in the future for dollars at a rate determined today. Currency swaps can be arranged over any time period, so the swap could be arranged for each of the next twelve months, or longer. The swap involves only one contract, whereby doing the same thing in the forward contract would require a number of contracts.

9. Bonds issued in euros by a U.S. company (eurobonds) may be issued to take advantage of better interest rates, or because the issuer expects the euro to get cheaper. If the euro does get cheaper, then the debt can be paid with fewer dollars than if the debt were denominated in dollars. The Eurobond issue may also be part of a diversified issuance of bonds. If bonds are issued in many currencies, then there is less chance the effect of any one adverse currency movement.

Chapter 15: Solutions to Questions

1. The monetary approach expresses the exchange rate as $R = M_s k^* Y^* / M_s^* kY$.
a) A decrease in the domestic demand for money for a given P and Y must mean that k falls. If k falls, then from the above equation, R will tend to increase. Intuitively, if the demand for money falls, then for a given money supply there will be an excess supply of domestic money. The excess supply of money in the domestic market will be used to buy goods, services, and assets from abroad—a deficit—which will put upward pressure on the foreign exchange rate (R).
b) From the above equation, an increase in Y causes a decrease in R. With more domestic real income there will be greater money demand. To satisfy the excss demand for domestic money, domestics will attempt to sell goods, services and assets abroad. The sale of domestic goods, services and assets abroad—a surplus—requires greater sales of foreign currency (by foreigners or domestics), which puts downward pressure on R.
c) From the above equation, an increase in M_s will cause R to increase. Excess money balances will cause an increase in demand for foreign goods, services and assets, -a deficit- putting upward pressure on the foreign exchange rate (R).

2. With a fixed exchange rate, any pressure on the exchange rate must be offset by official intervention. In Question 1, the changes in parts a and c led to an increase in the exchange rate because there was an excess domestic supply of money. If the exchange rate is to be held fixed, then the domestic monetary authorities must sell the foreign currency and buy the domestic currency to keep R from increasing. Buying domestic currency reduces the domestic money supply, which eliminates the excess domestic supply of money.

In part b of Question 1, the exchange rate fell because there was an excess demand for domestic money. In order to keep R from falling, the domestic monetary authorities must buy foreign currency with domestic money. This is an increase in the domestic money supply, which fulfills the excess demand for domestic money.

3. If the exchange rate floats freely, then the monetary authorities do not intervene in the foreign exchange market. Adjustment occurs not through the effect of intervention on the domestic money supply but through the effect of currency changes on price levels.

In parts a and c, R would be allowed to increase in response to the excess supply of domestic money. As R increases, the cost of foreign goods increase, and demand, by both domestics and foreigners, is switched to domestic goods, causing the price of domestic goods to increase. A higher domestic price level increases the demand for money, eliminating the excess supply of domestic money.

In part b, R would be allowed to decrease. As R decreases, the cost of foreign goods decreases, and demand, by both domestics and foreigners, is switched to foreign goods, causing a decrease in the price of domestic goods. A lower domestic price level reduces the demand for money, eliminating the excess demand for domestic money.

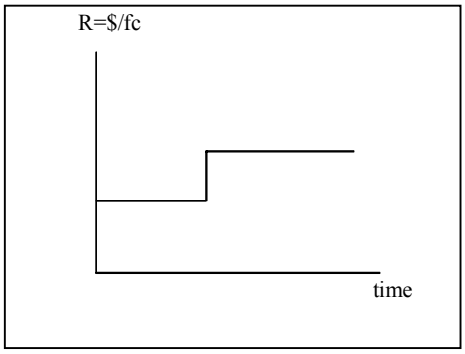
4. a) If real income increases in a fixed exchange rate system, then the resulting excess demand for domestic money will cause R to decrease. The monetary authorities must, then, buy the foreign currency with domestic money. This increases the domestic money supply. Thus, in order for Y to increase and R to remain constant, the monetary authorities must accommodate the increase in Y by increasing the domestic money supply.
b) If real income increases in a floating rate system, then the resulting excess demand for money will cause R to decrease. As R decreases, then demand is switched towards foreign goods, causing a decrease in the domestic price level. To avoid this deflation (assuming avoidance of deflation is desired), the money supply must be increased. With increased Y and increased money demand, an increase in the money supply will keep R from changing and avoid domestic deflation.
c) Given k, P, and Y in both countries, an increase in the domestic money supply cannot be sustained in a fixed rate system. If the domestic money supply increases, then the excess money balances will spill into foreign markets, causing R to increase. To maintain R, the foreign currency

must be sold and the domestic currency bought. Buying domestic currency reduces the money supply, undoing the initial increase in the money supply.

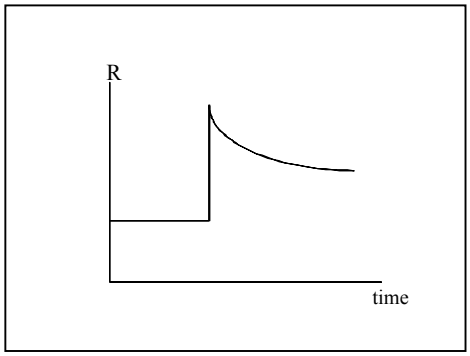
5. a) The real exchange rate is defined as $(P^{¥})(R)/P^{\$}$, and absolute PPP exists when $R = P^{\$}/P^{¥}$. Substituting for R in the real exchange rate produces a value of 1.0. If absolute PPP holds, then the real exchange rate is equal to 1.0.
b) If absolute PPP holds, then the exchange rate reflects the relative price levels, so converting $10 into candy bars in the United States would yield the same number of candy bars as converting $10 into yen and then into candy bars in Japan.
c) Yes. If the law of one price holds for all traded goods, then a dollar will buy the same amount of traded goods everywhere in the world. The law of one price will make the price of all traded goods the same when expressed in the same currency. PPP (absolute or relative), however, is not about the price of individual goods, but about all goods. There are non-traded goods, whose prices, when expressed in the same currency, are not identical. The exchange rate will reflect the law of one price in trade goods, but it may not reflect relative prices of non-traded goods.
d) If absolute PPP does not hold, then the real exchange rate, $(P^{¥})(R)/P^{\$}$, will not be equal to 1.0. However, if relative PPP holds, then the change in the exchange rate will reflect the difference in inflation rates, so the real exchange rate will not change. If the real exchange rate is 2.0, so that absolute PPP does not hold, then it will remain at 2.0 if relative PPP holds.

6. a) An expected appreciation of the foreign exchange rate will disturb the uncovered parity relationship, making foreign assets more attractive. As portfolios allocate more funds to foreign assets, the foreign exchange rate will appreciate.
b) An increase in the risk of foreign currencies will cause a reallocation of portfolios away from foreign currencies, causing a depreciation of the foreign currency.
c) An increase in domestic income will increase the domestic demand for money. This is a reallocation of financial holdings away from interest-bearing assets towards money. Some of those interest-bearing assets will be foreign so the sale of foreign assets and foreign currency will cause a depreciation of the foreign currency.
d) An increase in foreign interest rates will attract funds and appreciate the foreign currency.

7. a) If price level increases at the same time and by the same proportionate amount as the change in the money supply, then according to PPP, the domestic exchange rate will depreciate simultaneously by that same amount. If the exchange rate is defined as R = \$/fc, where fc is foreign currency, then R will increase (dollar depreciate) at the same time as the money supply increases, as shown in the figure to the right.



The interest rate will not be affected because an increase in the money supply by, say, 10%, and a simultaneous increase in the price level by 10% leaves the real money supply unchanged, so the interest rate will not change.
b) If the price level does not immediately react to the increase in the money supply, then the real money supply increases, which causes an initial decrease in the interest rate. By uncovered parity, this must mean, given foreign interest rates, that the foreign currency must be expected to depreciate. (It is assumed that i and i^* are initially equal.) If it is known that the foreign currency will appreciate in the long run, then the only way that foreign currency can be expected to depreciate now is if it overshoots its long-run value. The exchange rate will initially move above its long-run value, and then slowly approach its long-run value as prices slowly



increase. The time path of the exchange rate in this case is shown in the figure.

Chapter 16: Solutions to Questions

1. The ability of depreciation to correct a balance-of-payments deficit depends upon the price elasticities of demand for exports and for imports. The Marshall-Lerner condition states that the sum of the price elasticities of demand for imports and exports must exceed 1.0 in order for depreciation to correct a balance-of-payment deficit through changes in trade flows. The higher these elasticities are, the smaller is the change in the foreign exchange rate necessary to correct a balance of payments deficit.

For a small open economy, imports have high budgetary importance. Goods that have high budgetary importance have high price elasticities of demand so depreciation will tend to be effective in correcting a balance-of-payments deficit. (The price elasticity of demand for exports is determined by conditions in the foreign economy.)

2. A depreciation of the dollar will increase the demand for U.S. exports and increase export prices, when expressed in the domestic currency. The same depreciation will decrease the supply of imports and increase import prices, when expressed in the domestic currency. These increased prices will feed directly into higher inflation rates. In addition, other prices in the domestic economy will increase as consumers substitute into domestic goods in response to high import prices and high export industry prices. (Export goods are also sold domestically.)

If inflation increases in the domestic economy, this may produce another balance-of-payments deficit as buyers substitute into foreign goods, requiring further depreciation, which further increases inflation, etc. Depreciation in an inflationary economy will require macro policies that will reduce the rate of inflation.

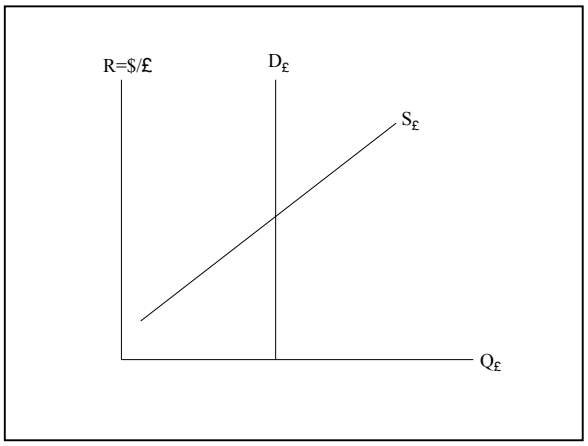
3. a) Gold movements are motivated by exchange rates that differ from the underlying prices of gold between countries. For example if the United States agrees to peg gold at $50 per ounce, and the United Kingdom agrees to peg gold at £10 per ounce, then the implied exchange rate is $5/£1. If, on the foreign exchange market, the pound goes to, say, $5.50/£1, then pounds will not be purchased on the foreign exchange market. Those needing pounds that have dollars will buy gold in the United States for $50 and ship it to the United Kingdom where £5 can be purchased. Shipping gold at the maintained gold prices always insures that pounds can be had for $5 per pound.

b) Continuing the example in part a, if the pound is moving to $5.50/£1, then it is because there is an excess demand for pounds at $5.00/£1, or there is a U.S. balance-of-payments deficit. As gold moves out of the U.S. into the United Kingdom, as explained in part a, then the money supply will fall in the U.S. (money is taken out of circulation by domestics to buy gold from the government). The decrease in the money supply will lower prices, which will restore U.S. competitiveness and correct the balance-of-payments deficit. In the meantime, the opposite will occur in the U.K. In the U.K. there will be a gold inflow, increasing U.K. prices and eliminating the U.K. surplus.

c) The major benefit of a gold standard is the reduced exchange risk produced by fixed exchange rates. The major cost is that the money supply cannot be controlled. Ideally, the changes in the money supply will affect prices and not real output, but in practice real output declines with decreases in the money supply and increases with increases in the money supply. Only in the long run will a change in the money supply change prices with no change in real output. Deficit countries in a gold standard often had to accept unemployment in order to correct a balance-of-payments deficit and surplus countries had to accept inflation in order to correct a balance-of-payments surplus.

4. a) The U.S. demand for imports, with pound prices on the vertical axis, shifts vertically down by the same proportion as the depreciation. If the demand curve is vertical, then a vertical shift down

produces no change. Consumers do not respond to a change in price caused by depreciation. The price of imports is unchanged and the quantity is unchanged, so the quantity demanded of foreign exchange is unaffected by a change in the exchange rate. This is shown in the accompanying figure by a vertical demand curve.



The depreciation of the dollar has the effect of shifting the supply of exports to the right, when pound prices are measured on the vertical axis. In this case the value of exports measured in pounds increases from 200 (50x4) to 240 (80x3). (See price and quantities in the question.) As the dollar cost of the pound, $/£, increases (depreciation of the dollar), the quantity of pounds supplied from the U.K. increases, so the supply of pounds is upward sloping, as shown in the accompanying figure.

With a vertical demand curve and an upward-sloping supply curve, the foreign exchange market is stable. Stability means that excess demand will cause a change in the price (exchange rate) that eliminates itself, and excess supply will cause a change in the price that eliminates itself. (Verify in the accompanying figure that excess supply, which causes R=$/£ to decrease, will cause the excess supply to fall. Verify in the accompanying figure that excess demand, which causes R=$/£ to increase, will cause the excess demand to fall.)

b) The demand curve for imports shifts down due to the depreciation, and as can be seen in the figure for Question 4, part b, the price and quantity falls. Depreciation reduces the amount of pounds needed for imports, so the demand curve for foreign exchange is downward sloping.

The supply curve of exports shifts to the right, but the amount of pounds needed by the United Kingdom to buy exports is unchanged at 100. Price multiplied by quantity is identical at both intersections. This produces a vertical supply curve of foreign exchange.

A vertical supply of foreign exchange and a downward-sloping demand curve for foreign exchange produces a stable foreign exchange market. As in part a, verify that the foreign exchange market is stable by showing that excess demand or supply will produce a change in price that eliminates that excess.

c) The demand for imports is vertical and so is unaffected by the depreciation. Because the value of imports is not affected by depreciation, the amount of pounds demanded for imports will not change. The demand curve for foreign exchange is vertical.

The demand for exports is vertical so the supply shift reduces the price of exports but leaves the quantity unaffected. Because the price is lower and quantity is unaffected, the United Kingdom needs to supply less foreign exchange as a result of depreciation. The supply curve for foreign exchange is *downward* sloping.

A vertical demand curve for foreign exchange and a downward-sloping supply curve produce an unstable foreign exchange market. If the exchange rate, R=$/£, increases, then there will be excess demand, which causes a further increase in R, which causes greater excess demand, etc.

5. Case c of Question 4 is consistent with the J-curve phenomenon. A depreciation of the dollar will cause further excess demand for foreign exchange, which is a larger balance-of-payments deficit. Notice that this case is one in which the price elasticity of demand for both imports and exports is zero. In the short run, price elasticities do tend to be low. The J-curve phenomenon exists because elasticities are low, but then increase (in absolute value) as time passes. In time, the demand curves will be downward sloping and the depreciation will improve a balance-of-payments deficit.

6. If there is no currency pass-through, then the foreign exporters maintain the dollar price of goods in the face of depreciation. Essentially, foreign exporters who receive dollars and realize

less of their own currency, absorb the decrease in revenues (accepting less profit). If there is no currency pass-through, then the depreciation has no effect on imports, so there is no effect on the demand for foreign currency as a result of the change in the exchange rate (the demand for foreign exchange will be vertical in this case). The effect of depreciation is totally dependent on the effect of the U.S. depreciation on the U.S. export market. If the elasticity of demand for U.S. exports is high enough, the depreciation will correct the balance of payments.

Chapter 17: Solutions to Questions

1. a) The MPC, $\Delta C/\Delta Y = .75$.
b) With no government and no trade, equilibrium occurs where Y=C+I. By substitution, Y=100+.75Y + 400. Solving for Y yields Y=2000.
c) If investment increases by 50, then substitute I=450 into Y=100+.75Y+I. Solving for Y yields Y=2200.

Alternatively, the multiplier is 1/(1-MPC)=1/(1-.75)=4, so an increase in I of 50 will increase output by the multiplier times the increase in I. Output will increase by 4(50)=200 (from Y=2000 to Y=2200).
d) Due to the MPC. Investment spending increases by 50, to which producers respond by increasing output by 50. The receipt of 50 is then paid out as income, out of which 75% is spent on consumption. This new consumption will lead producers to increase production. The receipts will be paid out as income, out of which 75% is spent, etc.
e) If the consumption function shifts up by 50, then the effect on output will be the same as when investment increases. Consumption increases are also subject to the multiplier, so output will increase by 200.
f) The consumption function will *shift* as a result of anything increasing income other than income. Some possibilities include lower interest rates and greater wealth.
g) The multiplier, as discussed above, is 1/(1-MPC), so when MPC=.75, as in C=100+.75Y, the multiplier is 4.
h) Multiplier=1/(1-MPC) = 1/.1 = 10.
i) As the MPC increases, the consumption induced by any increase in spending will be larger. Consequently, when the MPC increases, the multiplier increases.

2. a) In equilibrium, Y=C+I+X-M. By substitution, Y=100+.75Y+400+300-(50+.25Y).
Solving for Y yields Y=1500.
b) Exports are given as X=300. Imports are M=50+.25Y. When Y=1500, M=50+.25(1500)=425. The trade balance is X-M=300-425=-125. There is a trade deficit of 125.
c) If exports increase by 100, then substitute X=400 into the equilibrium shown in part a to produce Y = 100+.75Y+400+**400**-(50+.25Y). Solving for Y yields Y=1700.
d) At Y=1700, the trade balance is X-M=400-(50+.25Y)=400-475=-75. The trade balance improved from a deficit of 125 (part b) to a deficit of 75. The improvement was less than the increase in exports of 100, because exports increased income, which caused an increase in imports.
e) If this were a large economy, then the increase in exports would cause an increase in imports (as seen in part d). The increase in imports would cause foreign exports to increase, which would increase foreign incomes, and so increase foreign imports, which are domestic exports. This would cause a further increase in domestic income. For a small economy, the effect of increased domestic imports on foreign income is negligible.

3. The absorption approach points out that depreciation will increase net exports only if it increases production relative to the increase in absorption. Devaluation switches demand towards domestic goods, but if production is at full employment, real production cannot change, so devaluation will work only if it reduces domestic absorption. The point is that it is not clear that devaluation will increase production relative to the increase in absorption, especially if an economy is at full employment. In addition to devaluation, other policies may be required in a fully employed economy to insure that domestic absorption is reduced.

4. a) Foreign recession will reduce foreign imports, which are Kenya's exports. The reduction in exports will reduce Kenya's income level. The lower income level will provide some adjustment to trade deficit produced by the decreased exports, because at lower levels of income imports will be lower. The deficit caused by the reduction in exports (partially offset by the reduced imports) will put downward pressure on Kenya's exchange rate. To defend the exchange rate, the monetary authorities of Kenya must buy their own currency with foreign exchange reserves. This will reduce Kenya's money supply, which will have the effect of further contracting Kenya's output, and will reduce Kenya's price levels. The money supply will contract as long as there is a deficit putting pressure on the exchange rate, so this process will continue until the lower income and lower prices restore trade balance. In addition, the lower money supply will raise interest rates and attract financial capital to Kenya, providing private financing for the trade deficit. At the new equilibrium, there may still be a trade deficit financed by the financial capital inflows. It's not clear what happens to import-competing sectors. The reduced income will mean less domestic activity, but the lower price level will reduce imports, shifting some demand to import-competing sectors.
b) The adjustment requires a reduction in domestic income, directly from the reduced exports, and indirectly from the lower money supply. Kenya may resist letting its economy move into recession as a result automatic adjustments to a trade deficit.

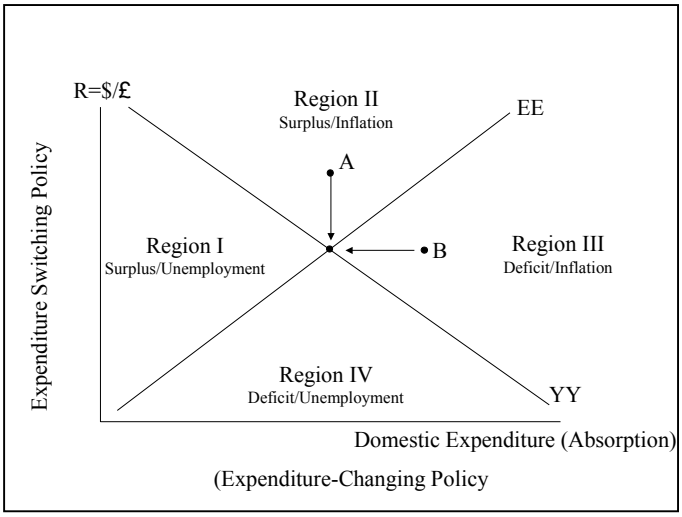
5. a) With a floating exchange rate, the reduction in exports caused by foreign recession will trigger a depreciation of Kenya's currency. The depreciation will switch demand towards Kenya's goods, reducing imports and increasing demand for Kenya's exports and import-competing products. The problem, though, is that this automatic adjustment may not be completely successful. Kenya's economy is at full employment (as assumed in the question), so the depreciation may not increase domestic output, which would mean that domestic absorption would have to be reduced through other policies. In addition, the increased demand for Kenya's products may produce an inflation that will worsen the trade balance.
b) Even if the depreciation is successful, it will cause a reallocation of resources. Export sectors will expand and import-competing sectors will expand. If Kenya uses deprecation and appreciation as an adjustment for changes in foreign economies, there will be repeated reallocations of resources. These reallocations can be disruptive as labor and capital repeatedly move. In addition, currency depreciation may be inflationary and currency appreciation may cause unemployment, which Kenya may not be willing to accept.

The point of Questions 4 and 5 is that adjustments to trade balances may not necessarily produce economic changes consistent with the desired state of the domestic economy.

Chapter 18: Solutions to Questions

*The analysis in this chapter relies heavily on diagrams. All of the relevant diagrams are not provided in the following answers, but the changes are described. To fully understand the answers, you **must** draw your own diagrams and work along with the descriptions.*

1. a) If there is surplus and inflation, then it is possible that only an appreciation of the domestic currency (reduction in R) is necessary. If the appreciation reduces the surplus, and the reduction in X-M is just that required to eliminate the inflation, then only a change in R is necessary. An example of this situation is shown at point A in the accompanying Swan Diagram. Notice that only a reduction in R is necessary to reach the intersection of EE and YY.



b) The depreciation of the domestic currency (increase in R) causes an increase in domestic expenditures. It must be the case, then, that correction of the deficit will not eliminate the inflation, so expenditures must be reduced. Deficit/inflation is shown in Region III of the accompanying figure. Notice from Region III of the Swan Diagram that domestic expenditures must be reduced to get to an intersection of EE and YY.
c) Yes. If the reduction in domestic expenditures necessary to eliminate the inflation and reach full employment also reduces imports by the amount necessary to restore external balance, then only a reduction in domestic expenditures is necessary. Such a situation is shown by point B in the accompanying Swan Diagram.

2. If the Marshall-Lerner condition is not met, then currency depreciation will worsen the trade balance and an appreciation will improve the trade balance. If domestic expenditure increases, then imports will increase, producing a trade deficit. To correct the deficit, an appreciation of the domestic currency (depreciation of the foreign currency) is necessary. With R = $/£ on the vertical axis and domestic expenditure on the horizontal axis, an increase in domestic expenditure requires a reduction in R. This produces a *downward-sloping* EE line, reversing the sign of the slope in the usual Swan Diagram.

The YY line also reverses the sign of its usual slope. If there is full employment and domestic expenditures are decreased, then full employment will be restored by domestic *appreciation*, a reduction in R. The YY line will be upward sloping.

3. a) An increase in foreign imports will increase domestic exports. This will shift the IS curve to the right and it will intersect the LM curve above the flat BP line. The higher interest rate will attract foreign financial capital. With fixed exchange rates, the monetary authorities will have to sell domestic currency, increasing the domestic money supply. The increased money supply will shift the LM curve to the right until it intersects the new IS curve on the flat BP line. Interest rates return to their old level, and imports will be higher because domestic income has increased. It is not clear what the new trade balance will be because both exports and imports have increased.
b) If the budget deficit increases, then either government spending increases and/or taxes decrease. The IS curve will shift to the right, producing an interest rate above the BP line. The financial inflows will threaten appreciation, requiring a sale of domestic currency. The resulting increase in the money supply will shift the LM curve to the right until it intersects the new IS curve on the flat BP line. The interest rate has returned to its former level, income has increased, and along with the increased income there will be greater imports. Because exports have not changed, the trade balance has worsened.
c) An increased money supply will shift the LM curve to the right where it will intersect the IS curve below the BP line. The low interest rate will produce financial outflows and downward pressure on the domestic currency. The monetary authorities will buy domestic currency to maintain the exchange rate, which reduces the money supply and shifts the LM curve back to the left. The LM curve will continue to shift to the left until pressure on the currency is relieved, which is where LM originally intersected the IS curve on the BP line. There is no change in interest rates, income, or the trade balance, after all adjustments have occurred.

4. a) An increase in foreign imports will increase domestic exports, shifting the IS curve to the right. The IS and LM curves now intersect above the BP curve. The high interest rate will attract financial flows, appreciating the domestic currency. The appreciation will reduce exports and increase imports, shifting the IS curve back until it intersects the LM curve at the old interest rate. The interest rate and income remain unchanged. The effect on the trade balance is uncertain. The exchange rate appreciation has reduced export and increased imports, but increased foreign incomes (assumed) increased exports.
b) An increase in government spending and/or a reduction in taxes will shift the IS curve to the right, where it will intersect the LM curve above the BP line. The high interest rate will attract financial flows, appreciating the exchange rate. The appreciation will reduce exports and increase imports, shifting the IS curve back to where it started. The interest rate and income are unchanged, but due to the appreciation, the trade balance has deteriorated.

Note: This is the twin-deficit theory of why the United States produced significant trade deficits beginning in the early 1980s. The United States produced large budget deficits in the early 1980s, which was followed by appreciation and a large trade deficit.

c) The increased money supply will shift the LM curve to the right, intersecting the IS curve below the BP line. The low interest rate will produce financial outflows, depreciating the domestic currency. The depreciation will increase exports and reduce imports, shifting the IS curve to the right until it intersects the new LM curve on the flat BP line. The interest rate is unaffected and the level of income is increased. The effect on the trade balance is unclear. Higher income means more imports, but the depreciation increased exports and reduced imports.

5. a) If the BP lines shifts up due to increased perceived risk of financial investments within a country, then IS and LM intersect below the BP line. This will cause an outflow of financial capital and threaten to depreciate the domestic currency. The monetary authorities will buy the domestic currency, reducing the money supply and shifting the LM curve to the left until it intersects the IS curve on the new BP line. There will now be unemployment because it was assumed that the economy was initially at full employment.

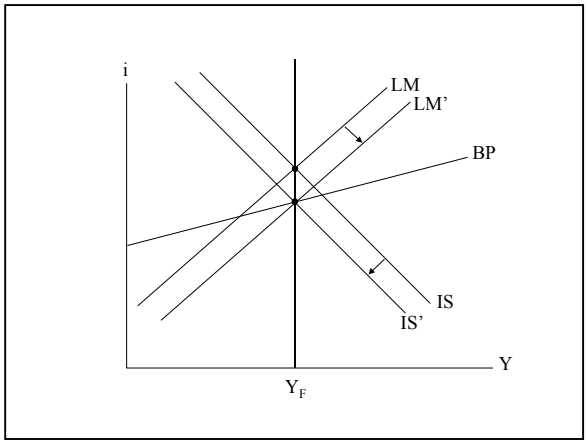
This might explain what happens to countries that produce large trade deficits financed by borrowing (financial capital inflows). Lenders to the country will want a return at some point, requiring financial capital outflows. If the trade deficit and the need to borrow continue to grow for the nation, lenders will require a greater return due to the risk involved in continued lending.

b) With fixed exchange rates, monetary policy is ineffective. An expansionary monetary policy would just lead to downward pressure on the domestic currency that the monetary authorities would have to offset by buying the currency, thus offsetting the attempt to increase the money supply. Fiscal policy is effective, first shifting IS to the right. This will make interest rates above the BP line, threatening to appreciate the currency, which the monetary authorities would resist by selling domestic currency. Selling domestic currency increases the money supply, shifting the LM curve to the right until it intersects the new IS curve on the new BP line. The net effect is to increase domestic income.

6. a) The financial account is ignored in the Swan Diagram. Domestic expenditures are measured on the horizontal axis of the Swan Diagram, and there is no distinction made between fiscal and monetary policies. Both expansionary fiscal and monetary policies are assumed to produce an external deficit. If financial capital is introduced, then expansionary fiscal policy may actually produce a surplus because it produces a higher interest rate that attracts financial capital.

b) In the very long run, countries must produce an equality of imports and exports. A trade deficit implies a financial inflow (borrowing), and countries cannot borrow from the rest of the world forever.

7. a) If there is full employment and surplus, then IS and LM intersect above the BP line, as shown in the accompanying diagram. In order to remain at the current level of output (assumed to be full employment), the LM curve must shift to the right and the IS curve to the left. Thus expansionary monetary policy and contractionary fiscal policy is required.

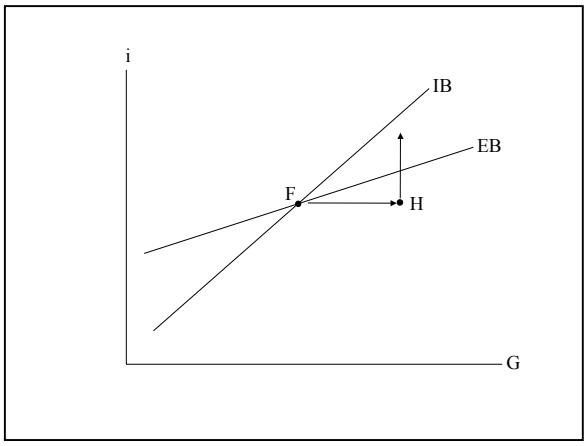


b) If there is full employment and a deficit, then the IS and LM curves intersect at full employment and below the BP line. To remain at that income level, but move to external balance, then the IS curve must shift to the right and the LM curve to the left until they both intersect the BP line at full employment. (Draw it!) Fiscal policy must be expansionary and monetary policy must be contractionary.

c) If output is above full employment and there is a surplus, then IS and LM must intersect to the right of full employment and above the BP line. The IS curve must shift to the left so fiscal policy must be contractionary, but depending upon how you draw the IS and LM curves, monetary policy could be expansionary or contractionary. Draw both cases.
d) IS and LM intersect below full employment and below the BP line. Fiscal policy must be expansionary, but monetary policy will be expansionary or contractionary, depending upon how the curves are drawn. Draw both cases.

8. According to the principle of effective market classification, monetary policy should be directed towards the external problem and fiscal policy towards the internal problem.
a) Contractionary monetary policy and contractionary fiscal policy.
b) Contractionary monetary policy and expansionary fiscal policy.
c) Expansionary monetary policy and contractionary fiscal policy.
d) Expansionary monetary policy and expansionary fiscal policy.

9. a) Suppose there is both external balance and internal balance at point F in the accompanying figure. Suppose now that G increases as shown by the horizontal arrow to point H. The increase in G will increase domestic income, producing inflation. The increase in domestic income will also produce a trade deficit due to increased imports. Now increase the interest rate to see what balance will be restored most easily.



As interest rates are increased, income will decrease, which will decrease imports. At the same time, however, the higher interest rates will attract financial capital, so interest rates need not be increased much to restore external balance. Thus, the EB line will be reached before the IB line. (If the interest rate is increased sufficiently to restore internal balance then income will have decreased by the same amount as higher G increased income. Thus, imports would be back at their former level, but with higher interest rates, which attracts financial capital. Consequently, being on the IB line at the higher G would mean a surplus, so the point on the IB line would be above the EB line.)
b) If financial capital is immobile, then starting at point F and increasing G would mean that interest rates would have to increase enough to restore the level of income and the trade balance, but with no help from financial inflows. Imports would have to decrease by as much as they initially increased, which would require a decrease in income by as much as it initially increased. The EB and IB lines would be identical.
c) External surplus and inflation would mean being above the EB line and to the right of the IB line. (See Fig.18-10 in Chapter 18 of *International Economics*.) If the money supply were to be decreased (increased i) to get to internal balance, and then government spending increased to get to external balance, then we would move farther from simultaneous external and internal balance. According to the principle of effective market classification, this is an incorrect assignment of policy.

10. In the effective market classification diagram (IB-EB diagram), fiscal policy is a tool separate from the interest rate. It is assumed that government spending has no effect on the interest rate, or that when fiscal policy is used that the interest rate effects are neutralized by monetary policy. In the IS-LM-BP analysis, the interest rate effects of fiscal policy are addressed directly.

Chapter 19: Solutions to Questions

1. a) If foreign income increases, then foreign imports will increase and domestic exports will increase. With higher exports, what was formerly external balance will now be surplus. Thus, external balance can be supported with higher income (producing higher imports), or with lower interest rates (less financial inflows), so the BP line will shift down.
b) If the domestic currency appreciates, then exports will be stimulated and imports discouraged, so the higher income or lower interest rates will be consistent with external balance, so the BP line will shift down.
c) An increase in foreign interest rates will mean that domestic interest rates will also have to increase in order to maintain financial inflows, so the BP line will shift up.
d) A tax on foreign asset purchases will discourage such purchases and reduce financial outflows. Thus, the domestic interest rate need not be as high to attract financial flows, so the BP line will shift down.

2. A flat BP curve means that a nation is unable to maintain an interest rate different than the rest of the world. Any small change in the domestic interest rate will produce large financial flows that will then cause the interest rate to return to world level. Alternatively, a flat BP curve means that a country can borrow or lend as much as it needs at the current interest rate.

The only thing that changes the horizontal BP curve is a change in world interest rates, or a change in the risk of investing in a country, or a change in the tax rate on financial income.
a) An increase in foreign income will have no effect on a horizontal BP curve. Exports of the country will increase, so the composition of the balance of payments will change, but the BP curve will not shift. The country simply increases its net foreign investment position (improved current account means less borrowing in foreign markets, or more lending to foreign markets) at the given interest rate.
b) Appreciation has no effect on a horizontal BP curve. The composition of the balance of payments will change, as in part a, but the interest rate at which international borrowing and lending takes place is unchanged.
c) An increase in foreign interest rates will shift the horizontal BP curve up. Funds will flow out of the country until interest rates increase to equal the foreign interest rate. [Same answer as for 1c].
d) A tax on foreign asset purchases will discourage such purchases and reduce financial outflows. Thus, the domestic interest rate need not be as high to attract financial flows, so the horizontal BP line will shift down. [Same as 1d].

3. a) Higher foreign income will increase foreign imports and domestic exports. This will shift the IS curve to the right.
b) An appreciation of the domestic currency will discourage exports and encourage imports, shifting the IS curve to the left.
c) A decrease in the income tax rate will increase disposable income, which will increase consumption and shift the IS curve to the right.
d) An increase in the money supply will not directly affect the IS curve.

4. a) The purchase of domestic currency by the monetary authorities will reduce the amount of domestic currency in circulation. The lower money supply will shift the LM curve to the left.
b) The money supply increases and shifts the LM curve to the right.
c) An increase in foreign income, in and of itself, has no direct effect on the money supply.
d) An appreciation of the domestic currency has no direct effect on the money supply.

5. a) If AS and AD intersect below the natural rate of output, then wages will drift down due to unemployment. Lower wages will shift the AS curve to the right, increasing equilibrium output and employment. This will continue until there is full employment.
b) Although unemployment will tend to cure itself, as described in part a, the adjustment may not be immediate. Rigid wages due to contracts, minimum wage laws, and the like, may mean a period of protracted unemployment. Government may undertake a policy of trying to quickly increase AD to produce full employment rather than waiting for the AS curve to shift to the right.

6. Recall from Question 2 that a flat BP curve will change only if something affects foreign interest rates (including risk and taxes). This means that in order to determine the effect of the events listed below, we need only consider the effect on IS and LM. Anything that shifts the IS curve to the right (left) will increase (decrease) AD, and anything that shifts the LM curve to the right (left) will increase (decrease) AD.
a) An increase in foreign income will increase foreign imports, which are domestic exports. An increase in domestic exports is an increase in spending on domestic goods, which shifts the AD curve to the right. Additionally, with a fixed exchange rate, the increased exports will increase interest rates (IS curve shifts right on an upward sloping LM curve) and attract financial capital, to which the monetary authorities will respond by selling domestic currency. This increases the money supply, which shifts AD further to the right.
b) An increase in G will shift the AD curve to the right. As in a, there will be also be an increase in the money supply caused by the agreement to maintain fixed exchange rates.
c) An increase in the money supply will increase spending on domestic goods, which shifts the AD curve to the right. However, if exchange rates are fixed, then the increased money supply will produce lower interest rates, a financial outflow, and a purchase of domestic currency by the monetary authorities. This reduces the money supply and the AD curve will return to its original position. In a fixed exchange rate system, monetary policy is ineffective; a nation cannot control its money supply.
d) A reduction in imports, due to something other than income, will produce an increase in spending on domestic production any given level of output so the AD curve will shift to the right. As in parts e and b, there will also be an increase in the money supply due to the exchange rate agreement, shifting AD further to the right.
e) An increase in foreign interest rates will not *directly* affect the AD curve. However, the increase in foreign interest rates will shift the BP curve up. IS and LM now intersect below the BP line, so the relatively low domestic interest rate will cause a financial capital outflow. This will put downward pressure on the domestic currency, so the monetary authorities will buy domestic currency on the foreign exchange market. This decreases the money supply, shifts the LM curve to the left, shifting the AD curve to the left.

7. a) An increase in foreign income leading to greater domestic exports will shift the AD curve to the right. However, the increased domestic spending will produce higher interest rates because the increased exports shifts the IS curve to the right. The higher interest rate will attract foreign financial capital, causing an appreciation of the domestic currency, which discourages exports and encourages imports. The reduced exports and increased imports shift the AD curve back. This will continue until the IS curve again intersects the LM curve on the flat BP line. Thus, AD does not change after all adjustments are considered.
b) Same as part a. Fiscal policy is ineffective with flexible exchange rates.
c) An increase in the money supply will shift the AD curve to the right. In addition, the lower interest rate due to the shift of the LM curve to the right will produce a financial capital outflow and depreciate the domestic currency. This depreciation will increase exports and reduce imports, which shifts the IS curve and the AD curve to the right. The AD curve shifts to the right due to both the increased money supply and increased net exports.
d) Same as parts a and b.
e) An increase in foreign interest rates shifts the BP curve up. Now IS and LM intersect below the flat BP line. The relatively low domestic interest rate will produce financial capital outflows and a depreciation of the domestic currency. This will reduce exports and increase imports, shifting the IS and AD curve to the left.

8. a) A reduction in foreign incomes will reduce foreign imports and reduce domestic exports. This will shift the IS curve to the left, which will now intersect the LM curve below the BP line. The relatively low domestic interest rate will cause financial capital outflows and put downward pressure on the domestic currency. With fixed exchange rates, the domestic monetary authorities are obligated to buy domestic currency, which lowers the money supply and shifts the LM curve to the left. The shifts of the LM and IS curves to the left mean the AD curve will shift to the left, producing an increased unemployment rate.

b) In the long run, the high unemployment will cause wages to eventually drift down, shifting the AS curve to the right until full employment is reached.
c) Rather than waiting for the AS curve to shift to the right as in part b, policy makers could try to shift the AD curve back to where it came from. The two options are monetary policy and fiscal policy. In a fixed exchange-rate system, monetary policy is ineffective [see Question 6c], so an increase in government spending or a decrease in taxes is necessary to shift the AD curve to the right.

9. a) In general, the AS curves (long and short run) will shift to the left when there is an increase in the price of an input. The higher price input will cause a reduction in the amount produced at a given price level. In the short run, the shift of the AS may be larger because it takes time for firms to seek and find alternative inputs. In the long run, alternative input use can be explored and used, so the short-run reduction in output will be larger than the long-run reduction in output.
b) If short-run AS shifts more than long-run AS, then the short-run AS and AD will intersect to the left of the long-run AS, indicating unemployment.
c) If no policy actions are taken, then the unemployment, described in part b, will cause wages to eventually fall, shifting the short-run AS curve to the right until it intersects with AD on the long-run AS. Full employment will be restored, but note that it will be at a lower level of output. A fully employed labor force will produce less when input prices are higher.
Policy makers could shift AD to the right rather than waiting for the AS curve to shift to the right. The exchange rate system determines which policy can be used. In a fixed- rate system, monetary policy is ineffective so fiscal policy will have to be used. In a floating rate system, fiscal policy is ineffective so monetary policy will have to be used.

Chapter 20: Solutions to Questions

1. a) Mexico is a relatively small open economy with a high mobility of financial capital. Restrictive monetary policy in the United States would cause higher interest rates in the United States and produce a financial capital flow out of Mexico. The financial capital outflow would be sizeable making it difficult for the Mexican monetary authorities to maintain the fixed exchange rate.
b) Private speculators would be aware that Mexico could do little to sustain the exchange rate in the face of large financial capital outflows. Consequently, speculators would bet against the peso and actually be responsible for the large financial capital outflows. Such speculation is destabilizing in the sense that it would not produce a return to the old exchange rate, but force Mexico to devalue the peso.

2. In a flexible exchange–rate system, exchange rate uncertainty is borne by the private participants in the foreign exchange market. Importers, exporters and holders of foreign assets would have to decide to speculate or to try to hedge in by using futures and options contracts.

In a fixed exchange-rate system, the government agrees to maintain the exchange rate by appropriate exchange rate intervention. The cost of holding reserves and the cost of administration is borne by taxpayers, in general, in that they must finance reserve holdings and pay the salaries and operating expenses of administrative staff.

3. a) A flexible exchange-rate system is considered more efficient because the exchange rate continually reflects the supply and demand for foreign exchange. A floating rate continuously maintains balance-of-payments equilibrium. In a fixed exchange rate system, external payments imbalances are transmitted to changes in the money supply, and, in turn, to domestic prices and incomes. It is more efficient for one price—the exchange rate—to change than for all domestic prices to change.
b) The EU has adopted one currency—the euro—in order to reduce the cost exchange rate uncertainty associated with flexible rates, and in order to reduce the clerical costs of exchanging money.
c) Fixed exchange rate systems rely on changes in the money supply and internal prices to adjust to balance-of-payments disequilibria. If the economy is large, then many prices will have to

adjust, which is very inefficient, relative to allowing the exchange rate to adjust. In small open economies, there are similar benefits to a fixed exchange rate system, but the costs are less because there are fewer prices to adjust and the price changes will easily affect trade flows because the economy is open.

4. a) If you favor a fixed exchange rate system, you might view speculation as destabilizing under flexible exchange rates and stabilizing under fixed exchange rate systems. If governments establish a *credible* fixed rate, then private participants will not bet against the ability of governments to maintain the exchange rate. If the exchange rate reaches the limit of its band, then private speculators will bet that it will return to its central value, and their actions will cause it to move towards the central value.
b) If you favor a flexible exchange rate system, then you would view speculation as stabilizing under flexible rates. You would argue that speculators will not, on average, be wrong about the movement of exchange rates. If speculators are correct, then they will buy low and sell high, chopping off the peaks and valleys of exchange rate movements.

A proponent of floating rates would argue that speculation is destabilizing under fixed rates. Fixed rates change very infrequently, and when it is clear that a change should be made, it's public news. Speculators acting on the public news will have a sure bet, and actually be a cause of a change in the exchange rate.

5. As an example, suppose the internal disturbance is a decrease in domestic income. With fixed exchange rates, a decrease in domestic income will decrease imports. The reduction in imports reduces the demand for foreign currency, threatening to appreciate the domestic currency. Monetary authorities will respond by selling domestic currency. This is an increase in the domestic money supply, the effects of which will offset the initial decrease in domestic income.

With floating rates, the decrease in imports due to domestic contraction will cause the domestic currency to appreciate. The appreciation of the domestic currency will cause fewer exports and more imports, thus adding to the contraction.

With internal disturbances, a nation would prefer a fixed exchange rate system because the resulting monetary change will offset the internal disturbance. With a floating rate system, the internal disturbance will amplify the internal disturbance.

6. The anchor argument is that a fixed exchange rate will help curb inflationary pressures. If the exchange rate is fixed relative to a major trading partner with a low rate of inflation, then any excessive domestic inflation will cause a balance-of-payments deficit. The deficit will threaten to weaken the domestic currency, which will lead to purchases of the domestic currency by the domestic monetary authorities. Purchases of the domestic currency will decrease the domestic supply of money and reduce inflationary pressures. The strength of the anchor argument lies in the commitment to the fixed exchange rate. A question that arises is why would governments be more committed to a fixed exchange rate than to a lower rate of inflation directly? If governments were committed to a lower rate of inflation directly, then inflation could be controlled directly by controlling the money supply.

7. a) If a nation chooses an inflation rate higher than its trading partners, then a fixed exchange rate system would be inappropriate. Higher relative inflation would continuously threaten to depreciate the domestic currency as both domestic and foreign buyers continually substitute into the goods of the nation with lower inflation. The exchange rate system would not necessarily have to be a freely floating one, but would have to be constructed such that continual currency devaluations could be easily and effectively made.
b) A fixed exchange rate system. If a government commits to a fixed exchange rate, then the currency pressures of high domestic inflation would produce monetary contraction and a lower inflation rate. This is the anchor argument. See Question 6.

8. a) The United Kingdom has chosen not to participate in the euro area because maintenance of a fixed rate for the pound meant that the United Kingdom would not be able to control its money

supply, as described in Chapters 16 and 19. By maintaining a separate currency the UK pound can adjust to international payments imbalances, freeing monetary policy for internal balance.
b) The UK could have joined the fixed exchange rate system of the euro area, but if the UK wanted the freedom to use monetary policy it would have had to suspend financial capital flows.

9. First, the United States has one central bank. Consequently, the United States has one underlying common rate of inflation, although some regions' inflation rates may differ slightly. In Latin America, each nation has a central bank and each nation has a different inflation rate. Before a common currency could be considered for Latin America, inflation rates would have to converge, after which a common central bank could be established.

Next, labor mobility is much higher in the United States. It is much easier to relocate from, say, Ohio to Virginia than it is to relocate from the mountains of Peru to Ecuador. A common currency area eliminates the exchange rate as an adjustment mechanism. A non-competitive nation in Latin America will find its currency depreciating, leading to a stimulation of exports and a contraction of imports. In the United States, a non-competitive region adjusts, in part, by a movement of labor to competitive regions.

Finally, the United States has a central fiscal agent that has the power to redistribute income from wealthy regions to poor regions. Latin America has many national governments that do not have the power to tax one nation in order to redistribute to other nations.

10. a) As has been described, fixed exchange rates between nations can only be maintained if national inflation rates are equal. If each nation meets a common inflation rate before the introduction of one currency, then it will be easier to maintain a currency with common value across countries. The same argument applies to interest rates. If one currency is introduced and interest rates are different, financial capital will flow to the high interest rate currencies, forcing the low interest rate countries to adjust by contracting their economies in order to maintain external balance.
b) The benefits include less exchange-rate risk, smaller clerical costs associated with currency conversion, and larger markets. As explained in the Chapter Summary and Review, floating rates may turn countries inward to avoid exchange risk. This reduces the size of the relevant market, meaning that economies of scale cannot be exploited, and that trade and its benefits will be reduced.
c) The cost is loss of monetary sovereignty. Each nation can no longer choose its own inflation rate, interest rate, etc. In addition, non-competitive regions can no longer rely on depreciation to help exports, but must rely on labor mobility and a central European government to redistribute income. There will also be cultural and social changes as labor mobility is fostered.

Chapter 21: Solutions to Questions

1. a) Under the gold standard, each participating nation agreed to stand ready to buy and sell gold at an agreed price. In doing so they fixed the price of gold by satisfying all private excess demands and supplies. The fixed price of gold in each nation also implied a fixed price of currencies.
b) Under the Bretton Woods system, the United States agreed to fix the price of gold in dollars. All other participating nations agreed to fix the price of their currency relative to the dollar, with a band of 1% on either side of the agreed-upon par value.

2. a) In order for world trade to expand, which would bring larger deficits and surpluses, it was necessary for the level of reserves to increase steadily. Because dollars were the principal reserve currency, this meant that the world relied upon a steady supply of dollars to the world. In order for the supply of dollars to increase, the United States had to run continual current account deficits. These continual deficits, though, would threaten the confidence in the dollars. The continually increasing supply of dollars led holders of dollars to believe, rightly, that the value of the dollar would have to fall. It was impossible to continue to hold and use a reserve currency whose value everyone knew would fall.

b) The SDR is international money created by the IMF. It is created by accounting entries that each country agreed to accept in exchange for its own currency. The purpose of the SDR was to increase the level of reserves in the world (increase liquidity) without increasing the number of dollars in circulation.

3. a) For a country facing continual balance-of-payments deficits, the exchange rate would reach the bottom of the band against the dollar, after which the country would buy its own currency with dollars. This would reduce the country's money supply, causing a reduction in domestic prices and income. Lower prices would stimulate exports and contract imports, and lower income would contract imports, thus correcting the balance-of-payments deficit.
b) Because the automatic adjustment meant lower domestic incomes for deficit countries, the automatic changes in the money supply were often offset through expansionary open market operations. The contractionary effect of the automatic adjustment could also be offset by expansionary fiscal policies.
c) If countries resisted the automatic changes in the money supply, then adjustment to deficits would not occur. Without adjustment, deficits continue and so must be financed with reserves. In time, reserves run out and the currency must devalue. Periods prior to devaluation were rather obvious because of the effect on reserves, so destabilizing speculation occurred, hastening the need for devaluation.

4. a) The experience with beggar-thy-neighbor policies between the wars convinced nations that trade and growth would best be promoted by a fixed exchange rate system.
b) The basic role of the IMF was to provide an orderly financing and adjustment of international payments imbalances with fixed exchange rates. It accomplished this by providing lending to deficit nations to finance imbalances, as well as by providing technical and legal assistance.

5. a) Destabilizing speculation was a major problem of the Bretton Woods system primarily because the provision for changes in the agreed-upon par values were not well specified. In practice, exchange rates were changed infrequently, and only when it became obvious to the world that currency devaluation was long overdue. This meant that speculators could take rather safe bets in foreign exchange markets. If it became apparent that the pound would have to devalue, then speculators would sell the pound, making their expectations realized.
b) In the spot market, governments could simply buy their own currency in order to maintain its value within the band. If speculators believed that governments had the resolve and liquidity to do so, then they would bet that the par value would be maintained and not bet on changes. Alternatively, governments could intervene in the forward market. If a currency were to come under speculative attack, then government purchases in the forward market would drive up the forward rate and possibly reverse the speculation. (Question 4 of Chapter 14 attempts to show that the forward rate and the spot rate are roughly equal.) If the forward rate is high enough, speculators will sell in the forward market hoping to satisfy the forward contract by buying in the near future at a low spot rate. This eventual buying in the spot market will support the currency.

6. The principal similarity between the Smithsonian Agreement and the Bretton Woods system was the attempt to keep exchange rates moving within a band. The differences were primarily a wider band, and the dollar was no longer fixed to gold. The Bretton Woods system was a gold-exchange standard, while the Smithsonian Agreement was a dollar standard.

7. a) The current international monetary system is made up of many types of exchange rate systems. Some small countries fix their currency to that of a major trading partner, while some other small countries fix to a basket of currencies, like the SDR. Many large countries have relatively flexible exchange rates, but do intervene on a regular basis to try to smooth short-term fluctuations without resisting long-term changes in the exchange rate. Notably, the EU has adopted one currency. In general, however, exchange rates are more flexible than they were under the Bretton Woods system.

b) The major problems of the currency international monetary system include excessive volatility of exchange rates and periodic financial crises in emerging market economies due to freer movement of financial capital across international borders.