- A tariff—a tax on imports—moves a market closer to the equilibrium that would exist without trade and, therefore, reduces the gains from trade. Although domestic producers are better off and the government raises revenue, the losses to consumers exceed these gains.
- There are various arguments for restricting trade: protecting jobs, defending national security, helping infant industries, preventing unfair competition, and responding to foreign trade restrictions. Although some of these arguments have some merit in some cases, economists believe that free trade is usually the better policy.

KEY CONCEPTS

world price, *p. 173*

tariff, *p. 177*

QUESTIONS FOR REVIEW

1. What does the domestic price that prevails without international trade tell us about a nation's comparative advantage?
2. If the world price of a good exceeds the domestic price of the good, will the country import or export the good? In this case, who gains from free trade: domestic consumers or domestic producers? Explain.
3. Draw the supply-and-demand diagram for an importing country. What is consumer surplus and producer surplus before trade is allowed? What is consumer surplus and producer surplus with free trade? What is the change in total surplus?
4. Describe what a tariff is and its economic effects.
5. List five arguments often given to support trade restrictions. How do economists respond to these arguments?
6. What is the difference between the unilateral and multilateral approaches to achieving free trade? Give an example of each.

PROBLEMS AND APPLICATIONS

1. Mexico represents a small part of the world orange market.
   a. Draw a diagram depicting the equilibrium in the Mexican orange market without international trade. Identify the equilibrium price, equilibrium quantity, consumer surplus, and producer surplus.
   b. Suppose that the world orange price is below the Mexican price before trade and that the Mexican orange market is now opened to trade. Identify the new equilibrium price, quantity consumed, quantity produced domestically, and quantity imported. Also show the change in the surplus of domestic consumers and producers. Has total surplus increased or decreased?
2. The world price of wine is below the price that would prevail in Canada in the absence of trade.
   a. Assuming that Canadian imports of wine are a small part of total world wine production, draw a graph for the Canadian market for wine under free trade. Identify consumer surplus, producer surplus, and total surplus in an appropriate table.
   b. Now suppose that an unusual shift of the Gulf Stream leads to an unseasonably cold summer in Europe, destroying much of the grape harvest there. What effect does this shock have on the world price of wine? Using your graph and table from part (a), show the effect on consumer surplus, producer surplus, and total surplus in Canada. Who are the winners and losers? Is Canada as a whole better or worse off?
3. Suppose that Congress imposes a tariff on imported autos to protect the U.S. auto industry

from foreign competition. Assuming that the United States is a price taker in the world auto market, show the following on a diagram: the change in the quantity of imports, the loss to U.S. consumers, the gain to U.S. manufacturers, government revenue, and the deadweight loss associated with the tariff. The loss to consumers can be decomposed into three pieces: a gain to domestic producers, revenue for the government, and a deadweight loss. Use your diagram to identify these three pieces.

4. When China's clothing industry expands, the increase in world supply lowers the world price of clothing.
   a. Draw an appropriate diagram to analyze how this change in price affects consumer surplus, producer surplus, and total surplus in a nation that imports clothing, such as the United States.
   b. Now draw an appropriate diagram to show how this change in price affects consumer surplus, producer surplus, and total surplus in a nation that exports clothing, such as the Dominican Republic.
   c. Compare your answers to parts (a) and (b). What are the similarities and what are the differences? Which country should be concerned about the expansion of the Chinese textile industry? Which country should be applauding it? Explain.
5. Imagine that winemakers in the state of Washington petitioned the state government to tax wines imported from California. They argue that this tax would both raise tax revenue for the state government and raise employment in the Washington state wine industry. Do you agree with these claims? Is it a good policy?
6. Consider the arguments for restricting trade.
   a. Assume you are a lobbyist for timber, an established industry suffering from low-priced foreign competition. Which two or three of the five arguments do you think would be most persuasive to the average member of Congress as to why he or she should support trade restrictions? Explain your reasoning.
   b. Now assume you are an astute student of economics (hopefully not a hard assumption). Although all the arguments for restricting trade have their shortcomings, name the two or three arguments that seem to make the most economic sense to you. For each, describe the economic rationale for and against these arguments for trade restrictions.
7. If tariffs reduce total surplus, why would a government impose them? (Think about who gains and who loses from a tariff.)
8. The nation of Textilia does not allow imports of clothing. In its equilibrium without trade, a T-shirt costs $20, and the equilibrium quantity is 3 million T-shirts. One day, after reading Adam Smith's *The Wealth of Nations* while on vacation, the president decides to open the Textilian market to international trade. The market price of a T-shirt falls to the world price of $16. The number of T-shirts consumed in Textilia rises to 4 million, while the number of T-shirts produced declines to 1 million.
   a. Illustrate the situation just described in a graph. Your graph should show all the numbers.
   b. Calculate the change in consumer surplus, producer surplus, and total surplus that results from opening up trade. (Hint: Recall that the area of a triangle is ½ × base × height.)
9. China is a major producer of grains, such as wheat, corn, and rice. In 2008 the Chinese government, concerned that grain exports were driving up food prices for domestic consumers, imposed a tax on grain exports.
   a. Draw the graph that describes the market for grain in an exporting country. Use this graph as the starting point to answer the following questions.
   b. How does an export tax affect domestic grain prices?
   c. How does it affect the welfare of domestic consumers, the welfare of domestic producers, and government revenue?
   d. What happens to total welfare in China, as measured by the sum of consumer surplus, producer surplus, and tax revenue?
10. For each of the following statements, determine whether it is true or false. Explain.
   a. A tariff increases consumer surplus, decreases producer surplus, and increases total surplus.
   b. If a country is an importer of a good, then the greater the elasticity of demand, the greater the gains from trade.

c. For every tariff, there is an import quota that could have generated a similar result.

11. Kawmin is a small country that produces and consumes jelly beans. The world price of jelly beans is $1 per bag, and Kawmin's domestic demand and supply for jelly beans are governed by the following equations:

Demand: $Q^D = 8 - P$
Supply: $Q^S = P$,

where P is in dollars per bag and Q is in bags of jelly beans.

a. Draw a well-labeled graph of the situation in Kawmin if the nation does not allow trade. Calculate the following (recalling that the area of a triangle is ½ × base × height): the equilibrium price and quantity, consumer surplus, producer surplus, and total surplus.
b. Kawmin then opens the market to trade. Draw another graph to describe the new situation in the jelly bean market. Calculate the equilibrium price, quantities of consumption and production, imports, consumer surplus, producer surplus, and total surplus.
c. After a while, the Czar of Kawmin responds to the pleas of jelly bean producers by placing a $1 per bag tariff on jelly bean imports. On a graph, show the effects of this tariff. Calculate the equilibrium price, quantities of consumption and production, imports, consumer surplus, producer surplus, government revenue, and total surplus.
d. What are the gains from opening up trade? What are the deadweight losses from restricting trade with the tariff? Give numerical answers.

12. Having rejected a tariff on textiles (a tax on imports), the president of Isoland is now considering the same-sized tax on textile consumption (including both imported and domestically produced textiles).

a. Using Figure 4, identify the quantity consumed and the quantity produced in Isoland under a textile consumption tax.
b. Construct a table similar to that in Figure 4 for the textile consumption tax.
c. Which raises more revenue for the government—the consumption tax or the tariff? Which has a smaller deadweight loss? Explain.

13. Assume the United States is an importer of televisions and there are no trade restrictions. U.S. consumers buy 1 million televisions per year, of which 400,000 are produced domestically and 600,000 are imported.

a. Suppose that a technological advance among Japanese television manufacturers causes the world price of televisions to fall by $100. Draw a graph to show how this change affects the welfare of U.S. consumers and U.S. producers and how it affects total surplus in the United States.
b. After the fall in price, consumers buy 1.2 million televisions, of which 200,000 are produced domestically and 1 million are imported. Calculate the change in consumer surplus, producer surplus, and total surplus from the price reduction.
c. If the government responded by putting a $100 tariff on imported televisions, what would this do? Calculate the revenue that would be raised and the deadweight loss. Would it be a good policy from the standpoint of U.S. welfare? Who might support the policy?
d. Suppose that the fall in price is attributable not to technological advance but to a $100 per television subsidy from the Japanese government to Japanese industry. How would this affect your analysis?

14. Consider a small country that exports steel. Suppose that a "pro-trade" government decides to subsidize the export of steel by paying a certain amount for each ton sold abroad. How does this export subsidy affect the domestic price of steel, the quantity of steel produced, the quantity of steel consumed, and the quantity of steel exported? How does it affect consumer surplus, producer surplus, government revenue, and total surplus? Is it a good policy from the standpoint of economic efficiency? (Hint: The analysis of an export subsidy is similar to the analysis of a tariff.)

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