

### Topic 3. Demand and supply in the external trade.

#### I. Match the Terms and Definitions

In the space after each of the 36 terms, note the matching definition from among A through HH:

1. agglomeration \_\_\_\_\_
2. biological leash \_\_\_\_\_
3. combinatorial process \_\_\_\_\_
4. compound growth process \_\_\_\_\_
5. compounding \_\_\_\_\_
6. creative destruction \_\_\_\_\_
7. depreciation \_\_\_\_\_
8. diminishing returns \_\_\_\_\_
9. economically significant \_\_\_\_\_
10. entrepreneur \_\_\_\_\_
11. evolutionary model of economic change \_\_\_\_\_
12. factor accumulation \_\_\_\_\_
13. innovation \_\_\_\_\_
14. learning curve \_\_\_\_\_
15. measurement error \_\_\_\_\_
16. medium-run growth \_\_\_\_\_
17. meta-ideas \_\_\_\_\_
18. natural resource curse \_\_\_\_\_
19. neoclassical growth model \_\_\_\_\_
20. neutral technological change \_\_\_\_\_
21. omitted variable bias \_\_\_\_\_
22. open economy \_\_\_\_\_
23. ordinary least squares \_\_\_\_\_
24. panel studies \_\_\_\_\_
25. path-dependent process \_\_\_\_\_
26. power of compounding \_\_\_\_\_
27. production function \_\_\_\_\_
28. Schumpeter model \_\_\_\_\_
29. Solow model \_\_\_\_\_
30. spurious regression results \_\_\_\_\_
31. statistically significant \_\_\_\_\_
32. steady state equilibrium \_\_\_\_\_
33. structural change \_\_\_\_\_
34. technological change \_\_\_\_\_
35. technology \_\_\_\_\_
36. transitional economic growth \_\_\_\_\_

Definitions:

- A. Joseph Schumpeter's term for the process in which firms continually seek profits by means of gaining an advantage in the marketplace through innovation.
- B. An alternative name often given for the Solow growth model.

- C. An improvement in the efficiency with which an economy uses its resources and factors of production to produce welfare-enhancing output.
- D. The surprisingly rapid increase or decrease in size of any initial value that grows at a constant rate over successive periods of time.
- E. The graphic relationship between the unit costs of production of a certain product and the experience accumulated in producing the product.
- F. The most common regression method used in statistics, which assumes the underlying population is normally distributed so that a mean and standard error can be accurately calculated.
- G. A person who innovates by applying new ideas and knowledge in ways never before done.
- H. Statistical regressions that simultaneously apply time-series and cross-section data, say ten years of annual observations for a set of 100 countries.
- I. A “Schumpeterian” type of model of technological change.
- J. Also known as the neoclassical growth model, this model assumes a neoclassical production function, depreciation of capital, and constant savings.
- K. A term often used to describe the transitional growth that occurs when there is a one-time shift in the parameters in the Solow model.
- L. A model of technological change that assumes innovation is driven by profit-seeking entrepreneurs who must find a way to employ productive resources in the innovative process.
- M. The stable equilibrium levels of output and the capital stock described by the Solow growth model.
- N. An economy that does not severely restrict international trade, international investment, and international migration and permits these international economic activities to interact with domestic economic activity.
- O. The name given to the common finding that countries that export only natural resources do not develop economically.
- P. A process in which new outcomes are the result of combinations of previous outcomes.
- Q. Regression results that reflect a correlation among data that does not reflect any real causal relationship or even a common economic trend.
- R. The behavior of nonhuman living creatures was passed on through genes, so that changes in the way they live, how they interact with each other, and how they deal with their natural environment occur through the slow process of evolution.
- S. The relationship between productive inputs and output, which neoclassical economics usually models as a production function. In practice, technology in an economy can have a very broad meaning, and it can include ideas, methods, habits, economic and social institutions, business organization, et cetera.
- T. A technical term that describes the probability that statistical analysis will accept as proof that the data confirm a hypothesized relationship.
- U. New ideas, innovations, inventions, and abstract concepts that set society on a path to an exceptionally large number of new ideas, inventions, and concepts.
- V. The process by which a constant rate of growth of a variable causes ever-larger absolute increases in the variable; an exponential process.
- W. The decrease in marginal output as equal amounts of a variable input are added to the production process.
- X. The special case where technology changes the marginal productivities of all factors of production by the exact same proportion.
- Y. A process that continuously builds on prior outcomes so that later outcomes depend on previous outcomes along a clear progression of outcomes that appears as a continuous path.
- Z. The process of creating new technology, new ideas, new institutions, new business structures, and any other changes in the way people live, work, and engage in economic and social activity.
- AA. The inaccuracy of regression estimates when a statistical regression model does not include all the variables or explicitly model all the true relationships between all the relevant variables.
- BB. The interpretation of statistical results that suggests a certain coefficient is sufficiently large

that the effect of the variable will generate a change in an outcome that substantially affects the situation being analyzed.

CC. An increase in productive resources such as labor, capital, and land that enables an economy to produce more welfare-enhancing output.

DD. The dynamic process whereby economic activity is increasingly concentrated in specific geographic regions.

EE. The reduction in the value of capital due to wear and tear or obsolescence.

FF. The relationship between productive inputs and the level of output

GG. The condition that certain sectors grow relative to others, and thus the relative contributions of each sector change.

FF. if per capita real GDP grows at an annual rate of  $R$ , then after  $T$  years the level of per capita real GDP will be:  $GDP_T = GDP_{T=0} (1+R)^T$

HH. The inaccuracies and biases introduced into statistical analysis by the fact that data are inaccurate and incomplete.

### Case “Globalization and the Shoe Industry”

“To produce the wine in Portugal, might require only the labour of 80 men for one year, and to produce the cloth in the same country, might require the labour of 90 men for the same time. It would therefore be advantageous for her to export wine in exchange for cloth. This exchange might even take place, notwithstanding that the commodity imported by Portugal could be produced there with less labour than in England.

Trade among humans and households has existed since the beginning of time, and has been documented well before ancient civilizations established trade routes to move sought after products to their domestic markets. Trade is a voluntary exchange between buyers and sellers in different countries that benefits both parties involved in the transaction. This benefit is called the “gains from trade.” Gains from trade arise as a result of specialization. Individuals, countries, and regions endowed with particular proprietary resources have the ability to produce an economic product at a lower cost than others and will be able to sell the good at a lower price to buyers than the domestically produced commodity. Those who can produce the good at lowest cost are said to have the absolute advantage and should specialize in the production of the good (Adam Smith). But even if an individual or country cannot produce the good at the lowest cost, it may produce the good at a lower opportunity cost, this being determined by their initial factor endowments, and also those of other countries. Those who can produce a good at the lowest opportunity cost are said to have a comparative advantage and should specialize in that good (David Ricardo). These concepts of specialization and comparative advantage are fundamental to an understanding of international trade.

Economists assert that voluntary exchange (trade) makes both market participants (the buyers and the sellers) better off than they would have been in the absence of the transaction. If this is true, why are some groups so opposed to free trade? The answer lies in the fact that not all parties benefit equally, nor are all the effects of trade positive for everyone. For instance, while consumers can purchase more at lower prices with trade, we often observe that domestic jobs are lost. This translates into lower income to some households and some producers. The economists’ assertion of gains from trade reflects an overall, net effect, and not an impact on any specific group within an economy. In the pages that follow, you will learn how to explain this phenomenon using economic theory. Let’s use a historical example and economic theory to analyze what happens when there is free trade; why some people oppose free trade; and what happens when the government uses protectionist policies to limit the amount of free trade.

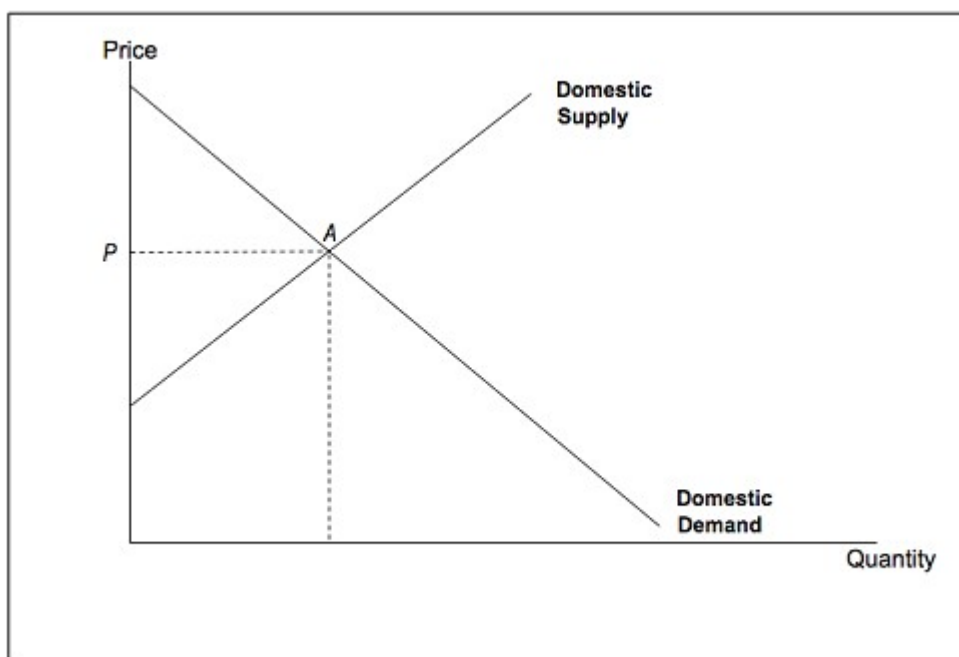
#### The U.S. Shoe Industry

The U.S. shoe industry was established primarily in New England and serves as an excellent platform for analyzing who gains and who loses from trade, the meaning of market efficiency, and the costs of trade barriers.

#### The Shoe Industry Before Trade

In the colonial era, a pair of shoes was relatively more expensive than what one might pay today. We need look no further than simple economic principles to uncover the reason for this. Since the methods employed in the manufacturing process were primarily labor intensive, assisted only by hand tools, the opportunity cost of a pair of shoes was relatively high compared with that of many other goods. Even though shoemakers were on the lower end of the wage scale compared with other skilled craftsmen such as cabinetmakers and silversmiths, they nevertheless commanded a fair market wage for the hours of labor required to make a pair of shoes. Shoes were produced with rudimentary and largely manual manufacturing techniques—not only in constructing the final product, but also in creating the inputs such as the leather and the thread. Because of this, shoes were produced and sold locally (i.e., not traded on the world market). Raw materials were generally not imported, and as many hours were required to make a pair of shoes, prices were relatively high. Figure 1 illustrates the U.S. shoe market in equilibrium. The position of the Domestic Supply curve reflects the relative high cost of production. We will assume throughout the analysis that follows, that demand remains constant

Figure 2: Domestic producers' supply and domestic buyers' demand.



This diagram illustrates the situation in the U.S. (the domestic economy) with no trade (i.e., shoes are produced domestically [no imports], and sold domestically [no exports]). While shoes are not traded in Figure 1, shoes are a tradable good—they can either be imported or exported. There will be a few things you'll note that are different about the diagrams for markets for tradable goods. First, you will note that supply and demand are labeled Domestic Supply and Domestic Demand. These are the same supply and demand curves you learned about when you first began your study in economics. By identifying them specifically as domestic curves, we can use this diagram to illustrate the situation with trade. This is a bit confusing. Perhaps change to “You will discover that with free trade, all consumers and producers face the world price.” When there is no international trade in shoes, market equilibrium is determined by the intersection of the domestic demand and domestic supply curves, point A in

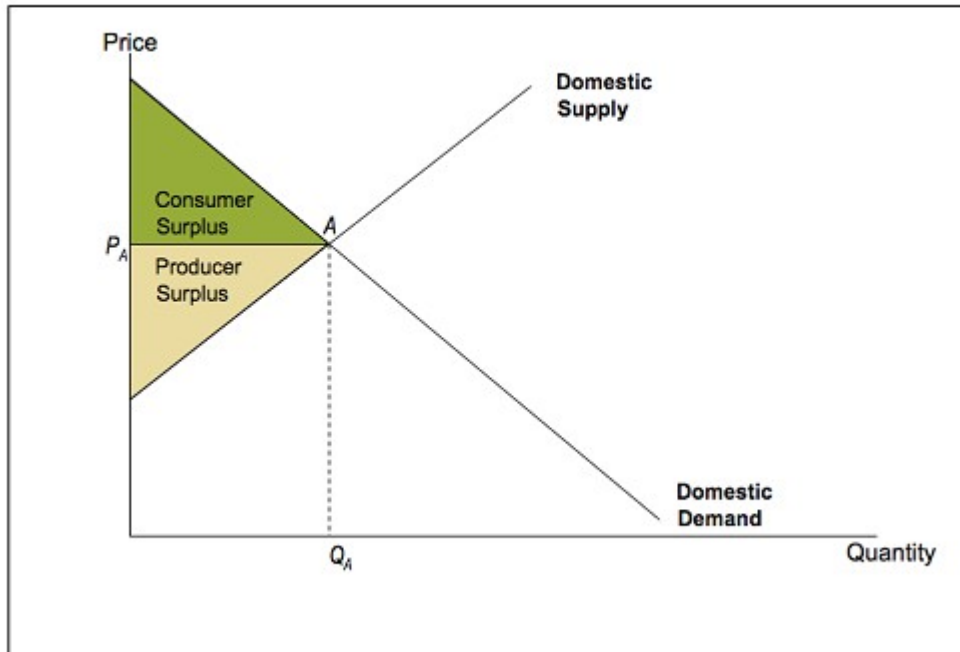
Figure 1. The domestic market equilibrium price of shoes is  $P_A$ , and the equilibrium quantity of shoes produced and consumed domestically is  $Q_A$

Gains from exchange in the domestic market

Before we consider trading shoes on the world market, let's review the concept of market efficiency in the shoe market. Efficiency is defined as the price and quantity that maximize total surplus.

Figure 2 illustrates consumer and producer surplus when the domestic market is in equilibrium.

Figure 2:



As you will note, both consumers and producers gain from voluntary exchange in the domestic market. Consumer surplus is equal to the area of the upper shaded triangle in Figure 2. Producer surplus is equal to the area of the lower shaded triangle, and total surplus is equal to the sum of these two shaded triangles.

Changes in supply; changes in gains from exchange

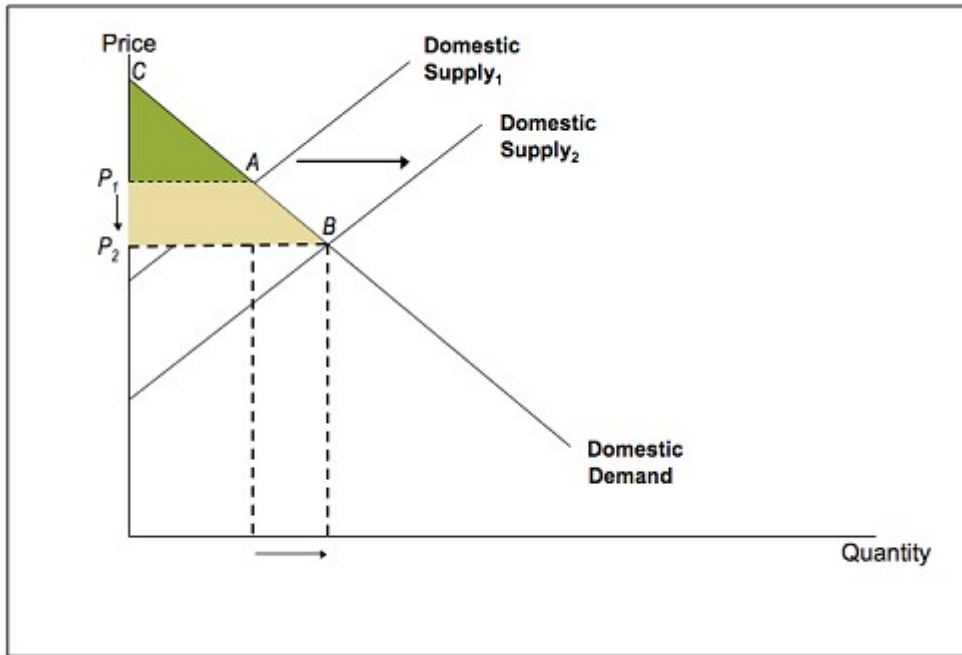
Around 1850, innovations in the industry occurred that mechanized many specialized processes. There were over 5,000 American patents<sup>6</sup> for improvements in shoemaking.

Three were especially significant:

1. Howe sewing machine
2. Method of sewing upper to sole
3. Invention of the Goodyear Welt

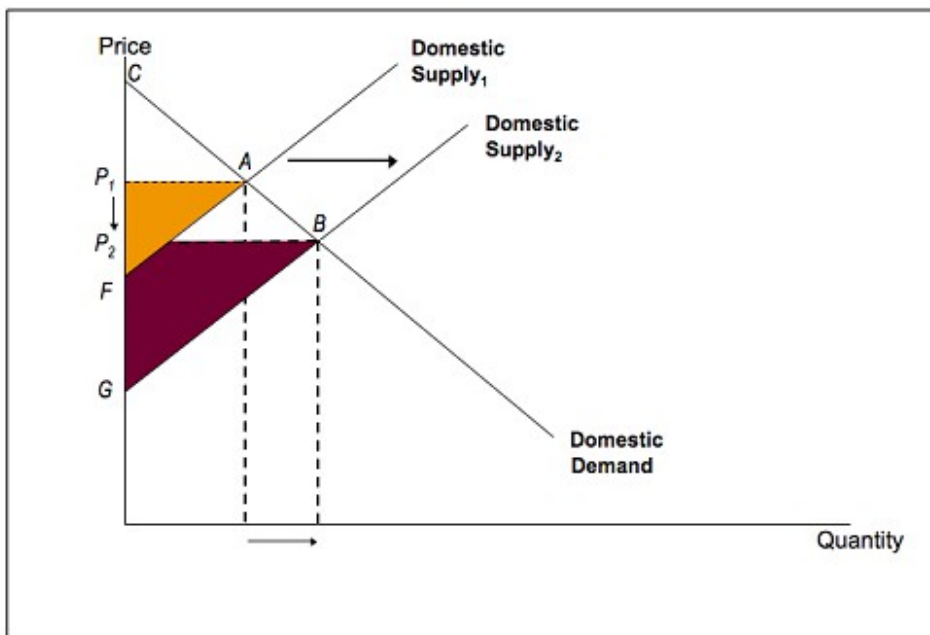
By 1919, there were 1,449 shoe firms with 211,000 employees producing 331 million pairs of shoes. You should recognize these innovations as one of the determinants of supply—shoe producers could produce more with fewer inputs. This increased supply and lowered prices to consumers. We illustrate this in the shoe market diagram with a rightward shift in the domestic supply curve. We then can use this to review the impact of an increase in domestic supply on consumer and producer surplus.

Figure 3:



With the increase in supply, the price falls and the quantity increases. As a result, consumer surplus rises. Consumer surplus initially was  $ACP_1$ , and after the increase in supply, consumer surplus is the area defined by  $BCP_2$ .

Figure 4:



With the increase in supply, the price falls and the quantity increases. As drawn, producer surplus rises. Producer surplus initially was  $AFP_1$ , and after the increase in supply, producer surplus is the area defined by  $BGP_2$ .

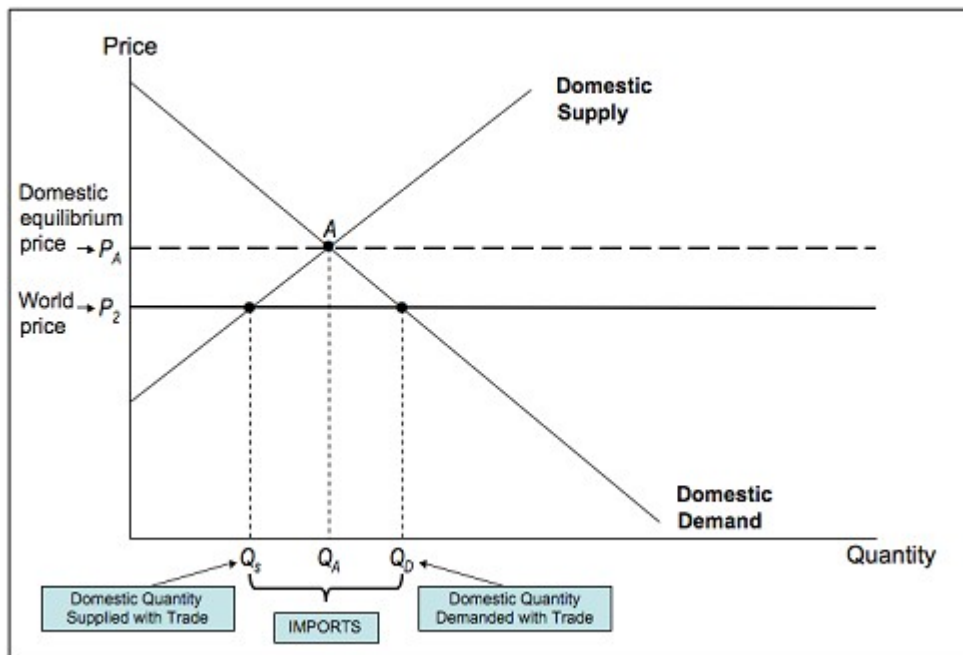
Gains and losses from trade

We can use the evolution of the shoe industry to analyze changes over time and examine who benefits and who loses from trade (sometimes called globalization in the news) in this industry.

When there is trade, the price that domestic producers and consumers face is no longer fully

determined by domestic supply and demand. Instead price is determined by the world market, which gives us the world price, and domestic producers and consumers face the world price when there is international trade. In an open economy (i.e., an economy where there is trade), in markets for tradable goods, domestic QS and domestic QD are no longer equal, and the difference between the two (domestic shortage or surplus) represents the amount of trade (imports or exports). With trade, there will be a net gain in total surplus in the economy, which can be illustrated on the demand/supply diagram using the market analysis. You will discover that with trade, there are always winners and losers, but that the wins are greater than the losses. After World War I, exports and imports increased in America as trade restrictions decreased. These changes affected the shoe industry.

**Figure 5:**



In an open economy (i.e., an economy where there is trade), in markets for tradable goods, domestic QS and domestic QD are no longer equal, and the difference between the two (domestic shortage or surplus) represents the amount of trade (imports or exports). If shoes are bought and sold in the world market, there will be an equilibrium price determined in that market, and this is the price that domestic consumers and producers face. We assume “that the world market is so large that the decisions of domestic consumers and producers do not affect the world price. Domestic consumers and producers can exchange all that they desire at a fixed world price.” Figure 5 illustrates the case where the world price is lower than the domestic equilibrium price, in other words,  $P_W$  is lower than the price of shoes that would prevail in the domestic market without trade,  $P_A$ .

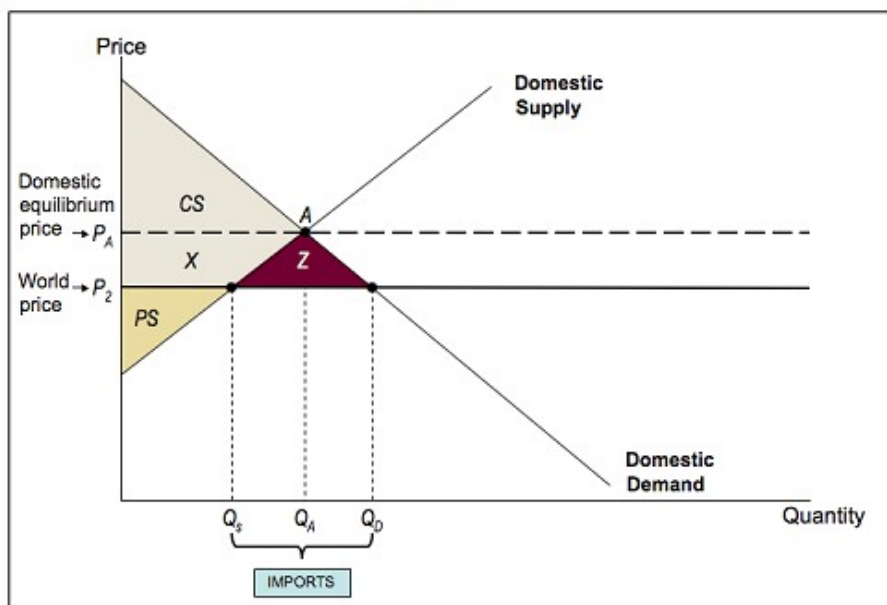
Let’s review the analysis of this diagram. At world price  $P_W$ , the quantity of domestic supply is labeled on the diagram as  $Q_S$ , and the quantity of domestic demand is  $Q_D$ . At the world price, quantity demanded is higher than quantity supplied. In a market analysis without trade, we would just call this a shortage. But because unlimited quantities of shoes can be purchased from abroad, the shortage is filled by imports from abroad. The amount of imports is  $Q_D - Q_S$ , as indicated in Figure 5.

Who gained and who lost?

American consumers gained because they pay lower prices for their shoes and are likely to have a larger variety of types and quality of shoes with trade. These gains can be demonstrated with an analysis of the change in consumer surplus. American producers lost because the lower world price means that U.S. shoe manufacturers earned lower profits. Some went out of business because the

world price was lower than their minimum average cost. The lower production (decrease in quantity supplied) of shoes in the United States resulted in a loss of jobs for workers in the shoe industry and in related industries. In fact, the few remaining American shoe producers tend to make specialty products such as hiking boots, steel-toed industrial shoes, and luxury products such as handmade bench-crafted shoes or custom-sized products. The losses incurred by producers can be illustrated with an analysis of the change in producer surplus. With trade, there will be a net gain in total surplus in the economy, illustrated on the demand/supply diagram using the market analysis. You will discover that with trade there are always winners and losers, but that the wins are greater than the losses. Figure 6 illustrates these impacts.

**Figure 6:**



	CHANGE IN SURPLUS	
	Gain	Loss
<b>Consumer Surplus</b>	X + Z	
<b>Producer Surplus</b>		X
<b>Change in Total Surplus</b>	Z	

With no trade, consumer surplus was represented by the area CS. With trade, consumer surplus is CS + X + Z. So consumers gain from trade when the world price is below the domestic equilibrium price and the country imports the good. However, domestic producers lose. Producer surplus before trade was PS + X, and after trade, producer surplus is PS. Imports of a particular good hurt domestic producers of that good but help domestic consumers. Consumers gain X + Z, whereas producers lose X, which means that the gains are greater than the losses—so overall, there is a net gain from trade for the economy. For exports, it is the opposite case—consumers are made worse off and producers are made better off. In each case, the gains are larger than the losses. “The undoubted pain suffered by the losers from trade often is translated into pressure put on politicians to restrict trade in one way or another. The pain is often felt more strongly than the “happiness” felt by those who benefit from trade.” Those who lose with trade often put pressure on politicians for trade barriers—policies that protect them from trade. If politicians yield to this pressure, there are costs that need to be taken into account. An import tariff is an example of such a policy, designed to protect domestic producers. What we’ll see is that while producers may be made better off by a tariff, the improvement in their well-being is at the expense of consumers, and that the loss to consumers is greater than the gains to producers.

Sample Free Response Question



Assume that Canada imports shoes from Mexico and that the price of shoes in Mexico is lower than the domestic price of shoes in Canada.

i) Explain what happens to the market price and quantity of shoes in Canada as a result of trade. Use a diagram to illustrate your answer.

ii) Show how trade affects producer surplus in Canada and explain how trade affects the Canadian producers.

iii) What trade policies might the Maple Leaf Boot Company, a Canadian manufacturer of footwear ask the government of Canada to implement? How would your policy affect Canadian producers were the policy to be adopted?