

Economics 102  
Summer 2015  
Homework #2  
Due Tuesday, June 30, 2015

**Directions:** The homework will be collected in a box **before** the lecture. Please place your name on top of the homework (legibly). Make sure you write your name as it appears on your ID so that you can receive the correct grade. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

**Please realize that you are essentially creating “your brand” when you submit this homework. Do you want your homework to convey that you are competent, careful, and professional? Or, do you want to convey the image that you are careless, sloppy, and less than professional. For the rest of your life you will be creating your brand: please think about what you are saying about yourself when you do any work for someone else!**

1. The following scenarios will allow you to practice your supply and demand analysis qualitatively.

a. Suppose the market for soap is initially in equilibrium. Then the price of labor used to manufacture soap decreases. Holding everything else constant, what happens to the equilibrium price and quantity in this market? Make sure in your answer you identify any shifts or movements that occur.

b. Suppose the market for envelopes is initially in equilibrium. Then the price of wood chips used in the manufacture of the paper for the envelopes increases. Holding everything else constant, what happens to the equilibrium price and quantity in this market? Make sure in your answer you identify any shifts or movements that occur.

c. Suppose that there is an infinite supply of sand at a price of \$1. But, recent developments in fracking have led to an increase in the demand for sand. Holding everything else constant, what happens to the equilibrium price and quantity in this market? Make sure in your answer you identify any shifts or movements that occur.

d. Suppose the market for jigsaw puzzles is initially in equilibrium. Then the price of the glue used to mount the picture to the cardboard backing increases while simultaneously there is a decrease in the price of video games. For many consumers with time on their hands a turn at a jigsaw puzzle is as satisfying as time spent playing video games. Holding everything else constant, what happens to the equilibrium price and quantity in the market for jigsaw puzzles? Make sure in your answer you identify any shifts or movements that occur.

e. Suppose the market for motorcycles is initially in equilibrium. Then, suppose that the government decides to tax motorcycle manufacturers an excise tax that must be paid on every motorcycle that is produced. At the same time young people decide that it is exciting and fun to ride motorcycles. Holding everything else constant, what happens to the equilibrium price and equilibrium quantity of motorcycles? In your answer be sure to identify any shifts or movements that occur.

f. Suppose the market for insulin for insulin-dependent diabetics is initially in equilibrium. Furthermore, suppose that the population of insulin-dependent diabetics is fixed and will not increase or decrease over time; in addition, assume that the amount of insulin each of these diabetics needs per day is a fixed amount. Suppose that the machinery needed to produce insulin becomes more expensive. Holding everything else constant, what happens to the equilibrium price and equilibrium quantity of insulin? In your answer be sure to identify any shifts or movements that occur.

2. Suppose you are told that the market for textbooks in Zipia, a small closed economy, can be described by the following equations where  $Q$  is that quantity of textbooks and  $P$  is the price per textbook:

$$\text{Domestic Demand: } P = 150 - 3Q$$

$$\text{Domestic Supply: } P = 24 + 6Q$$

a. Given the above information, find the equilibrium price and quantity of textbooks, the value of consumer surplus (CS), the value of producer surplus (PS), and the value of total surplus (TS). Draw a well labeled graph depicting these areas and this market.

b. Suppose that Zipia implements a policy that opens its market for textbooks to trade. When they open the market the world price of textbooks is \$114. Describe what happens to the price of textbooks in Zipia, the quantity of textbooks demanded in Zipia, the level of imports or exports of textbooks from Zipia's perspective. In addition, calculate the value of consumer surplus when this market opens to trade (CS'), the value of producer surplus when this market opens to trade (PS'), and the value of total surplus when this market opens to trade (TS'). In Zipia, who is celebrating this change in policy? Explain your answer. Provide a well labeled graph to illustrate all of these answers.

c. Now, suppose that Zipia implements a policy that opens its market for textbooks to trade. When they open the market the world price of textbooks is \$96. Describe what happens to the price of textbooks in Zipia, the quantity of textbooks demanded in Zipia, the level of imports or exports of textbooks from Zipia's perspective. In addition, calculate the value of consumer surplus when this market opens to trade (CS''), the value of producer surplus when this market opens to trade (PS''), and the value of total surplus when this market opens to trade (TS''). In Zipia, who is

celebrating this change in policy? Explain your answer. Provide a well-labeled graph to illustrate all of these answers.

3. Suppose you are told that the market for textbooks in Zipia, a small closed economy, can be described by the following equations where Q is that quantity of textbooks and P is the price per textbook:

Domestic Demand:  $P = 150 - 3Q$

Domestic Supply:  $P = 24 + 6Q$

You are also told that the world price for textbooks is \$96. Suppose that Zipia opens the market for textbooks to trade while simultaneously imposing an import quota of 3 textbooks. Given this information and assuming nothing else changes, determine the values for the following (I am including a table so you can consolidate your answers, but in your homework show the work you did to get the values):

Price per textbook in Zipia once this market is opened to trade and the import quota is imposed	
Quantity of textbooks demanded domestically in Zipia once this market is opened to trade and the import quota is imposed	
Quantity of textbooks supplied domestically in Zipia once this market is opened to trade and the import quota is imposed	
CS in this market once this market is opened to trade and the import quota is imposed	
PS in this market once this market is opened to trade and the import quota is imposed	
License Holder Revenue from this import quota	
TS in this market once this market is opened to trade and the import quota is imposed	
Deadweight Loss in this market once this market is opened to trade and the import quota is imposed	
Maximum amount per textbook an importer would pay to be given the right to import a textbook into this market given this import quota	

In addition, provide a graph illustrating this problem and the various concepts listed in the table.

4. Suppose you are told that the market for textbooks in Zipia, a small closed economy, can be described by the following equations where Q is that quantity of textbooks and P is the price per textbook:

Domestic Demand:  $P = 150 - 6Q$

Domestic Supply:  $P = 24 + 3Q$

You are also told that the world price for textbooks is \$96. Suppose that Zipia opens the market for textbooks to trade.

a. Given the above information what is the quantity of textbooks demanded domestically when this market opens to trade? What is the quantity of textbooks produced domestically when this market opens to trade? Given the above information will Zipia import or export textbooks once this market is open to trade? Show your work.

Suppose that the world price of textbooks changes to a level where Zipia finds that it is now importing 9 textbooks. Nothing else has changed in the market for textbooks in Zipia.

b. Given this new information and the initial domestic demand and supply equations, calculate what the world price must be. Show your work.

c. Given this new information, calculate the value of consumer surplus (CS) and producer surplus (PS). Provide a graph to illustrate your analysis and make sure the graph is completely and carefully labeled. Show your work.

d. Given this new information, the government of Zipia decides that they want to implement a tariff in this market so that the quantity of imported textbooks falls to 6. Assuming that everything else stays constant, how big a tariff will need to be implemented to reach this goal? Show your work.

e. What is the deadweight loss in this market due to the imposition of the tariff described in (d)? Show your work.

5. Suppose there are three countries in that produce and consume bananas. The domestic demand curves for the three countries are given as follows where  $Q$  is the quantity of units of bananas demanded by the particular country and  $P$  is the price per unit of bananas.

Domestic demand for bananas by Smallland:  $P = 10 - Q$

Domestic demand for bananas by Micoland:  $P = 10 - (1/2)Q$

Domestic demand for bananas by Topland:  $P = 5 - Q$

You are also given the domestic supply curves for bananas for each of these three countries:

Domestic supply of bananas by Smallland:  $P = (9/23)Q$

Domestic supply of bananas by Micoland:  $P = (9/23)Q$

Domestic supply of bananas by Topland:  $P = (9/23)Q$

a. Given this information, find the market demand curve for bananas if these three countries open their market for bananas to trade with one another. Assume that there

are no other countries in the world. If necessary there may be more than one equation and, if so, you will need to identify either the relevant range or domain for each equation.

b. Given this information, find the market supply curve for bananas if these three countries open their market for bananas to trade with one another. Assume that there are no other countries in the world. If necessary there may be more than one equation and, if so, you will need to identify either the relevant range or domain for each equation.

c. Given the work you have done in (a) and (b), determine the world price for a unit of bananas if these three countries open their banana markets to trade. What will be the equilibrium quantity of banana units when this market is open to trade? Show your work.

d. Let's check to make sure this really works. Given your answers in (a), (b) and (c) you should now be able to calculate the level of imports and exports in each country. Then you can sum the imports and sum the exports to verify that imports = exports when the banana market is open to trade and is in equilibrium. If you find that imports do not equal exports then you have made an error and you need to go back and rework the problem! Here's a table where you can track your calculations. Hint: you will get "messy" numbers here-keep them as improper fractions rather than converting them to proper fractions or decimals!

COUNTRY	NUMBER OF UNITS OF BANANAS IMPORTED	NUMBER OF UNITS OF BANANAS EXPORTED
SMALLLAND		
MICOLAND		
TOPLAND		
TOTALS		

e. Finally quickly identify which groups (domestic producers or domestic consumers) favor opening this market to trade. Make sure you identify the nationality of the group!