

Economics 102
Summer 2017
Homework #2
Due June 6, 2017

Directions: The homework will be collected in a box **before** the lecture. Please place your name, TA name and section number 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. Please remember the section number for the section **you are registered**, because you will need that number when you submit exams and homework. Late homework will not be accepted so make plans ahead of time. **Please show your work.** Good luck!

1. Analyze each of the following scenarios and provide a graph to illustrate your answer. Use (Q_0, P_0) to designate the initial equilibrium price and quantity, and (Q', P') to designate the new equilibrium price and quantity. Illustrate in your graph any shifts that occur in the demand and/or supply curves.

a. Consider the market for coffee mugs that is initially in equilibrium. Suppose that the price of coffee decreases. Analyze the impact of this change on the equilibrium price and quantity of coffee mugs. Use a graph to illustrate your answer.

b. Return to the coffee mug market that is initially in equilibrium. Suppose that the price of coffee decreases while at the same time, clay, an input in coffee mugs, has a price increase. Analyze the impact of this change on the equilibrium price and quantity of coffee mugs. Use a graph to illustrate your answer.

c. Consider the market for televisions that is initially in equilibrium. New technology makes it possible to view visual content not only on televisions, but also on smart phones, laptops, and a variety of other types of smart devices. Given these developments what do you predict is going to happen to the equilibrium price and quantity of televisions? Use a graph to illustrate your answer.

d. Consider the market for traditional cars: that is, gasoline-powered cars. Younger Americans are choosing to live in more urban locations; take advantage of car services like Uber, Lyft, and Zipcar; and even, in some cases, choosing to not get a driver's license (and maybe not even bother to learn to drive). At the same time, Google and Uber are pioneering new technology that will replace gasoline-powered and human-driven cars with driverless, electric cars. Given these changes, what do you predict will happen to the equilibrium price and equilibrium quantity of gasoline-powered cars over the next two decades (think about this in a longer time frame than just what is happening in this twenty-four hour period of time)? Use a graph to illustrate your answer.

e. Consider the market for ice cream that is initially in equilibrium. Suppose that people's income increase and that you know that the income elasticity of demand

for ice cream is .5. From this information, analyze what happens to the equilibrium price and equilibrium quantity of ice cream. Illustrate your answer with a graph.

2. (Do not use a calculator on this problem: you are working to grow stronger computational skills and to do that I need you to stop turning to your calculator so quickly! Also, work this with the fractions (no decimals) but think about how you can "get rid of" the fractions. This is another aspect that I am working on with respect to growing your numerical literacy.) Suppose there are two firms in a market, Good Enterprises and Products Unlimited. You are told the following information about this market. Good Enterprises supplies 200 units of the product sold in this market when the price is \$10 per unit. When the price in this market increases to \$20, the quantity of the product supplied by Good Enterprises increases by 100 units. Good Enterprises supply curve is linear. Products Unlimited supplies 150 units of the product sold in this market when the price is \$15 per unit. When the price increases to \$30, the quantity of the product supplied by Products Unlimited increases to 300 units. Products Unlimited's supply curve is also linear.

a. From the above information write the equation for the supply curve for Good Enterprises.

b. From the above information write the equation for the supply curve for Products Unlimited.

c. Assuming that these two firms are the only producers of this product, draw a graph that illustrates the market supply curve for this product. Then, provide an algebraic expression for the market supply curve. If you need more than one equation please be sure to note what the relevant range of prices is for each equation.

Now, suppose that Products Unlimited discovers a new technology (that they patent and therefore do not share with any of their competitors) that allows them to double their output at every price level. [Hint: you might find it helpful to draw a graph of Products Unlimited's initial supply curve and then from this graph draw their new supply curve.]

d. Given this new information write the equation for Products Unlimited's new supply curve.

e. Given this new information, provide an algebraic expression for the market supply curve. If you need more than one equation please be sure to note what the relevant range of prices is for each equation.

3. Suppose that a small, closed economy manufactures pencils. There are five domestic manufacturers of these pencils and they have identical supply curves. Suppose the supply curve for a single manufacturer of these pencils is given by the equation $P = Q + 20$. Additionally you know that the domestic demand for pencils in this small, closed economy is given by the equation $P = 50 - (1/10)Q$.

- a. What is the domestic supply curve for pencils in this economy?
- b. Given the domestic supply curve and the domestic demand curve, what is the equilibrium price and quantity of pencils in this economy if the economy is closed?
- c. Calculate the value of consumer surplus, producer surplus, and total surplus if the domestic economy is a closed economy with regard to the pencil market.
- d. Suppose that this economy decides to open this market to trade. Analyze what happens in this market if the world price of pencils is \$45 per pencil. In your answer identify the level of imports or exports, the new level of consumer surplus, the new level of producer surplus, the new level of total surplus, and identify the distributional consequences of opening this market to trade.
- e. Suppose that this economy decides to open this market to trade. Analyze what happens in this market if the world price of pencils is \$30 per pencil. In your answer identify the level of imports or exports, the new level of consumer surplus, the new level of producer surplus, the new level of total surplus, and identify the distributional consequences of opening this market to trade.
- f. Suppose that this market for pencils is opened to world trade and the world price is \$30 per pencil. Furthermore, suppose that the government of this economy decides to implement a tariff so that the price of pencils in the small open economy is equal to \$35 per pencil. Analyze the effect of this tariff on imports or exports, consumer surplus, producer surplus, total surplus, government tariff revenue and deadweight loss relative to the results you got when the market was open to trade and there was no tariff.

4. Here are a variety of situations to analyze.

a. Bicycles Galore produces 200 bicycles and sells 150 bicycles for \$200 per bicycle in 2013; produces 300 bicycles and sells 350 bicycles for \$150 per bicycle in 2014; and produces 400 bicycles and sells 300 bicycles for \$200 per bicycle in 2015. What is GDP in this economy in 2013, 2014, and 2015 if Bicycles Galore is the only producer of final goods and services in this economy?

b. Fast Wheels produces 300 bicycles in 2013 and sells 150 of them to domestic customers at \$200 per bicycle, and they sell 100 bicycles for \$200 per bicycle to

consumers in France. In 2014 Fast Wheels produces 250 bicycles and sells 200 of them to domestic buyers at \$300 per bicycle and 100 bicycles for \$300 per bicycle to Italian consumers. What is GDP in this economy in 2013 and 2014 if Fast Wheels is the only producer of final goods and services in this economy?

5. Suppose you are given the following information about an economy for the year 2016.

Consumption Expenditures	\$40,000
Business Expenditure on Plant and Equipment	\$10,000
Tax Revenues	\$12,000
Imports	\$8,000
Government Expenditures	\$20,000
Inventory Change for the Year	\$1000
Exports	\$9,000
Government transfer payments	\$3,000
New Home Construction	\$5,000

- a. Given the above information, is this economy a net exporter or a net importer?
- b. Given the above information, what is the level of investment in this economy for 2016?
- c. Suppose we define the government budget balance as being equal to government expenditures minus net taxes. Furthermore, suppose that net taxes are equal to tax revenues minus transfer payments from the government. What is the government budget balance for this economy? Is the government operating with a surplus, a deficit, or a balanced budget? Explain your answer.
- d. What is the value of GDP in 2016 for this economy?