Economics 101

Fall 2014

Homework #2

Due 10/2/14

**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. 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, 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. AT&T, T-mobile and Verizon all want to purchase some iPhone6 phones from Apple and hold these phones in stock so that they can promote their new contract with the iphone6 incorporated as an important element. Their respective demand curves for iPhone6 phones are as follows where Qa is the quantity of iPhone6 phones demanded by AT & T, Qt is the quantity of iPhone6 phones demanded by T-mobile, Qv is the quantity of iPhone6 phones demanded by Verizon, and P is the price per iPhone6 phone:

AT&T: Qa = 30 - P

T-mobile: Qt = 20 - 0.5P

Verizon: Qv = 40 - 2P

1. Draw the three individual demand curves in separate graphs measuring the quantity (Q) of iPhone6 phones on the horizontal axis and the price (P) on the vertical axis.
2. In a new graph find the market demand curve for iPhone6 phones assuming that the only demanders of these phones are AT&T, T-mobile and Verizon. After you draw the graph find the slope of each linear segment of the demand curve, the coordinates of each “kink point”, and the equation for each linear segment of the market demand curve. Make sure you identify the range of prices for each linear segment of the market demand curve.

2. Suppose we are still working with the iPhone6 market described in problem 1. On the supply side in this market suppose Apple, the manufacturer or provider of these phones, outsources their production of the iPhone6 phones to two firms, Firm A and Firm B. These firms’ supply curves are given below where Qa is the quantity of iPhone6 phones supplied by Firm A, Qb is the quantity of iPhone6 phones supplied by Firm B, and P is the price per iPhone6 phone:

Firm A: Qa = P - 15

Firm B: Qb = 0.5P - 5

1. Draw each firm’s supply curves in separate graphs and then construct the market supply curve in a new graph assuming that Firm A and Firm B are the only firms that are authorized to produce iPhones. Measure P on the vertical axis and Q on the horizontal axis for each graph. In the market supply curve identify the coordinates (Q, P) for any “kink points”.
2. Based on the market demand curve in question 1, what is equilibrium price and quantity in this market? Explain how you found your answer and how you decided which segments of the demand curve and the supply curve were the relevant segments to consider.
3. Suppose Apple provides better technology to both Firm A and Firm B and this better technology reduces the cost of producing the iPhone6 phones. Given this information and holding everything else constant, make a prediction about how this new technology will affect the equilibrium price and quantity in this market.

3. Use the framework of the supply and demand model to answer these questions. Assume that each market described is initially in equilibrium and then evaluate what happens to the market given the provided scenario. **In answering this set of questions you will find it helpful to sketch the market and what is happening to the market: our answer key will provide graphs for each scenario and we highly suggest that you draw the graphs as well in your answers!**

1. Consider the case of B. Wayne who is the most popular video blogger on YouTube. B Wayne receives a payment for every video he supplies to YouTube and his supply curve for these videos is upward sloping. The CEOs would like B. Wayne to supply a greater number of videos to YouTube. What kind of change in demand would result in B. Wayne supplying a greater number of videos? And, why would this change produce this result?
2. P. Parker works at a local newspaper where he uses a special film to take nice photographs that are newspaper worthy (this requires that he use a better camera than his iPhone6). Since the release of the iPhone6, everyone but P. Parker are taking photos with their cellphones. How should this change affect the price of the special film that P. Parker uses? Provide a complete answer using your own words.
3. T. Stark is a scientist that provides special weapons to some countries. T. Stark also enjoys skydiving and he would like to spend as much time as possible skydiving while still meeting the production needs for these weapons. He must decide on how many weapons to produce two years in advance of producing these weapons. He knows that Israel and Palestine plan to sign a peace agreement during this two year time period (and it will be an agreement that both countries respect). He also expects that next month the price of plutonium (a necessary input into his weapons) will be cheaper. Given this information, should T. Stark increase or decrease his production of these weapons? Should T. Stark expect a higher equilibrium price in the future?
4. Suppose that Metropolis is currently served by a single newspaper, The Daily Planet, and that the market for this newspaper follows the Laws of Supply and Demand. Furthermore, suppose that this market currently is in equilibrium. If a new firm enters this market and provides a newspaper with comparable coverage what do you predict will happen to the market price of newspapers and the market quantity of newspapers? What will happen to the quantity of newspapers produced by The Daily Planet? Explain your answer fully and provide a graph or graphs to illustrate your analysis.
5. Consider the market for purple tokens that initially is in equilibrium. The Joker likes to consume poker cards with purple tokens. If the price of poker cards goes up, what will happen to the number of purple tokens that he buys?
6. Bruce Banner works in the university lab and he can produce a perfect substitute for milk. His principal input is gamma radiation: this input is green and it’s called gamma milk. Imagine that the university builds a better machine to produce gamma radiation. At the same time the university decides to implement a subsidy on the price of milk for all undergrads (that is, this subsidy will effectively make it possible for students to be able to afford more milk at every price). Given this information and holding everything else constant, what will happen to the quantity demanded of gamma milk?

4. Consider the case of Transylvania. This town has the best vampire killing stakes in the world. Recently an adventurous explorer gathered this information about the market for stakes in Transylvania where P is the price per stake and Q is the quantity of stakes:

Demand of Stakes: P = 50 – (1/2)Q

Supply of Stakes: P = 20 + (1/2)Q

Help this adventurous explorer answer these questions with your new econ 101 tools.

1. First find the equilibrium price and the equilibrium quantity.
2. Calculate the value of the vampire hunters’ consumer surplus (CS) and the stake producers’ producer surplus (PS). Show your work in calculating this answer.
3. The explorer tells you that Count Dracula (Lord of Transylvania) wants to establish a price support program that will help the producers of stakes. He wants to set a price floor of $50 per stake. To maintain this in the market for stakes Count Dracula plans to buy any surplus stakes produced in the market. How many stakes will the vampire hunters buy once this price support program is enacted? How many stakes will the stake producers sell once this price support program is enacted? How many stakes will Count Dracula buy once this price support program is enacted? Provide a graph to illustrate your answer: make sure your graph is clearly and completely labeled.
4. Actually Count Dracula is a Vampire, so after buying the stakes he burns them (making him unable to sell them to anyone else). How costly is the price support program for Count Dracula?
5. On his last day in Transylvania our adventurous explorer decided to propose a different measure to Count Dracula. He proposes that a price guarantee program be implemented in the stake market. This program would provide a subsidy to the stake producers that results in their receiving a total price of $50 per stake. The stake producers would be told to determine how many stakes they are willing to produce at this subsidized price. Once they determine how many stakes to produce, they are then instructed to go and sell these stakes at whatever price they need to in order to sell all of the stakes they produced. Then Count Dracula will pay them the difference per stake between the promised subsidized price and the actual price the stake sells for in the market. Given this program how many stakes will the producers produce? How many stakes will the vampire hunters buy? What will be the price that the vampire hunters pay per stake? What is the total amount that Count Dracula will have to pay the stake producers once this program is implemented? Provide a graph to illustrate your answer.
6. How many stakes will the count buy?
7. Given the two programs described in (d) and (e), which program do the producers of stakes prefer? Explain your answer.
8. Which program is less costly for the count? Which program is safer for him if his goal is to insure that he is not killed?

5. You are the new manager at Starbucks. Suppose that the demand and supply curves for coffee is given by the following two equations where P is the price per cup in Mexican Pesos (13 pesos is a dollar) and Q is the quantity of cups:

Market Demand: P = 60 – Q

Market Supply: P = 40 +Q

1. Given this information, what is the equilibrium price and the equilibrium quantity?
2. Given this information, what is the value of consumer surplus (CS) in this market? What is the value of producer surplus (PS) in this market? Illustrate your answer with a graph that is well labeled and complete.
3. Suppose that the mayor in Mexico City decides that the current price of Starbucks is too high. The government sets a price ceiling, the price of Starbucks’ coffee now is set at 44 pesos per cup. Given this price ceiling, how many cups will be demanded? Given this price ceiling, how many cups will be supplied? Who represents the short side of the market?
4. What is the value of consumer surplus (CS’) with the price ceiling described (c)? What is the value of producer surplus (PS’) with this price ceiling? Provide a well labeled graph to illustrate your answer.

e. What is the value of the deadweight loss due to the implementation of this program? The deadweight loss will be equal to the total loss in (consumer surplus and producer surplus) due to the implementation of this program. Provide a graph to illustrate the deadweight loss (DWL) due to the program.