Economics 101
Fall 2017
Homework #3
Due Tuesday, October 31, 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.
- Late homework will **not** be accepted so make plans ahead of time.
- **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 submit any work for someone else.

Part I: Excise Taxes

1) Under the influence of President Trump's "Buy American, Hire American" policy, Foxconn, a Chinese company has pledged that it will build an LCD-manufacturing facility in Wisconsin, which represents a $10 billion investment. This facility is expected to create between 3,000 and 13,000 jobs and should be up and running by 2020. Suppose the market for LCD screens in Wisconsin after Foxconn comes can be described by the following supply and demand curves:

Demand: $P = 660 - 3Q$
Supply: $P = 60 + 2Q$

where Q is the quantity of LCD screens and P is the dollar price per unit of LCD screen:

a. Given the above information, find the market equilibrium price and quantity. Then calculate Consumer Surplus (CS), Producer Surplus (PS) and Total Surplus (TS).

Suppose that Governor of the state considers the LCD screen market as a potential government income source and decides to impose an excise tax of $50 per screen on all producers.

b. Given this excise tax, find the new price that consumers will pay for a LCD screen in this market, the new price producers will receive for a LCD screen in this market, and the new equilibrium quantity of LCD screens that will be sold.

c. Given this excise tax, calculate the value of Consumer Surplus with tax (CSt), Producer Surplus with tax (PSt), tax revenue the government receives from implementing the tax (Tax Revenue), Total Surplus with tax(TSt) and the Deadweight Loss (DWL) due to the implementation of this excise tax.

d. Suppose the government decides to implement an excise tax in this market so that consumption of LCD screens drops to 100 units. Calculate the size of the excise tax that will be needed (assume that there is no initial excise tax) for the government to hit the target. Show how you derived your answer.

Part II: International Trade

2) The Vuvuzela is a kind of plastic horn. After the 2010 FIFA World Cup, it became a symbol of South African soccer as the stadiums in South Africa are often filled with its sound. The domestic demand and supply for Vuvuzela in South Africa are given by the following equations where Q is the quantity of Vuvuzelas and P is the price in dollars per unit of Vuvuzela:

Domestic Demand: $P = 10 - \frac{1}{200}Q$

Domestic Supply: $P = 1 + \frac{1}{100}Q$

a. Calculate the equilibrium price, quantity, Consumer Surplus (CS), Producer Surplus (PS) and Total Surplus (TS) for the domestic market of Vuvuzelas when South Africa is in autarky (i.e. the market is closed to trade). Illustrate your answer graphically.

b. Suppose South Africa now opens it Vuvuzela market to international trade and the world price for vuvuzela is $4 per Vuvuzela. Furthermore, suppose the market for Vuvuzelas in South Africa is small relative to the global market. Given this information, what is the new market price in South Africa? How many Vuvuzelas will be consumed domestically in the South African market? How many Vuvuzelas will be imported/exported? Calculate the new Consumer Surplus, Producer Surplus and Total Surplus when the market for Vuvuzelas opens in South Africa. Illustrate your answers graphically.

c. Suppose South Africa government, fearing that the domestic Vuvuzela industry is unduly suffering from the influx of cheap foreign Vuvuzelas, decides to implement a $1 per unit tariff on imports. What is the new price for a Vuvuzela in the domestic market, the quantity consumed, the quantity imported, the Consumer Surplus, Producer Surplus, Government Tariff Revenue, Total Surplus and Deadweight Loss due to the imposition of this tariff? Illustrate your answers graphically.

d. Provide an intuitive explanation for the sources of deadweight loss under this tariff.

e. Suppose the government of South Africa is very corrupt and that the government's concern is only about the amount of tariff revenue they collect. What is the tariff that maximizes the government's tariff revenue? Find the revenue-maximizing tariff.

3) Kyber crystal is the key raw material to produce lightsabers. And Jedha is a small desert moon (can be viewed as a small economy) which orbits the planet NaJedha. Suppose that the domestic supply and demand for Kyber crystal in Jedha are given as follows:

Domestic Demand: $Q = 420 - 5P$
Domestic Supply: $Q = 3P - 60$

where Q is the quantity of Kyber crystals and P is the price per Kyber crystal.

a. What is the equilibrium price and quantity in autarky (remember "autarky" is the term used to describe a closed market)? Also calculate the Consumer, Producer, and Total Surplus.

b. Jedha now decides to enter the international market for Kyber crystal. Once the market clears, we find that Jedha imports 160 units of Kyber crystal. Given this fact, what is the world price for a Kyber crystal? What is the new consumer, producer, and total surplus in Jedha's open market for Kyber crystals? And what is the value of the gains from trade that Jedha experiences when it opens it Kyber crystal market to trade? Illustrate your answers graphically.

c. Now suppose the government decides to set an import quota of 200 units of Kyber crystals; i.e. only 200 units of Kyber crystals may be imported in to Jedha. What is the new equilibrium price, quantity, surpluses (CS, PS and TS) and deadweight loss due to the imposition of this import quota?

d. Now suppose the government decides to set an import quota of 80 Kyber crystals; i.e. only 80 Kyber crystals may be imported. What is the new equilibrium price, quantity, surpluses (CS, PS and TS), license holder revenue and deadweight loss due to the imposition of this import quota? Illustrate your answers graphically.