Econ 2: Spring 2014: UC Berkeley

Problem Set 2

Due at the start of lecture, Wednesday, February 26, 2014

(1) Supply, Demand, Equilibrium, Consumer Surplus, and Producer Surplus

Suppose that we are given the supply equation (S:) $P = 10Q$, and the demand equation (D:) $P = 200 – 50 Q$

(A) Draw a graph of these two supply and demand curves:

(B) Redraw your graph, and label it to explain how—if you were just given the graph—you would, from the graph, learn that the equations (S) and (D) were as specified in Part (A):

(C) What is the equilibrium price and what is the equilibrium quantity?

(D) What is the consumer surplus?

(E) What is the producer surplus?

(F) Suppose that resource depletion makes the inputs—what suppliers must buy in order to produce—of lower quality and the supply equation shifts to (S2:) $P = 20Q$ with the demand equation remaining (D:) $P = 200 - 50 Q$. What are the new values for the new equilibrium price, quantity, consumer, and producer surplus?

(G) Did you expect an adverse shock to supply like this to lead to such a shift in the values of these variables? If not, attempt to explain why it is that such an adverse shock to supply had these effects on equilibrium

(2) Supply, Demand, Equilibrium, Consumer Surplus, and Producer Surplus Once Again

Suppose that we are given the supply equation (S:) $P = 40$, and the demand equation (D:) $P = 200 - 50\,Q$

(A) Draw a graph of these two supply and demand curves:

(B) Redraw your graph, and label it to explain how—if you were just given the graph—you would, from the graph, learn that the equations (S) and (D) were as specified in Part (A):

(C) What is the equilibrium price and what is the equilibrium quantity?

(D) What is the consumer surplus?

(E) What is the producer surplus?

(F) Suppose that a *People Magazine* story that the product produced is bad for your health leads to a shift in demand: the new demand equation is (D2:) $P = 150 - 50\,Q$ while the supply equation remains (S:) $P = 40$. What are the new values for the new equilibrium price, quantity, consumer, and producer surplus?

(G) Did you expect an adverse shock to demand like this to lead to such a shift in the values of these variables? If not, attempt to explain why it is that such an adverse shock to supply had these effects on equilibrium

(3) Quotas, Price Ceilings, and Taxes

Suppose we have a demand equation (D:) P = 100 and a supply equation (S:) P = Q

(A) Calculate, for these equations (D:) and (S:), equilibrium price, quantity, consumer surplus, and producer surplus.

(B) Do any of these calculations generate numbers that strike you as strange? If so, explain why the numbers strike you as strange, and why it is that the calculations came out the way that they did.

(C) Suppose that the government imposes a quota: (Q:) Q=70. Calculate, for (D), (S), and (Q), equilibrium price, quantity, consumer surplus, and producer surplus.

(D) Explain how the government's quota-intervention in the marketplace has shifted the equilibrium values of all four of these variables. Explain how you would go about assessing whether this quota was a good policy or a bad policy.

(E) Suppose that, instead of a quota, the government imposes a price ceiling (C:) P = 70. Calculate, for (S:), (D:), and (C:), equilibrium price, quantity, consumer surplus, and producer surplus.

(F) Explain how the government's price-ceiling intervention in the marketplace has shifted the equilibrium values of all four of these variables that you found in part (A). Explain how you would go about assessing whether disturbing the competitive market equilibrium by this price ceiling was a good policy or a bad policy.

(G) Explain how the government's price-ceiling intervention in the marketplace shifted the equilibrium values of all four of these variables from that that you found in the quota-equilibrium in part (C). Explain how you would go about assessing whether redisturbing the competitive market equilibrium by shifting from the quota (Q:) to the price ceiling (C:) was a good policy or a bad policy.

(H) Now return to our original competitive equilibrium with our supply and demand equations (D:) $P = 100 - Q$ and a supply equation (S:) $Q = 60$. Suppose the government imposes a tax (T:) of $30: it drives a wedge of $30 between P_s and P_d : $P_s + 30 = P_d$. Calculate the equilibrium values of the price received by producers, the price paid by consumers, the consumer surplus, and the producer surplus.

(I) Compare the tax equilibrium of part (H) with the competitive market equilibrium of part (A). What conclusions do you draw?

(J) Compare the tax equilibrium of part (H) with the quota equilibrium of part (C). What conclusions do you draw?

(K) Compare the tax equilibrium of part (H) with the price-ceiling equilibrium of part (E). What conclusions do you draw?

(4) Quotas, Price Ceilings, and Taxes

Suppose we have a demand equation (D:) $P = 100 - Q$ and a supply equation (S:) $Q = 60$

(A) Calculate, for these equations (D:) and (S:), equilibrium price, quantity, consumer surplus, and producer surplus.

(B) Do any of these calculations generate numbers that strike you as strange? If so, explain why the numbers strike you as strange, and why it is that the calculations came out the way that they did.

(C) Suppose that the government imposes a quota: (Q:) Q=40. Calculate, for (D), (S), and (Q), equilibrium price, quantity, consumer surplus, and producer surplus.

(D) Explain how the government's quota-intervention in the marketplace has shifted the equilibrium values of all four of these variables. Explain how you would go about assessing whether this quota was a good policy or a bad policy.

(E) Suppose that, instead of a quota, the government imposes a price ceiling (C:) P = 1. Calculate, for (S:), (D:), and (C:), equilibrium price, quantity, consumer surplus, and producer surplus.

(F) Explain how the government's price-ceiling intervention in the marketplace has shifted the equilibrium values of all four of these variables that you found in part (A). Explain how you would go about assessing whether disturbing the competitive market equilibrium by this price ceiling was a good policy or a bad policy.

(G) Explain how the government's price-ceiling intervention in the marketplace shifted the equilibrium values of all four of these variables from that that you found in the quota-equilibrium in part (C). Explain how you would go about assessing whether redisturbing the competitive market equilibrium by shifting from the quota (Q:) to the price ceiling (C:) was a good policy or a bad policy.

(H) Now return to our original competitive equilibrium with our supply and demand equations (S:) $P_s = Q$ and (D:) $P_d = 100$. Suppose the government imposes a tax (T:) of \$30: it drives a wedge of \$30 between P_s and P_d : $P_s + 30 = P_d$. Calculate the equilibrium values of the price received by producers, the price paid by consumers, the consumer surplus, and the producer surplus.

(I) Compare the tax equilibrium of part (H) with the competitive market equilibrium of part (A). What conclusions do you draw?

(J) Compare the tax equilibrium of part (H) with the quota equilibrium of part (C). What conclusions do you draw?

(K) Compare the tax equilibrium of part (H) with the price-ceiling equilibrium of part (E). What conclusions do you draw?