EE320 Exercise 1

Semester 2, 2014

Chapter 3: Static and Comparative Static Equilibrium Analysis

1. Product A has a fixed cost at 5,000 Baht and variable cost for 7.5 baht per unit and price for 10 Baht per unit. Determine break-even quantity and illustrate by the graph [2,000 units]

2. Let TC = 2,000 + 20Q and price per unit is 40 Baht per unit. Determine the following:
a) Total revenue
b) Break-even quantity [Q=100]
c) If the company require the minimum profit of 2,000 Baht, how many products company should produce? [Q=200]

3. Given the following information,

P	15	10	5
Q^d	0	15	30
Q^s	64	39	14

a) Find equilibrium price and quantity [$P^* = 7, Q^* = 24$]
b) If government provide the subsidy (to buyers) for each unit purchased, 8 Baht per unit, find equilibrium price and quantity with subsidy. [$P^* = 10, Q^* = 39$]

4. Let demand and supply equations be $Q^d = 1,200 - 2P$ and $Q^s = 4P$, respectively. If the government collect taxes from sellers for 75 Baht per unit, find the following
a) equilibrium price and quality before taxes [P = 200. Q =800]
b) equilibrium price and quantity after taxes [P =250 , Q =700]
c) consumer's tax burden , producer's tax burden and government's tax revenue [35000 Baht, 17500 Baht, and 52500 Baht]

5. Let Q^d = 800 - 50P and Q^s = -700 +100P, if government imposes excise Tax on customers for 3 Baht per unit.
a) Find the equilibrium price and quantity after the tax. [9 Baht ,200 units]
b) consumer's tax burden , producer's tax burden and government's tax revenue [400 Baht, 200 Baht , 600 Baht]

6. Consider the following IS-LM model

$$\begin{aligned} C &= 48 + 0.8Y \\ I &= 98 - 75r \\ M^s &= 250 \\ M^d &= 52 + 0.3Y - 150r \end{aligned}$$

where C = consumption
Y = income
I = investment
r = interest rate
M^s = money supply
M^d = money demand

Find the equilibrium income (Y^*) and equilibrium interest rate (r^*) [$Y^* = 700, r^* = 0.08$]

7. Consider the following simple macroeconomic model

$$\begin{aligned} C &= a + bY_d, a>0, 0<b<1 \\ I &= I_0 \\ G &= G_0 \\ T &= T_0 \\ Y_d &= Y - T \end{aligned}$$

where C = consumption
Y = income
Y_d = disposable Income
I = investment
G = government spending
T = tax

Find investment multiplier ($\frac{dY}{dI_0}$) and tax multiplier ($\frac{dY}{dT_0}$)

8. In June, KFC lowers the price of fried chicken from 50 Baht per piece to 30 Baht per piece. Then, KFC can sell more fried chicken from 600 pieces to 1,800 pieces and the sale of the drinks increases from 300 to 1,500 cups. From this information, answer the following questions
a)Find "price elasticity" of demand for fried chicken with respect to price of fried chicken. [ε = -5]
b)Find "cross-price elasticity" of demand for the drinks with respect to price of fried chicken. [$\varepsilon = 10$]
c)Holding other things remain constant, if the fried chicken's price drops to be 25 Baht per piece, would the total revenue from selling fried chicken and drinks increase or not? Explain.

9. Let demand and supply of market for goods A and B be

$D_a = 20 - 3P_a - 2P_b$
$S_a = 12 + 2P_a + 5P_b$

$D_b = 4 - P_a - 3P_b$
$S_b = -1 + 2P_a + 4P_b$

a) Find the equilibrium price and quantity of the market for goods A and the equilibrium price and quantity of the market for goods B. [a: $\frac{3}{2}$ Baht and $\frac{215}{14}$ units , b: $\frac{1}{14}$ Baht and $\frac{32}{14}$ units]
b) Find Cross-price elasticity for goods A and B and determine whether A and B are substitute or compliment. [$\varepsilon_{ab} = \frac{-2}{215}$ and $\varepsilon_{ba} = \frac{-42}{64}$]

10. Let $Q^d = 6 - P$ and $Q^s = -1.5 + 0.5P$ Suppose government provides subsidy (to sellers) for each unit sold ,1 Baht per unit, determine the following:
a)Equilibrium price and quality after subsidy [P = $\frac{14}{3}$, Q = $\frac{4}{3}$]
b)Gain on consumer surplus from subsidy and gain on producer surplus from subsidy [$\frac{4}{9}$ and $\frac{8}{9}$] (Show all steps of calculation and graph)

11. Given the following information,

P	6	5	4	3	2	1	0
Q^d	0	2	4	6	8	10	12
Q^s	120	100	80	60	40	20	0

Determine the following
a)Demand equation for each individual consumer [$Q^d = 12 - 2P$]
b)Supply equation for each individual producer [$Q^s = 20P$]
c)Suppose there are 10,000 consumers in the market, find the market demand equation in the case that the producers have the same supply function.
d)Suppose there are 10,000 producers in the market, find the market supply equation in the case that the consumers have the same demand function.
e)Equilibrium price and quantity (also illustrate by graph) [$P^* = 3, Q^* = 60,000$]
f)If government provide subsidy (to sellers) for each unit sold, 1 Baht per unit, find the amount of subsidy and the gain in consumer and producer surplus from subsidy [70,000 and 35,000 and 35,000]

Practice makes perfect.
Good Luck :)