

EE211 Assignment #1 (2/2020)**Instructions:**

- Assigned date is Thursday the 18th, Feb 2021. Due date is Thursday the 25th, Feb 2021 before class at 08.00 AM.
 - Submission is only received through BE Moodle platform as PDF file.
 - Name your file as StudentID_nickname, such as 1234567489_Bo.
 - There is no need to rewrite the question into your answer sheets, however, indicate clearly question and item number.
 - Write your nickname and student ID on top-right corner of the first page.
 - For those who do not have a digital device to write on, you can write your answers in sheets of paper, take pictures, convert them to PDF and merge them into a single file.
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1. Suppose that a baker can produce muffins and cupcakes. If she uses all her resources on producing muffins, she can bake 120 muffins. If she produces only cupcakes, she can bake 100 cupcakes.

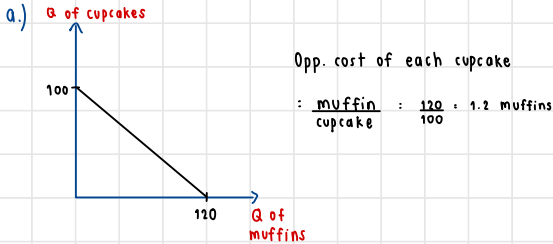
(a) Draw the Production Possibility Curve of this baker, where the x-axis represents the quantity of muffins and y-axis represents the quantity of cupcakes. Assume that the PPC is a straight line. What is the opportunity cost of each cupcake?

(b) With her available resources, can this baker make 60 cupcakes and 50 muffins? Justify your answer.

(X) If the baker learns a new technique and now the maximum quantity of muffins she can produce is 150 muffins, while the maximum quantity of cupcakes she can produce is still 100 cupcakes, *ceteris paribus*. Will the opportunity cost of each cupcake increase or decrease, and by what amount? Illustrate the change of the Production Possibility Curve of this baker.

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b.)

$$Q_{\text{cupcake}} = -\frac{5}{6} Q_{\text{muffin}} + 100$$

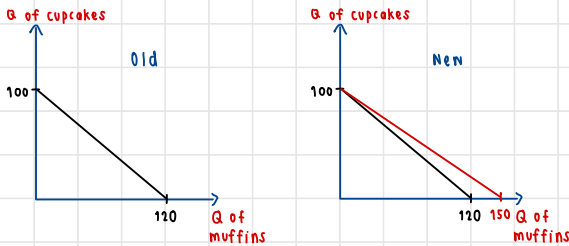
$$60 = -\frac{5}{6} Q_{\text{muffin}} + 100$$

$$\frac{5}{6} Q_{\text{muffin}} = 40$$

$$Q_{\text{muffin}} = 40 \cdot \frac{6}{5} = \frac{240}{5} = 48 \rightarrow \text{if you want to make 60 cupcakes, you can make only 48 muffins}$$

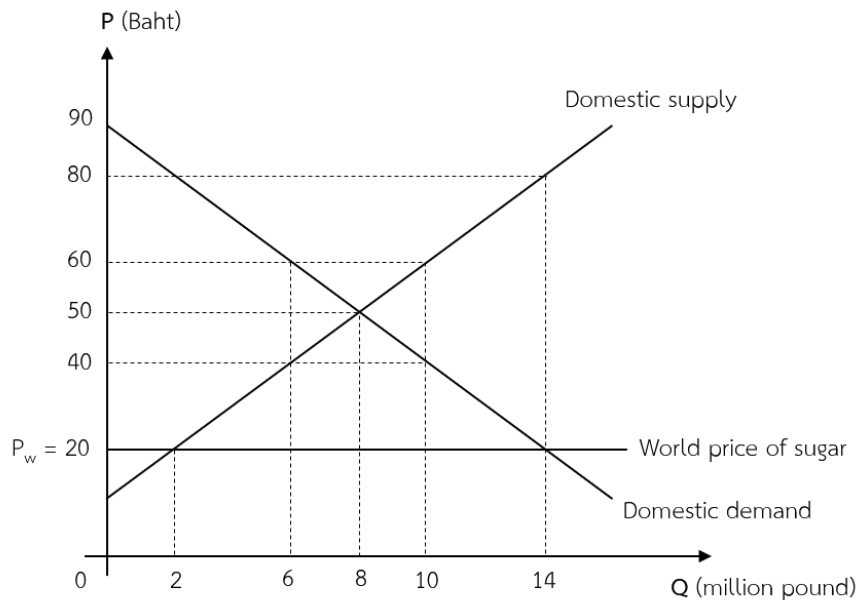
\therefore It is impossible to make 60 cupcakes and 50 muffins

(X) If the baker learns a new technique and now the maximum quantity of muffins she can produce is 150 muffins, while the maximum quantity of cupcakes she can produce is still 100 cupcakes, *ceteris paribus*. Will the opportunity cost of each cupcake increase or decrease, and by what amount? Illustrate the change of the Production Possibility Curve of this baker.



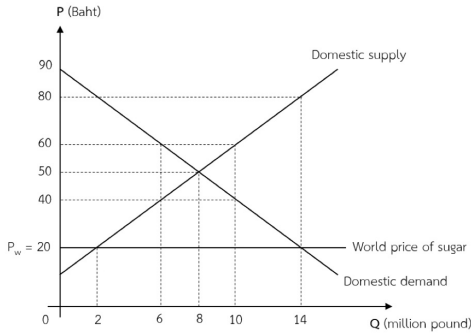
\therefore Before she learn a new technique, she can produce only 120 muffins, which means the opportunity for producing 1 cupcake is 1.2 muffins. However, after learning new technique, she can produce 150 muffins. So, the opportunity cost for producing 1 cupcake is increase to 1.5 muffins.

2. Supposed that sugar is traded freely in the world market, Thai people consume domestically produced sugar while the rest is imported. Given that world market price is 20 baht per pound and the government decides to set domestic ceiling price equally to the world price, below graph shows domestic demand, supply and world price level. Answer the following questions.



- (a) Supposed that Thailand takes world price, how many pounds of sugar is imported at the world price level?
- (b) If the government further decides to collect an import unit tax of 20 baht per pound and the price after tax becomes 40 baht per pound,
- (c) How much of the sugar is domestically produced in Thailand after tax?
- (d) After the import tax is imposed, compute the change in consumer surplus. Also highlight the change in consumer surplus in the provided graph. Are the domestic consumers better off or worse off? Clearly explain your answer.
- (e) Compute the government revenue from the import tax and identify its area in the provided graph. Clearly explain why the area identified above represents the government revenue from the import tax.

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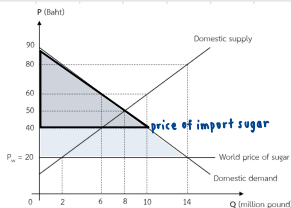
a.) When the price of sugar is only 20 \$, the domestic supply can supply only 2 million pound of sugar. However, when price is 20 \$, the quantity demanded is 14 million pound. So, there is an excess in demand. As a result, country need to import other 12 million pound to meet the demand at 14 million pound.

(b) If the government further decides to collect an import unit tax of 20 baht per pound and the price after tax becomes 40 baht per pound,

(c) How much of the sugar is domestically produced in Thailand after tax?

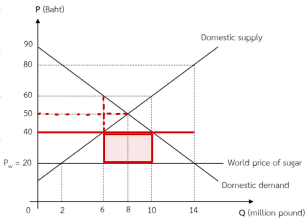
b, c.) When tax is applied, the price is set to 40 \$ per pound in Thailand. So, when price is 40 \$, the domestic producer can produce at 6 million pound.

(d) After the import tax is imposed, compute the change in consumer surplus. Also highlight the change in consumer surplus in the provided graph. Are the domestic consumers better off or worse off? Clearly explain your answer.



The domestic consumers are worst off because the price is increase. When the price is increase, it means consumers who have willingness to pay at the price below 40 \$ cannot afford the new price.

(e) Compute the government revenue from the import tax and identify its area in the provided graph. Clearly explain why the area identified above represents the government revenue from the import tax.



When the price is 40 \$, the domestic supplier can supply only 6 million pound of sugar. However, at 40 \$ price, the demand for sugar is 10 million pound. This means apart from 6 million pound from domestic supplier, it needs to be other 4 million pound from import. As a result, the gov. revenue is total taxation from import other 4 million pound.

$$\begin{aligned} \therefore \text{Gov. revenue} &= 40 \text{ million pound} \times 20 \\ &= 80 \text{ million baht} \end{aligned}$$

3. Suppose that the quantity demanded for sweetened green tea at Thammasat University is 5,000 bottles per month at the price 20 baht per bottle. Suppose further that the university imposes an excise tax of 5 baht per bottle so that the new price is 25 baht per bottle. At this new price, the quantity demanded drops to 3,000 bottles per month.

(a) Use POINT elasticity to calculate the price elasticity of demand at the NEW price.

(b) Without any calculation, would the total sale revenue from selling sweetened green tea at Thammasat University decrease or increase? Explain by using the concept of price elasticity of demand.

(c) Suppose that, as a result of imposing this tax on green tea, the quantity demanded for “Super Drink” increases from 2,500 to 3,000 bottles per month, all else constant. Calculate the cross-price elasticity of demand for “Super Drink”, with respect to the price of sweetened green tea.

(d) From part (c), are sweetened green tea and Super Drink complements or substitutes? Explain.

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(a) Use POINT elasticity to calculate the price elasticity of demand at the NEW price.

$$E_d = \frac{Q_2 - Q_1}{Q_1} \cdot \frac{Q_2 - Q_1}{P_2 - P_1} \cdot \frac{P_2}{Q_2} = \frac{3000 - 5000}{5000} \cdot \frac{3000 - 5000}{25 - 20} \cdot \frac{25}{3000} = -\frac{1000}{5000} \cdot \frac{4000}{5} \cdot \frac{25}{3000} = -\frac{8}{5} = -1.6$$

(b) Without any calculation, would the total sale revenue from selling sweetened green tea at Thammasat University decrease or increase? Explain by using the concept of price elasticity of demand.

It will decrease because the absolute demand from a.) is more than 1.
When demand is elastic, it means when price increase by 1 unit, demand will decrease a lot.

(c) Suppose that, as a result of imposing this tax on green tea, the quantity demanded for "Super Drink" increases from 2,500 to 3,000 bottles per month, all else constant. Calculate the cross-price elasticity of demand for "Super Drink", with respect to the price of sweetened green tea.

$$P_1 \text{ greentea} : 20, P_2 \text{ greentea} : 25$$

$$Q_1 \text{ superdrink} : 2,500, Q_2 \text{ superdrink} : 3,000$$

$$E_d = \frac{Q_2 - Q_1}{P_2 - P_1} \cdot \frac{3000 - 2500}{25 - 20} \cdot \frac{20}{2500} = \frac{500}{5} \cdot \frac{500}{2500} = 100 \cdot \frac{1}{125} = \frac{100}{125} = 0.8$$

(d) From part (c), are sweetened green tea and Super Drink complements or substitutes? Explain.

It is a substitutable good because when price of greentea increase, the quantity demanded for super drink is increase.

4. Consider a liquor market in a country, answer the following questions. If you have any specific assumption, please state them clearly within each item.

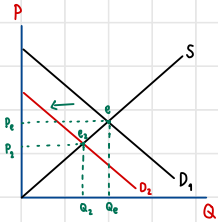
(a) Supposed that a Health Foundation which is an independent organization decides to put up a campaign showing how bad can alcoholic beverages affect health condition in long-term through several big billboards, what do you think will happen to this market, equilibrium price and quantity. Support your claim with economic reasoning.

(b) If the government decides to collect unit tax on sellers, show that how would this affects equilibrium price and quantity. Provide a clear explanation with support of a diagram.

(c) There are two groups of liquor consumers: the alcoholic and the occasional drinkers. Does the unit tax affect both groups the same or differently. Provide a clear explanation with support of diagrams.

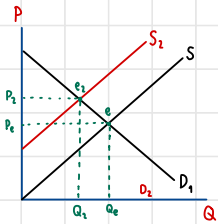
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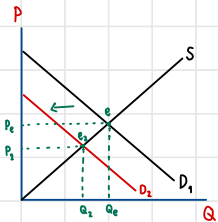
Point e_1 represents equilibrium point before Health foundation put up a campaign. After Health Foundation put up campaign, it is an extend factor that causes demand to shift leftward. Shift in graph means at the same price level at P_0 the demand decrease. At the new equilibrium (e_2), the price is decrease from P_0 to P_2 and the quantity demand decrease from Q_0 to Q_2 .

(b) If the government decides to collect unit tax on sellers, show that how would this affects equilibrium price and quantity. Provide a clear explanation with support of a diagram.



Point e_2 represents the equilibrium price before gov. collect unit tax on seller. However, after the gov. collect the unit tax, it causes the higher cost of production. Producers can produce at the smaller amount ($Q_0 \rightarrow Q_2$). When quantity supply decrease, it raises price from ($P_0 \rightarrow P_2$), then market is at a new equilibrium e_2 .

(c) There are two groups of liquor consumers: the alcoholic and the occasional drinkers. Does the unit tax affect both groups the same or differently. Provide a clear explanation with support of diagrams.



When tax is imposed in the products, it might both affect the two groups of liquor consumers. Since the price will increase, the quantity demanded will decrease, so the demand will shift from Q_0 to Q_2 . It might also affect both groups differently because alcoholic usually need to buy it regularly, but for occasional drinkers might not affect much of them.