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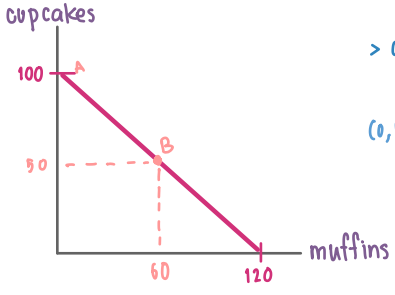
EE211 Assignment #1 (2/2020)

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?



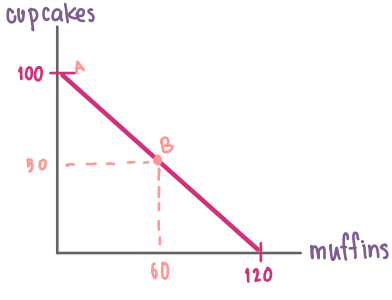
> Opportunity cost

A → B : more cupcakes, less muffins

(0, 120) (50, 60) + 50 − 60

+ 1 − 1.2 Ans.

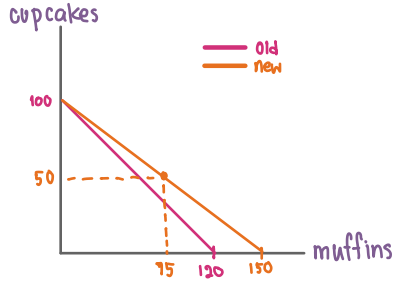
(b) With her available resources, can this baker make 60 cupcakes and 50 muffins? Justify your answer.



cupcake	muffins
50	60
+ 10	− 12
60	48

48 < 50, Therefore it is impossible.

(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.

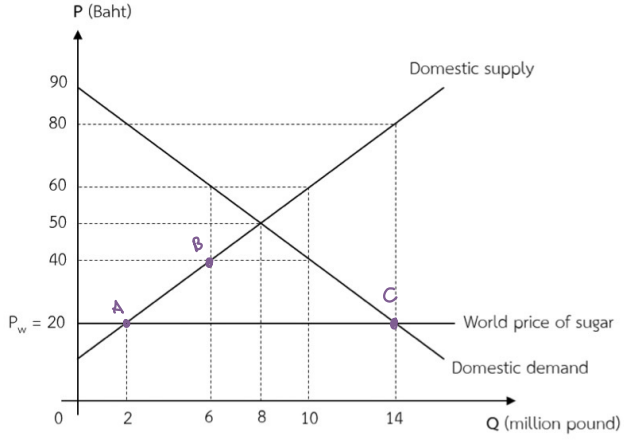


cupcake	muffins
50	− 75
+ 1	− 1.5

opportunity cost of cupcake will increase from 1.2 → 1.5 muffins

Ans.

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?

At world price, Thai suppliers would like to supply 2 m pound of sugar (Poin A).
Thai consumer demand for 14 m pounds of sugar (Point C), 14 - 2 = 12 m

Therefore, another 12 million pound of sugar need to be imported. Ans.

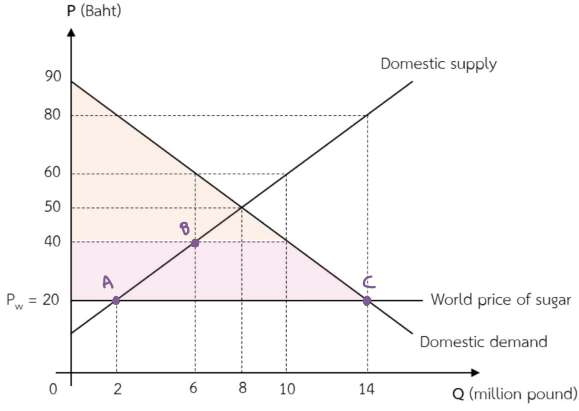
(b) If the government further decides to collect an import unit tax of 20 baht per pound and the price after tax becomes 40 baht per pound,

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

20 baht → 40 baht

Increase in price would encourage supplier to produce more, the amount of sugar being produced increase from 2 million pounds to 6 million pounds. (Point C)
Ans.

(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.



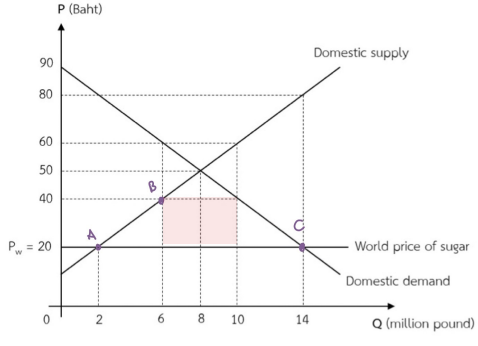
consumer surplus before tax is imposed

After tax policy is imposed

consumer are worse off, since they have to pay more for the sugar imported.

Some might not be able to purchase if their willingness to purchase is under 40 baht/pound.

(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.



government revenue

Price after tax = 40 baht/pound

supply of sugar is 6 million (point B)

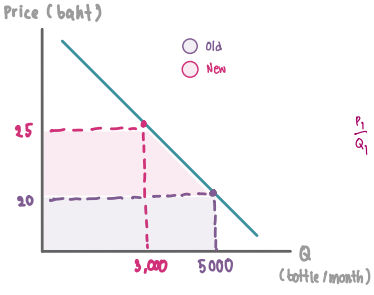
But customer demand is 10 million, which mean that another 4 million pounds of sugar need to to be imported.

import tax = 20 baht/pound

Therefore 4,000,000 X 20 = 80 million baht. Ans.

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.



$$\varepsilon_d = \frac{\%change\ in\ quntity\ demanded}{\%change\ in\ price} = \frac{\%\Delta Q_d}{\%\Delta P}$$

$$\frac{P_1}{Q_1} \cdot \frac{Q_2 - Q_1}{P_2 - P_1} = \frac{5000 - 3000}{20 - 25} \times \frac{25}{3000} = -3.33$$

(ΔQ over $Q_2 - Q_1$; ΔP over $P_2 - P_1$)

∴ price elasticity of demand at the new price is -3.33. Ans.

(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.

From Ans. in (A) $|\varepsilon_d| > 1$, that means demand for greentea in TU is elastic.
So we can implies that pecentage of decrease in demand > increase of price.

Therefore, the total revenue in selling green tea in TU decrease. Ans.

(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.

$$\varepsilon_c = \frac{\%change\ in\ quantity\ demanded}{\%change\ in\ another\ commodity\ price} = \frac{\%\Delta Q_d^a}{\%\Delta P^b}$$

$$\frac{3000 - 2500}{25 - 20} \times \frac{20}{2500} = 0.8 \quad \text{Ans.}$$

(cross price elasticity demand for super drink, with respect to the price of green tea)

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

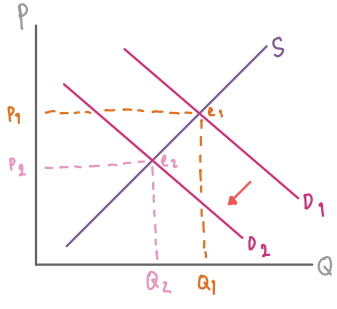
As the result of price increase in tea, people switch to demand more of "super drink" casing quantity demand of super drink increase from 2500 to 3000 bottles per month.

Ans.

Therefore, green tea and supper dink are substitutes to each other.

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.

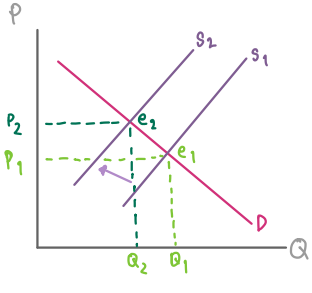
(a) Supposed that a Health Foundation which is an independent organization decides to put up a campaign showing how bad can alcoholic beverages affect health condition in long-term through several big billboards, what do you think will happen to this market, equilibrium price and quantity. Support your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



People will cousume less / stop consuming alcohol if the heath foundation put a campaign showing how bad can alcohol affect health. This then will lead demand curve shift to the left.

People will demand less with the current price, therefore price will adjust from P_1 to P_2, Quantity will decrease from Q_1 to Q_2. Then new market equilibrium is now at e^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.



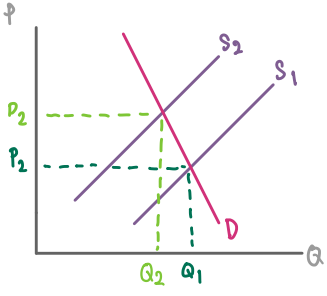
Since there's collection of tax from government, cost of production of seller will now increase. With the higher cost to produce, supplier would produce less causing supply curve shift to the left.

Decrease in supply will lead to increase of price from P_1 to P_2. Increase in price will reduce quantity demanded from Q_1 to Q_2. Equilibrium price and quantity then change to 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.

Alcoholic

Inelastic demand

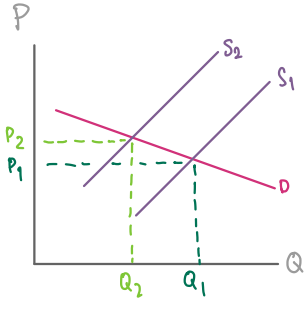


The demand for alcoholic customers is inelastic. This group of group of people is already addicted to the alcohol, alcohol is necessity for them.

Therefore unit tax which lead to increase of price will not affect much in their willingness to purchase, as shown in the graph, quantity demand decrease only little while price increase alot.

Occasional drinker

elastic demand



The demand for occasional drinkers in elastic. Because alcohol is not a necessity for this group of people.

Therefore, as shown in the graph. Price has a little change while quantity demand has great difference. Because if the price increase, they can just switch to substitute product.