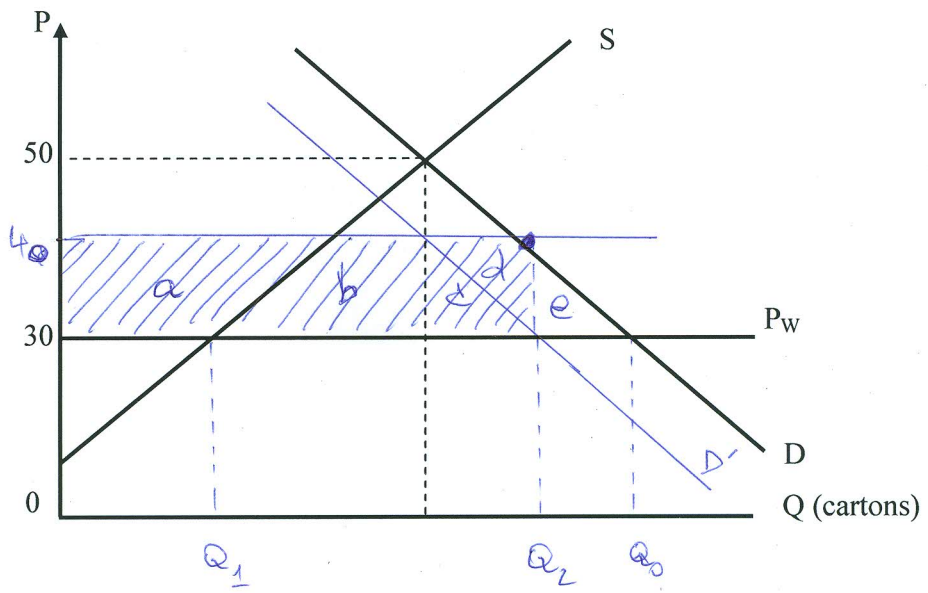
ID_____ Seat No._____

1. (15 marks) Suppose Thailand currently imports cigarettes from abroad at a world price P_W = \$30/carton as shown in the picture where the local demand and supply are given by the D and S curves, respectively. To discourage consumption, the government issues an excise tax on consumers at \$10/carton.

(a) (5 marks) Analyze the tax impacts on the net price paid by the consumer, the net price received by the local producer, the quantity consumed, the quantity sold by local producers, and imports as compare to the situation before tax. Explain.

(b) (3 marks) Show on the graph the size of the tax revenue. Among the consumer, the domestic producer, and the foreign exporter, who bears more tax burden and why?

(c) (7 marks) Analyze and explain the welfare impacts, with the help of the graph, on the consumer, the local producer, the government, and the society. Is there any deadweight loss generated and from what source(s)? If so, why would the government issue such tax?



Initially, the world price is at 30.

- Total consumption is at Q_0
- Domestic production is at Q_1
- Import is Q_1Q_0

a) Tax on consumers shifts demand downward for \$10 along the curve. The new demand line is D'. Therefore,
   - Total consumption reduces to Q_2 and consumers pay \$40/carton
   - Domestic producers still produce at Q_1 and get \$30/carton
   - Import reduces to Q_1Q_2, but importers still get \$30/carton

b) Tax revenue is the shaded area. The consumers bear all tax burden, because the supply curve is perfectly elastic. The country is small compared to the world, and if the consumers pay less than \$30/carton, they cannot get any cigarettes imported.

c) The consumer surplus is reduced by the area a+b+c+d+e. Government revenue increases by a+b+c+d. Domestic producers are not affected. Importers can import less, but they get the same price. D-W loss is the area e.

ID 6024640824 Seat No. 3

2. (10 marks) There are only two goods, Beers and Chips, available. Somchai has total income of 12 Baht.

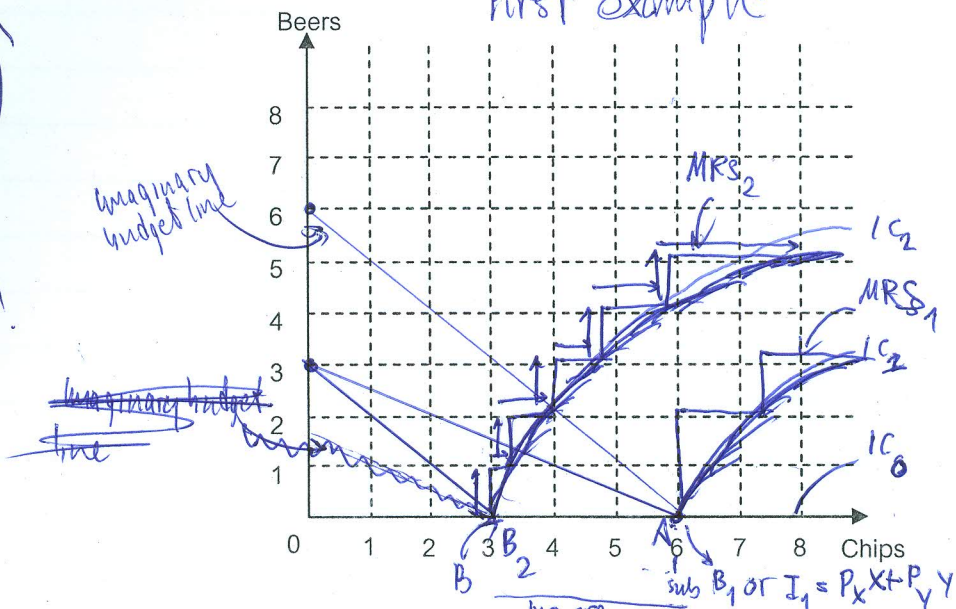
(a) (2 marks) Initially, the price of Beer is P_B = 4 Baht and the price of Chip is P_C = 2 Baht. Draw the budget line of Somchai in the provided diagram. ✓

(b) (4 marks) Suppose Somchai is allergic to alcohol. He always prefers more Chips, but hates drinking Beers. Draw Somchai's indifferent curves in the provided diagram. Also specify the optimal consumption bundle of this person and explain your answer.

(c) (4 marks) Later, the price of Chips increases to P_C' = 4 Baht, while the price of Beers stays the same. Specify Somchai's optimal consumption bundle after the price changes. Decompose substitution effect and income effect of the change and explain your answer.

10 good!

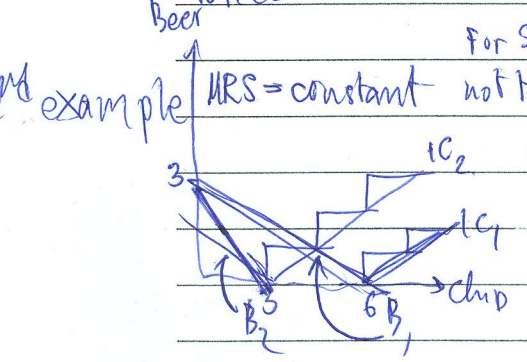
First example



(2)

(b) From the given information, inc eff his utility level would increase if his IC curve shifts more and more near to X axis. which implies us that he perceived beers as bad and consequently, his IC slope explain us that additional one bottle of beer would cause him to consume more and more chips. Therefore his IC curve is downward sloping. His optimal consumption would be point A where his bundle contents 6 of chips and 0 of beers. (4)

Notice that the IC doesn't have to be in a shape like first example. For second example IC shows us that we hate beer but not that much compared to IC of first example. (4)



c) Since the price goes up to 4 baht. Budget line from B_1 to B_2. By remaining change in income constant, we used slutsky approach to decompose to solve for substitution effect, we can see that with change in price but the point where imaginary budget line tangents with IC_1 is still at point A. Whereby in next step, we would remain substitution effect constant, and we see that he still chooses change in price for bundle B which gives him 3 of chips and 0 of beers given that these is

ID 5704641199 Seat No. 24

3. (15 marks) Suppose Mana spends 30 Baht each week on video and game. When the prices of both video and game are 5 Baht, he buys 1 video and 5 games. Following a video price war and an increasing cost of games, the video price falls to 3 Baht and the game price increases to 6 Baht. Mana now buys 2 videos and 4 games.

(a) (7 marks) Construct Laspeyres and Paasche price indexes and the cost of living index of Mana.

(b) (8 marks) Is Mana better off or worse off after the prices change? Explain your answer with graphical illustration with video on the horizontal axis.

Let I = income of mana = ฿30

P_V = Price of video $P_V^B = P_V^{old} = 5$ $P_V^T = P_V^{new} = 3$

P_g = Price of game $P_g^B = P_g^{old} = 5$ $P_g^T = P_g^{new} = 6$

V = unit of video mana consume $V^B = V^{old} = 1$ $V^T = V^{new} = 2$

G = unit of game mana consume $V^B = V^{old} = 5$ $V^T = G^{new} = 4$

15

a) Laspeyes Price index

$$\frac{P_V^T \cdot V^B + P_g^T \cdot G^B}{P_V^B \cdot V^B + P_g^B \cdot G^B} = \frac{3 \times 1 + 6 \times 5}{5 \times 1 + 5 \times 5} = \frac{33}{30} = 1.1$$

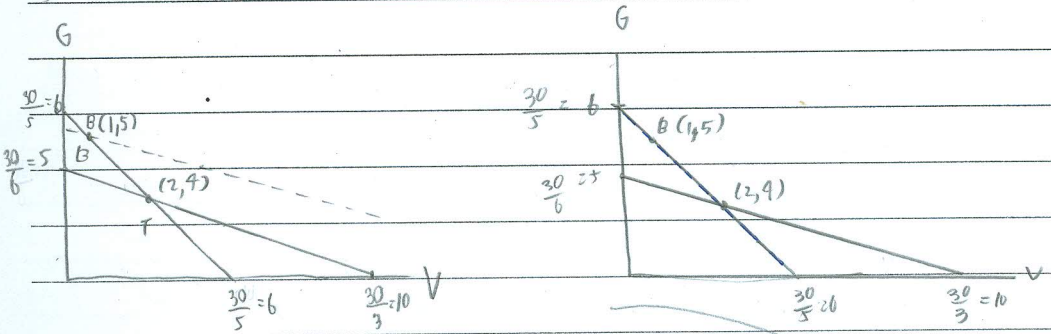
$P_V^T \cdot V^T + P_g^T \cdot G^T = 30$

$P^B P^B \cdot P_g^B \cdot G^B = 30$

Paasche Price index

$$\frac{P_V^T \cdot V^T + P_g^T \cdot G^T}{P_V^B \cdot V^T + P_g^B \cdot G^T} = \frac{3 \times 2 + 6 \times 4}{5 \times 2 + 5 \times 4} = \frac{30}{30} = 1$$

b)



Due to Laspeyres price index, $P_V^T \cdot V^B + P_g^T \cdot G^B \geq P_V^T \cdot V^T + P_g^T \cdot G^T$

$33 \geq 30$

It is not reveal preference condition we only know that

In period T, bundle B is not affordable.

Due to paasche price index

$P_g^B \cdot G^T + P_V^B \cdot V^T \leq P_g^B \cdot G^B + P_V^B \cdot V^B$

$30 = 30$

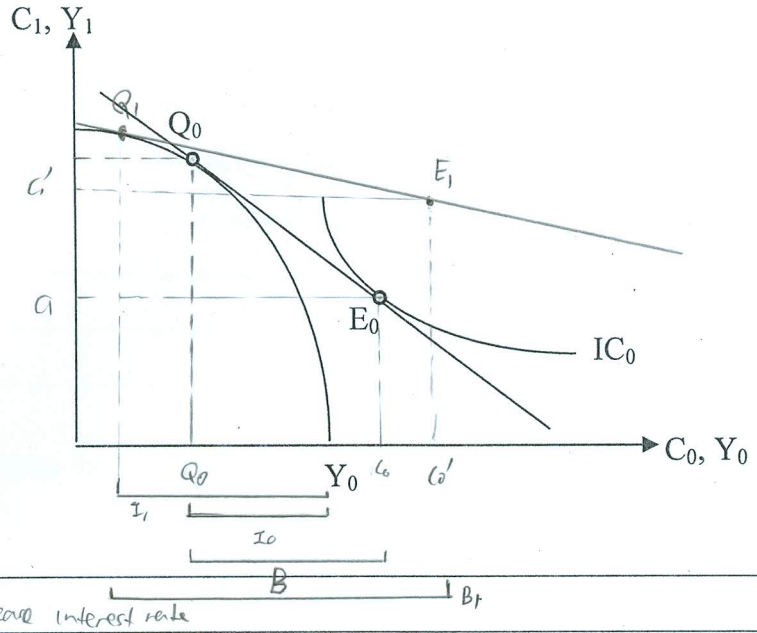
It is reveal preference condition

so people choose bundle B over T in Base period. So it is worse off in T period compare to B period.

ID 5704641199 Seat No. 24

4. (10 marks) From the given endowment Y_0 and equilibrium E_0, Show the level of investment, lending or borrowing, current year consumption, and next year consumption before and after a decrease in interest rate.

10



Before decrease interest rate

He make investment at $Y_0 - Q_0$ or distance I_0

He have no lending

He borrowing from $E_0 - Q_0$ or distance B

His current year consumption Level at C_0

Next year consumption level at C_1

After decrease interest rate - the budget line will rotate outward to be flatter as. interest rest drop.

His investment level is $Y_0 - Q_1$ or distance I_1

The interest rate drop so price of consume in current year is cheaper.

His borrowing level may larger. at point E_1, He may borrow $E_1 - Q_1$ or distance B,

His current year consumption level is C_0'

His next year consumption level is C_1'

ID 5704691199 Seat No. 24

5. (10 marks) Suppose the price of a stock now is 5 baht. Probability and gross returns of this stock are as given below:

10

Probability	Return
0.2	9
0.8	4

(a) (4 marks) What is the expected (gross) return of this stock? What is the variance?

(b) (6 marks) Suppose Dang's utility function is given by

$$u(x) = \sqrt{x},$$

where x is the return that he gets. Calculate expected utility Dang gets if he owns the stock. Will he buys this stock? Explain your answer with graphical illustration.

a) Expected (gross) return $= \sum_{i=1}^{n} (p(x_i))(x_i)$

$= (0.2)(9) + (0.8)(4)$

$= 1.8 + 3.2$

$= 5$ ✓

Variance $= \sigma^2 = \sum p(x_i)(x_i - E(x_i))^2$

$= (0.2)(9-5)^2 + (0.8)(4-5)^2$

$= 0.2(16) + (0.8)(1)$

$= 3.2 + 0.8$

$= 4$ ✓

ID 5704641149 Seat No. 24

Calculate expect utility Bang gets if he owns the stock

$E(u) = P(T_i)T_u(T_i)$ $u(x) = \sqrt{x}$

$= 0.2(\sqrt{9}) + 0.8(\sqrt{4})$

$= 0.2(3) + 0.8(2)$

$= 0.6 + 1.6$

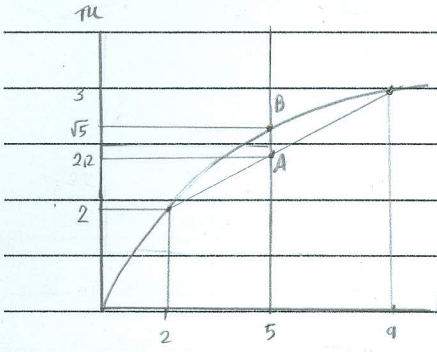
$= 2.2$ ✓

If he not own stock and keep certain income of 5

$x = 5$

$u(x) = \sqrt{x}$

$u(5) = \sqrt{5} = 2.236 > 2.2$



$u(x) = \sqrt{x}$		MU	
$x = 1$	$u = 1$	–	∴ It implies that
$x = 4$	$u = 2$	1/3	marginal utility
$x = 9$	$u = 3$	1/5	is decreasing.
$x = 16$	$u = 4$	1/7	He is risk Averse person.

According to the calculation if he own stock which is the risky asset he will get expected return at 5 and utility level at 2.2. If he hold the sure asset at $x=5$ he will get the utility level at $\sqrt{5}$.

At the same expected value which equal to 5, he preferred no-risk option to uncertain option. that he have higher utility level ($\sqrt{5} > 2.2$) when he own sure option. He will not buy the stock since stock give him same expected return with lower utility Moreover, since he is risk averse person, with the same expect income, he will choose no risk option. Confirm that he will not buy the stock.

ID 5704691199 Seat No. 24

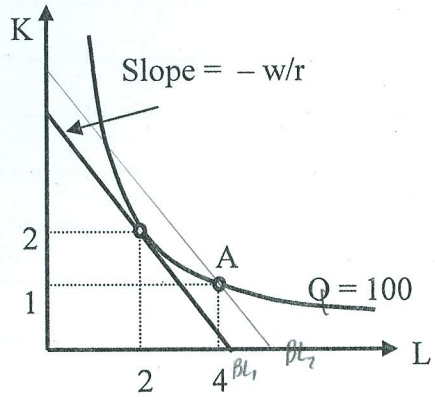
6. (10 marks) A factory is producing 100 units of furniture/day by using 1 machine (K) and 4 workers (L). The combination of inputs is at point A in the picture. The factory pays each worker (w) 200 Baht/day and the rental cost for the machine (r) 200 Baht/day.

(a) (4 marks) Show the calculation of the short run average cost (SAC) for this factory.

(b) (4 marks) Show the calculation of the long run average cost (LAC) for this factory.

(c) (2 marks) Compare the value of the SAC and LAC and explain why they are different.

10



shortrun average cost = Total cost / Quantity produce = Total fixed cost + Total variable cost / Quantity produce

at 1 machine (K)
4 workers (L)
r = rental rate = 200
w = wage rate = 200

$= \frac{(K)(r) + (L)(w)}{Q}$

$= \frac{(1)(200) + (4)(200)}{100}$

$= \frac{1000}{100}$

$= 10$ ✓

2) In the long run, firm can produce at least cost combination where $|MRTS| = |\frac{w}{r}|$

or at point (2,2) given Q = 100

Long run average cost = Longrun total cost / Quantity product

$= \frac{2(200) + 2(200)}{100}$

$= \frac{800}{100}$

$= 8$ ✓

3) Comparing between SRAC and LRAC, LRAC = 8 which is lower than SRAC (SRAC = 10), there are different since short run production there are at least 1 factor of production are fixed. In this case at point A (in the graph) we can see that $|MRTS|$ is "greater" than $|\frac{w}{r}|$. It is better to use less of labour and more of capital so as to minimise cost. However there are fixed factor of product, we can not change it flexibly.

At point A in short run use high cost than in the Longrun ($BL_2 > BL_1$).

At the same quantity = 100, therefore in the long run has lower average cost than shortrun do.

ID 5704641199 Seat No. 24

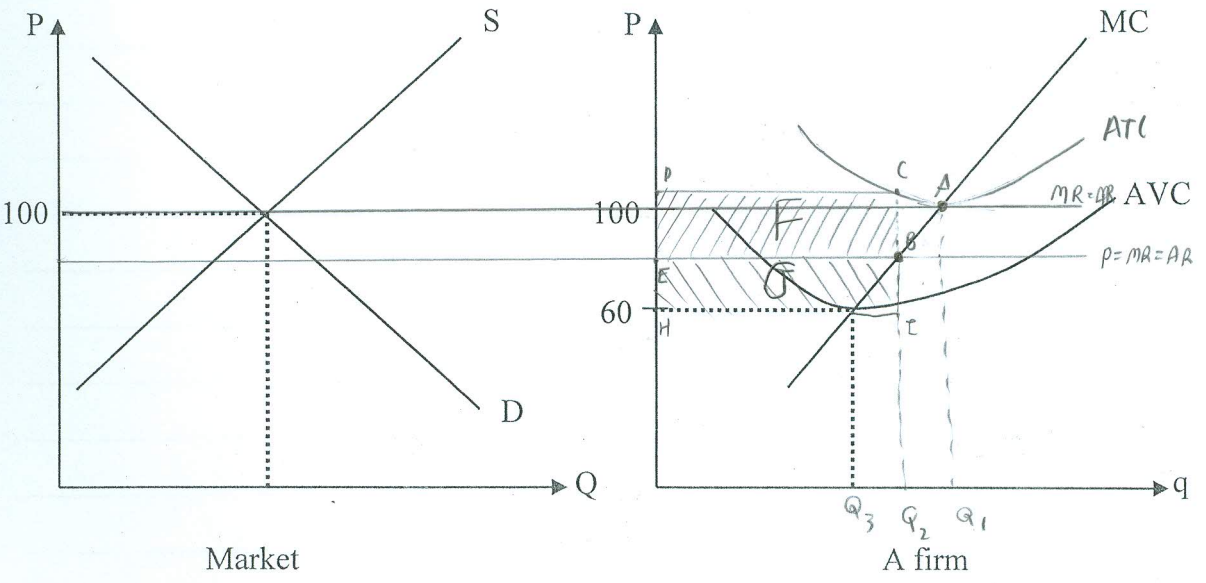
7. (10 marks) Suppose a perfectly competitive firm is operating initially with a normal profit, $\pi = 0$

10

(a) (4 marks) Complete the following picture for the firm to depict this initial situation with the ATC, the facing demand curve, and the quantity produced.

(b) (4 marks) Following from part (a), suppose the government imposes a price ceiling at 80 Baht. Explain, by the aid of the graph, the impact of this policy on the price received by the firm, the new maximizing quantity and the level of profits or losses.

(c) (2 marks) Should the firm operate or shutdown under the price ceiling? Explain.



ID 5704691149 Seat No. 24

Qf that makes

(a) At price given at P=100, the firm will produced and sell at MC = MR (in perfectly competitive market is price taker P = MR = AR).

If state that there is normal profit, therefore minimum of ATC is tangent to P = MR that makes firm has zero profit. (16)

(b) If government imposed price ceiling at 80, it make P drops from P=100 to P=80. In this situation with profit maximizing condition (MR = MC) the will face losses with area ▨ BCDE. The new quantity produce at Q_2 (where MR = MC) (16)

↗ new max Q.

(c) The firm should continue to operate. Comparing between continued and close the firm down. If he continue he will experienced loss of area F (▨ BCDE) which is some parts of Fixed cost. But if shutdown he will still have to pay the fixed cost which is the area F+G (▨ DCIH) [or the area between the gap of ATC and AVC which is AFC × Quantity or Fixed cost.] (2)

So it is better to continue operate since shutdown loss more. (F+G > F)