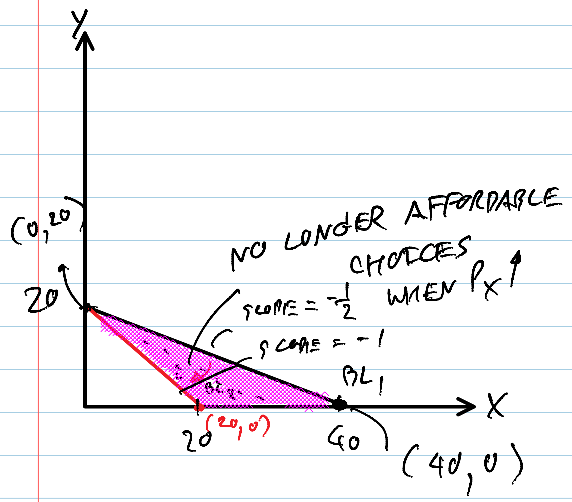


$$\boxed{\begin{array}{l} P_X = 50 \\ P_Y = 100 \\ M = 2000 \end{array}}$$

$\frac{M}{P_X} = \frac{2000}{50} = 40$

$\frac{M}{P_Y} = \frac{2000}{100} = 20$

SLOPE OF $BL_1 = \frac{-20}{+40} = -\frac{1}{2}$

OPP. COST OF HAVING ONE MORE X MEASURED IN TERMS OF FORGONE UNITS OF Y

SUPPOSE X BECOMES MORE EXPENSIVE.

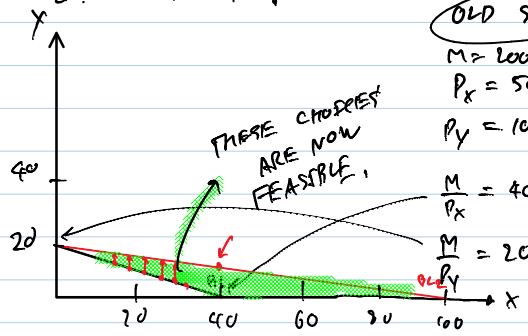
P_X CHANGES FROM 50 BAHT/UNIT TO 100 BAHT/UNIT.

WHAT HAPPENS TO BL ?

- BL_1 ROTATES INWARD TO BL_2 (PIVOTS)
- SOME CHOICES IN PINK SHADED REGION ARE NO LONGER AFFORDABLE. :(
- SLOPE OF BL_1 : $-\frac{1}{2}$

  SLOPE OF BL_2 : -1 $\Rightarrow$ OPP. COST OF HAVING ONE EXTRA UNIT OF X HAS BECOME MORE EXPENSIVE.

IF P_X BECOMES CHEAPER, LET'S SAY FROM 50 TO 20 BAHT.



OLD SITUATION

$M = 2000$

$P_X = 50$

$P_Y = 100$

$\frac{M}{P_X} = 40$

$\frac{M}{P_Y} = 20$

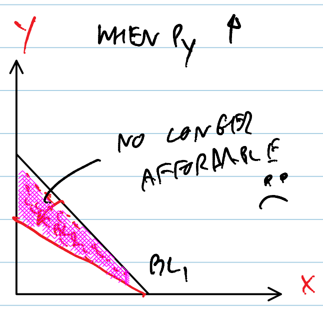
NEW SITUATION

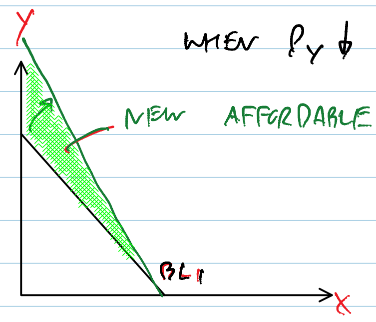
$P_X' = 20$

$P_Y = 100$

$\frac{M}{P_X'} = \frac{2000}{20} = 100$

$\frac{M}{P_Y} = 20$

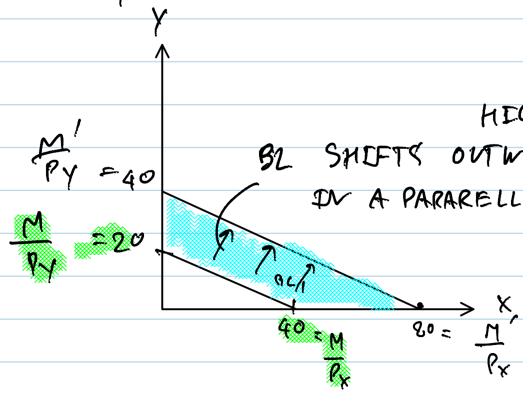




DIY ; TRY TO GIVE AN INTERPRETATION ON THE OLD AND NEW SLOPE.

WHAT IF THIS GUY IS RICHER ?

OLD SITUATION	$\longrightarrow$	NEW SITUATION
$M = 2000$		$M' = 4{,}000$
$P_X = 50$		$P_X = 50$
$P_Y = 100$		$P_Y = 100$



HIGHER INCOME $\longrightarrow$ MORE CHOICES TO BE CHOSEN FROM.

NOTE: SLOPE REMAINS THE SAME

SO FAR, ...
$\left.\begin{array}{l}\text{CHANGE IN } P_X \\ \text{CHANGE IN } P_Y \\ \text{CHANGE IN INCOME}\end{array}\right\}$ ON BL.

NOW, WE ARE GOING TO BRING THE TWO TOOLS TO BE ON THE SAME DIAGRAM.

CONSIDER: TWO GOODS: X AND Y
(PIZZA) (PEPSI)

P_X = PRICE OF GOOD X (BAHT/UNIT)

P_Y = PRICE OF GOOD Y (BAHT/UNIT)

M = INCOME OR BUDGET (BAHT/WEEK)

PROBLEM:

$$\boxed{\begin{array}{l}\text{MAXIMIZE } U(X, Y) \\ \text{SUBJECT TO } \underbrace{P_X \cdot X + P_Y Y}_{\text{TOTAL SPENDING}} = \underset{\text{INCOME}}{\underset{\downarrow}{M}}.\end{array}}$$

CONSUMER'S OPTIMIZATION PROBLEM

CHOOSE THE BEST AFFORDABLE CHOICE

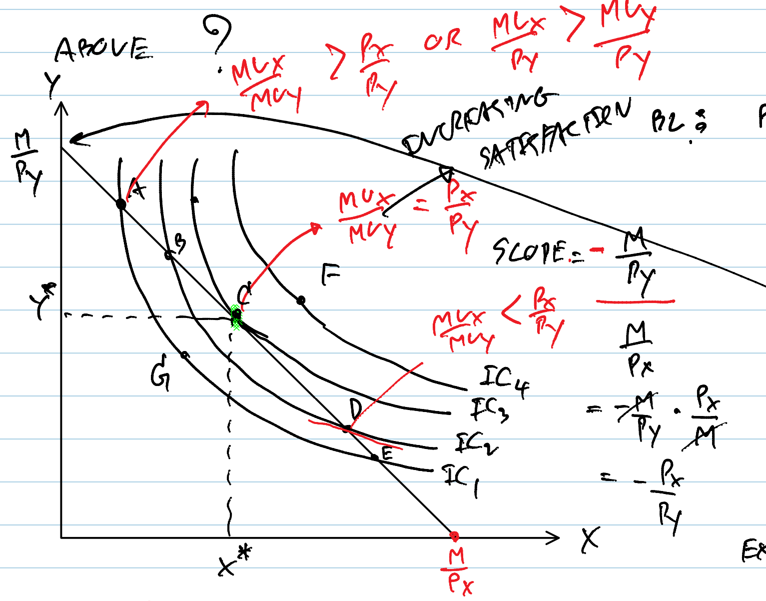
$$\underbrace{X = ?, \quad Y = ?}, \qquad \underbrace{P_X, \quad P_Y, \quad M}$$

CHOICE VARIABLES

EXOGENOUS VARIABLES (i.e., HE HAS NO CONTROL OVER THESE THREE VARIABLES)

$$\boxed{\begin{matrix} X^* = ? \\ Y^* = ? \end{matrix} \quad \xrightarrow{\text{MAXIMIZE}} \quad U}$$

Q: IS THERE ANY ECONOMIC ADVICE FOR THE PROBLEM ABOVE?



BL: $P_x X + P_y Y = M$

$P_y \cdot Y = M - P_x X$

$Y = \dfrac{M - P_x X}{P_y}$

$$\boxed{Y = \frac{M}{P_y} - \frac{P_x}{P_y} \cdot X}$$

INTERCEPT - Y AXIS ; SLOPE

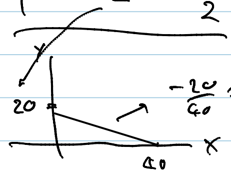
EX: $P_x = 50$, $P_y = 100$, $M = 2000$

$50 \cdot X + 100 Y = 2000$

$100 Y = 2000 - 50 X$

$Y = \frac{2000}{100} - \frac{50}{100} X$

$\therefore Y = 20 - \frac{1}{2} X$



$-\dfrac{P_x}{P_y}$ = SLOPE OF BUDGET LINE

= OPP. COST OF HAVING ONE MORE UNIT OF X (MEASURED IN TERM OF FORGONE UNITS OF Y)

= RELATIVE PRICE

(FOR EXAMPLE: $P_x = 50$, $P_y = 100$

$\therefore \frac{P_x}{P_y} = \frac{50}{100} = \frac{1}{2}$

$$\boxed{P_x = \frac{1}{2} P_y}$$

OR

$$\boxed{P_y = 2 P_x}$$

① CONSIDER THE GRAPH ABOVE, BASKET C (X^*, Y^*) YIELDS THE HIGHEST POSSIBLE UTILITY LEVEL (IC_3)

② AT POINT C THERE IS SOMETHING SPECIAL ABOUT IT

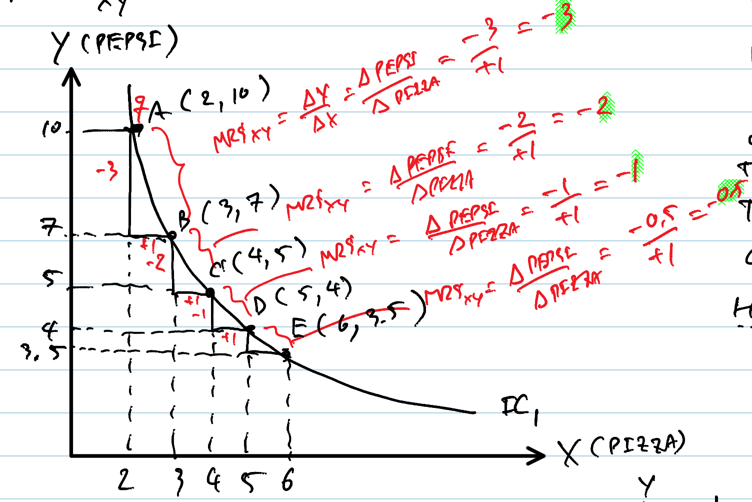
IF YOU NOTICE, SLOPE OF IC AND SLOPE OF BUDGET LINE ARE EQUAL AT POINT C:

$$\text{SLOPE OF IC} = \text{SLOPE OF BL}$$

$$MRS_{xy} = -\frac{P_x}{P_y}$$

Q: WHAT DOES IT MEAN?

A: BEFORE WE TRY TO UNDERSTAND THE ABOVE CONDITION, WE NEED TO KNOW MORE ABOUT MRS_{xy}.



DEFINITION:

$$MRS_{xy} = \left.\frac{\Delta Y}{\Delta X}\right|_{\bar{U}}$$

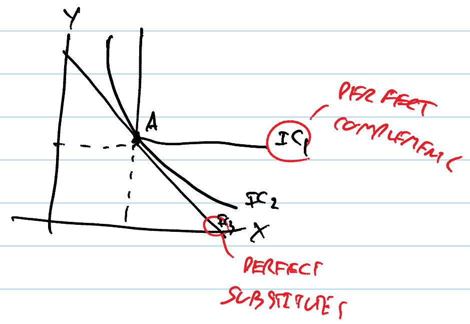
ΔY: CHANGE IN AMOUNT OF GOOD Y

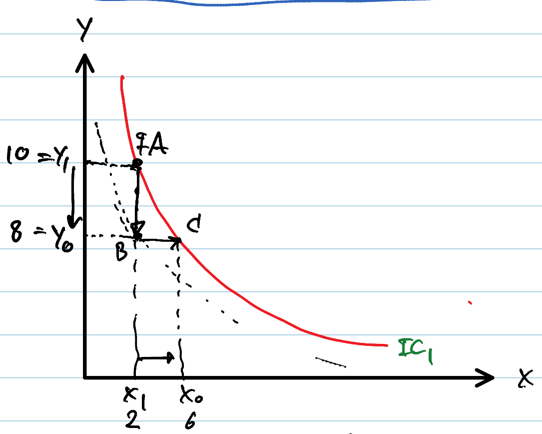
ΔX: CHANGE IN AMOUNT OF GOOD X

THE RATE YOU ARE WILLING TO TRADE ONE GOOD FOR OTHER SO THAT YOUR HAPPINESS REMAIN THE SAME.

(READ OUT LOUD)

LAW OF DIMINISHING MRS:





MOVEMENT FROM A TO B: LOSS IN UTILITY $= MU_y \cdot \Delta Y$

$$\underbrace{5 \cdot -2}_{-10 \text{ UTILS}}$$

MOVEMENT FROM B TO C: GAIN IN UTILITY $= MU_x \cdot \Delta X$

$$\underbrace{2.5 \cdot +4}_{+10 \text{ UTILS}}$$

$$MU_y \cdot \Delta Y + MU_x \cdot \Delta X = 0 \quad (\Delta U = 0)$$

$$MU_y \cdot \Delta Y = -MU_x \cdot \Delta X$$

$$MU_y \cdot \Delta Y = -MU_x \cdot \Delta X$$

$$* \quad \boxed{MRS_{xy} = \frac{\Delta Y}{\Delta X} = -\frac{MU_x}{MU_y}} \quad *$$

RELATIVE MARGINAL UTILITY BETWEEN THE TWO GOODS

SO, THE CONDITION ABOVE: $MRS_{xy} = -\frac{P_x}{P_y}$

CAN BE WRITTEN AS

$$-\frac{MU_x}{MU_y} = -\frac{P_x}{P_y}$$

SLOPE OF IC

$$\boxed{\frac{MU_x}{MU_y} = \frac{P_x}{P_y}}$$

SLOPE OF BC

OR

$$\boxed{\frac{MU_x}{P_x} = \frac{MU_y}{P_y}}$$

MARGINAL HAPPINESS FROM LAST BAHT SPENT ON GOOD X

MARGINAL HAPPINESS FROM LAST BAHT SPENT ON GOOD Y