Consumer Behavior

(i) Indifference Curve & Budget Line.

(ii) Utility maximization [For 2 Goods case]
[Obtain the Marshallian demand fns]

(iii) Utility maximization with 3 or more goods
[Method of Lagrange Multipliers].

(iv) Utility Maximization ⇒ Indirect utility fn (Properties)
Expenditure Minimization ⇒ Derive Hicksian Demand Curve

(v) Slutsky Decomposition Effect
Compared with Hicksian SE.

(vi) Intertemporal Choice & Labour - Leisure Choice.

8. Consider $u(x, y, z) = x + \min\{y, z\}$ - Find the Indirect utility fn.

B.L ⇒ $M = P_x \cdot x + P_y \cdot y + P_z \cdot z$.

Find Marshallian demands:

Max $u = x + \min\{y, z\}$ s.t $M = P_x \cdot x + P_y \cdot y + P_z \cdot z$

Solving: we $x^* = x^*(\bar{P_x}, \bar{P_y}, \bar{P_z}, \bar{M})$

$y^* = y^*(\quad)$

$z^* = z^*(\quad)$

$\therefore u(x^*, y^*, z^*) = u^* \Rightarrow$ Maximized value of utility

$= u^*(P_x, P_y, P_z, M)$ --- Indirect utility fn

$u = x + \min\{y, z\}$ [P.S b/w x & $\min\{y, z\}$]

P.C b/w y, z.

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At opt $y^* = z^*$

$\therefore$ Let $\min\{y, z\} = a$, $P_a = P_y + P_z$

$u = x + a$.

(i) If $P_a > P_x$, then, $a = 0 \Rightarrow y^* = z^* = 0$.

$\therefore u = x$; $x^* = \frac{M}{P_x}$

Ans: $x^* = \frac{M}{P_x}$, $y^* = z^* = 0$.

$$u_1^* = x^* + \min(y^*, z^*) = \frac{M}{P_x}$$

(ii) If $P_x > P_a \Rightarrow x^* = 0$.

$u = \min\{y, z\}$

At opt: $y^* = z^* = \frac{M}{P_y + P_z}$.

Ans: $x^* = 0$, $y^* = z^* = \frac{M}{P_y + P_z}$.

$$u_2^* = x^* + \min\{y^*, z^*\} = \frac{M}{P_y + P_z}$$

Combine:

$u^* = \text{Max}\{u_1^*, u_2^*\}$

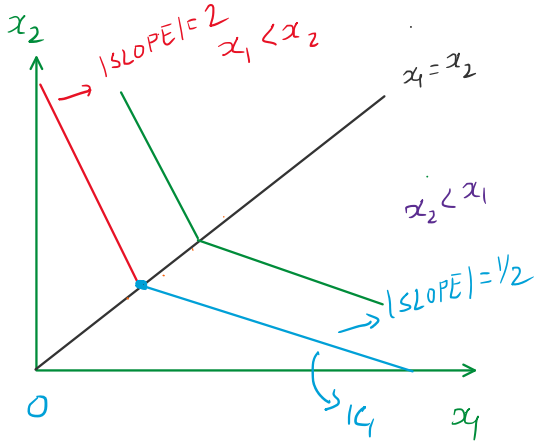
$= \text{Max}\left\{\frac{M}{P_x}, \frac{M}{P_y + P_z}\right\} = M \cdot \text{Max}\left\{\frac{1}{P_x}, \frac{1}{P_y + P_z}\right\}$

8. $u(x_1, x_2) = \min\{2x_1 + x_2, x_1 + 2x_2\}$

(i) Plot the IC [x_2 = vertical axis, x_1 = horizontal axis].

HW (ii) What should be range of P_1, P_2 s.t both goods are consumed.

(ii) What should be range of P_1, P_2 s.t both goods are consumed.



$$u = \min\{2x_1 + x_2,\ x_1 + 2x_2\}.$$

At opt: $2x_1 + x_2 = x_1 + 2x_2$

$$x_1 = x_2$$

Case I: $2x_1 + x_2 < x_1 + 2x_2 \Rightarrow x_1 < x_2$

$u = 2x_1 + x_2 \ldots$ [P.S form]

$du = 2dx_1 + dx_2$

$0 = 2dx_1 + dx_2$

$dx_2 = -2dx_1 \Rightarrow \left|\frac{dx_2}{dx_1}\right| = 2$

Case II: $x_1 + 2x_2 < 2x_1 + x_2 \Rightarrow x_2 < x_1$

$u = x_1 + 2x_2 \ldots$ [P.S form]

$du = dx_1 + 2dx_2$

$0 = dx_1 + 2dx_2$

$2dx_2 = -dx_1 \Rightarrow \left|\frac{dx_2}{dx_1}\right| = \frac{1}{2}$