28 December 2023 07:04 PM

Q1 : A consumer consumes two commodities in quantities F and C.
It is given that $P_F = 5$ and $P_C = 1$
and income (M) = 40.

$$MRS = \frac{40-5F}{30-C}$$

Find the best choice bundle for the consumer.

The budget equation of the consumer is

$$M = P_F \cdot F + P_C \cdot C$$

$$\boxed{40 = 5F + C} \quad \text{— (1)}$$

Slope of budget line, $\frac{dC}{dF} = -\frac{P_F}{P_C} = -5$

Also given $MRS = \frac{40-5F}{30-C}$

In consumer's equilibrium, $MRS = \frac{P_F}{P_C}$

or, $\frac{40-5F}{30-C} = 5$

or, $40 - 5F = 150 - 5C$

or, $5C - 5F = 110$

or, $C - F = 22$ — (2)

Subtracting eq (2) from eq (1)

$\cancel{C} + 5F = 40$

$\cancel{C} - F = 22$

$$C + 5F = 40$$

$$\underset{(-)}{C} - \underset{(+)}{F} = \underset{(-)}{22}$$

$$6F = 18$$

$$\boxed{F = 3 \text{ units}}$$

$\therefore$ $C = 22 + F$

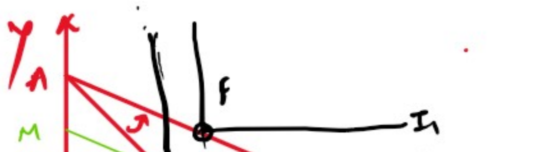
$$\boxed{C = 25 \text{ units}}$$

Therefore the best choice bundle for the consumer is (3, 25).

**Q2** Show decomposition of price effect in case of

**(a) Perfect Compliments**

In case of perf compliments indifference curve is L-shaped. Now AB is the initial budget line where initial equilibrium is at pt E and enjoys the utility level $I_0$




Due to fall in price of X, budget line rotates anticlockwise to AC where equil is at point F

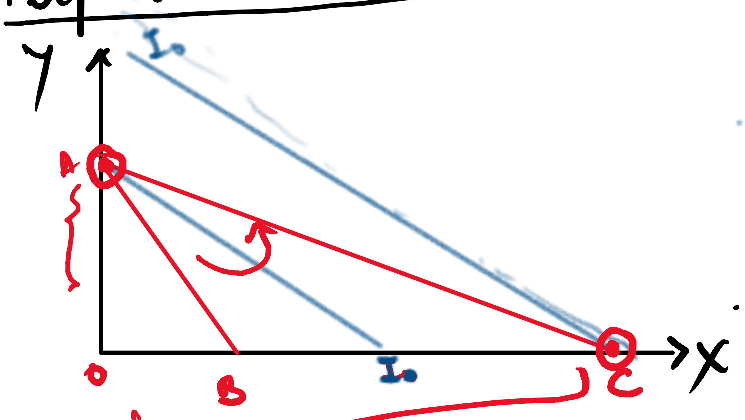
When income away such that new budget line is MN and the consumer can consume at pt E and remain on same indifference curve $I_0$.

So in this with the help of Slutsky's ... for commodity

So in this with the help of Slutsky's decomposition, change in demand for commodity $x$ is entirely due to income effect as shown by movement from pt E to F.

$$PE = SE + IE$$
$$PE = 0 + IE$$
$$PE = IE$$ in case of perfect complements.

(b) Perfect Substitutes



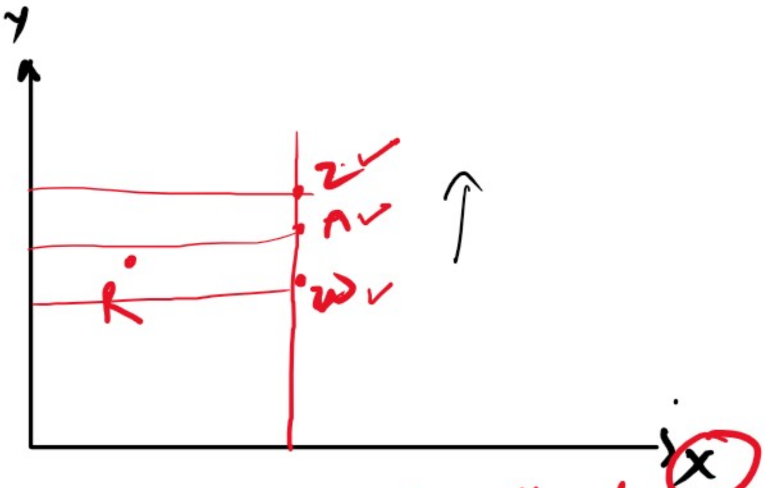

Price effect = Substitution effect.

initially $P_y < P_x$ (AB → Budget) (Corner solution at A because y is cheaper)

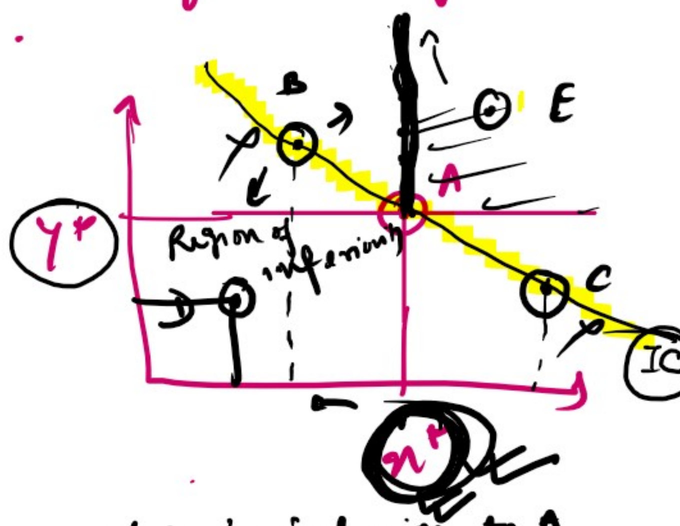
$P_x$ decrease such that $P_y > P_x$ (Budget line rotate to AC and consumer consumes at C)

Q3 What is lexicographic ordering? Can you draw an IC for this type of preference? If not which axiom of choice has been violated?

If a consumer always prefer a commodity bundle with more of good x irrespective of the amount of good if a consumer ... more of good X irrespective of the amount of good Y and if at the same time, two commodity bundle contain same amount of good X, then the consumer prefers the bundle with more of good Y. This type of ranking or ordering is called Lexicographic Ordering. For this kind of ordering indifference curve doesn't exist.




Always A preffered to point and not indifferent to

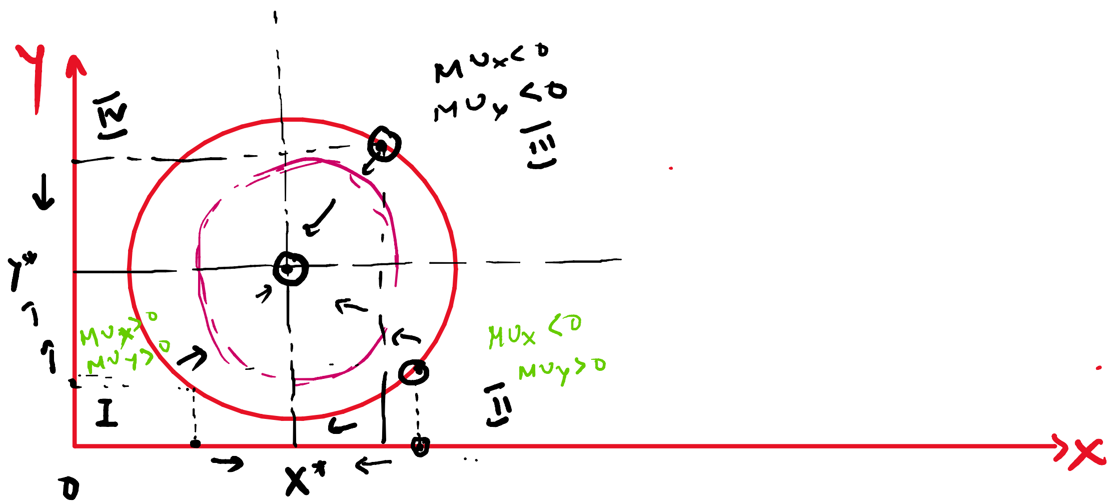



pt D is inferior to A
Pt E is superior to A
B and C and A (consumer is indifferent)

Z is pref A
A is pref W } No point of indiff → NO ICX.

This type of ordering violates the axiom of continuity which states that there exist a set of points on a boundary dividing the commodity space into less preffered to and more preffered to ... that there are points of indifference into less preferred ... areas such that there are points of indifference to each other. But in lexicographic ordering there are no set of points on boundary that divides the commodity space into two with a relation of indifference.

## Different shapes of Indifference Curve:




| Zones | X | Y | Shape of IC |
|---|---|---|---|
| I | Good | Good | $MU_x > 0$, $MU_y > 0$, slope $= -\frac{MU_x}{MU_y} < 0$ (IC is downward & convex) |
| II | Bad | Good | $MU_x < 0$, $MU_y > 0$, slope IC $> 0$ and convex. |
| III | Bad | Bad | $MU_x < 0$ $MU_y < 0$ ⇒ IC is −vely sloped and concave. |
| IV | Good | bad | $MU_x > 0$, $MU_y < 0$ ⇒ IC is +vely sloped and concave. |

Q4 Construct a set of ICs for a person who doesn't like risk but like return.

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MU of Return > 0
MU of Risk < 0
∴ slope > 0.