CHAPTER 3 CONSUMER BEHAVIOR
4 INDIVIDUAL AND MARKET DEMAND
5 UNCERTAINTY AND CONSUMER BEHAVIOR

LET'S BEGIN W/ CONSUMER BEHAVIOR (CH. 3)

CONSUMER PREFERENCES / TASTES

BUDGET CONSTRAINTS

CONSUMER CHOICE

TOOLS: INDIFFERENCE CURVES BUDGET LINES OPTIMIZATION

Q: WHAT DO CONSUMERS DO?

A: $\boxed{\begin{array}{l}\text{MAXIMIZE } U(X, Y) \\ \text{SUBJECT TO BUDGET CONSTRAINT}\end{array}}$ $\Rightarrow$ X = ? Y = ?

$\downarrow$

MAX U

CONSUMER PREFERENCES

ASSUMPTIONS ABOUT PREFERENCES

① COMPLETENESS: CONSUMERS CAN "RANK" ALTERNATIVES.

A IS PREFERRED TO B ($A \succ B$) $\longleftrightarrow$ $U(A) > U(B)$

B " ——— " A ($B \succ A$) $\longleftrightarrow$ $U(B) > U(A)$

A AND B ARE INDIFFERENT ($A \sim B$) $\longleftrightarrow$ $U(A) = U(B)$

② TRANSITIVITY: CONSUMER PREFERENCE MUST BE CONSISTENT SUCH THAT ...

IF $A \succ B$ AND $B \succ C$, THEN IT MUST THE CASE THAT $A \succ C$.

(3) MORE IS BETTER THAN LESS : WHEN GOODS ARE ASSUMED TO BE DESIRABLE, MORE OF GOODS NEVER UPSET A CONSUMER.

"MORE IS ALWAYS BETTER, EVEN IF JUST A BIT BETTER"

(4) CONVEXITY : AVERAGE IS PREFERRED TO EXTREME

(FOOD, CLOTHES)

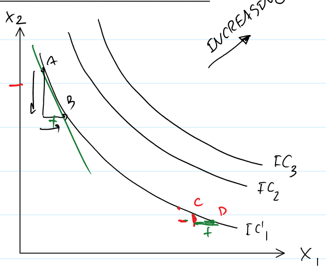
A (0, 100)

B (100, 0)

C (x, $100-x$) WHERE $x \neq 0$

Friday, August 25, 2017 11:11 AM

INDIFFERENCE CURVES



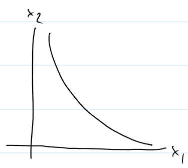
2 GOODS: x_1 AND x_2

SLOPE OF IC $= \left.\dfrac{\Delta x_2}{\Delta x_1}\right|_{\bar{U}} = MRS_{12}$

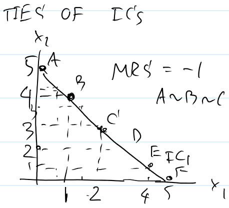
WHERE MRS_{12} = MARGINAL RATE OF SUBSTITUTION BETWEEN GOOD 1 AND GOOD 2.

$$\boxed{MRS_{12} = -\frac{MU_1}{MU_2}}$$

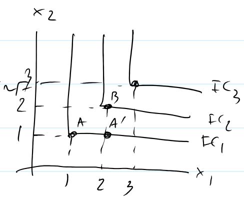
DIY: REVIEW PROPERTIES OF IC'S



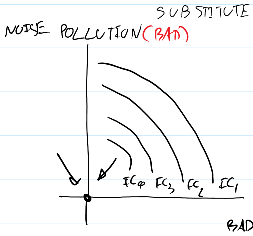
X_1 AND X_2 ARE IMPERFECT SUBSTITUTES



X_1 AND X_2 ARE PERFECT SUBSTITUTE



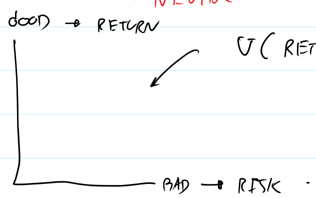
X_1 AND X_2 ARE PERFECT COMPLEMENTS



GARBAGE (BAD)

GOOD (COMMODITY)
- IS GOOD: MORE IS BETTER
- IS BAD: LESS IS PREFERRED TO MORE
- IS NEUTER

DIY

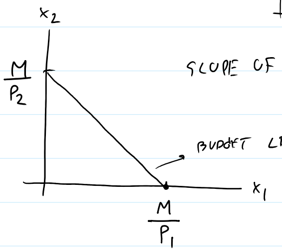


U(RETURN, RISK)

- BUDGET LINES

2 GOODS: x_1 AND x_2

BUDGET CONSTRAINT: $\boxed{P_1 x_1 + P_2 x_2 = M}$



SLOPE OF BL $= -\dfrac{\frac{M}{P_2}}{\frac{M}{P_1}} = -\dfrac{\cancel{M}}{P_2}\cdot\dfrac{P_1}{\cancel{M}} = -\dfrac{P_1}{P_2}$

CALL = PRICE RATIO = RELATIVE PRICE

$P_1 x_1 + P_2 x_2 = M$

$P_2 x_2 = M - P_1 x_1$

$x_2 = \dfrac{M - P_1 x_1}{P_2}$

Ex: $P_1 = 100$
$P_2 = 50$

$\dfrac{P_1}{P_2} = \dfrac{100}{50} = 2$ OR $P_1 = 2P_2$

OPP. COST OF BUYING GOOD 1 = 2 UNITS OF GOOD 2 FORGONE.

$$\boxed{X_2 = \frac{M}{P_2} - \frac{P_1}{P_2}X_1}$$

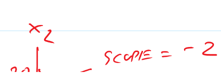
BUDGET LINE EQUATION

INTERCEPT OF Y-AXIS

SLOPE OF BL WHICH IS RELATIVE PRICE.

Ex: $M = 1000$
$P_1 = 100$

$x_2 = \dfrac{M}{P_2} - \dfrac{P_1}{P_2}x_1$



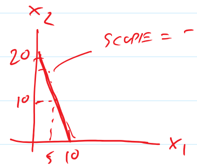
EX: $M = 1000$, $P_1 = 100$, $P_2 = 50$

OF Y-AXIS

$$x_2 = \frac{M}{P_2} - \frac{P_1}{P_2} x_1$$

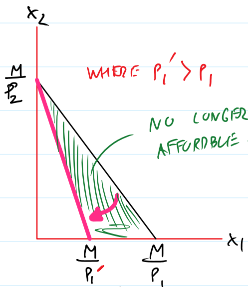
$$= \frac{1000}{50} - \frac{100}{50} x_1$$

$$x_2 = 20 - 2x_1$$



(20, 0)
(18, 1)
(16, 2)

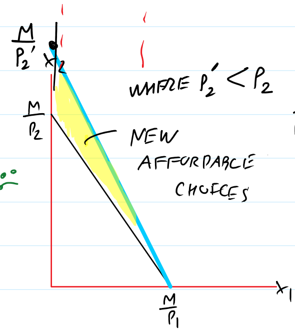
-2, +1, -, +1



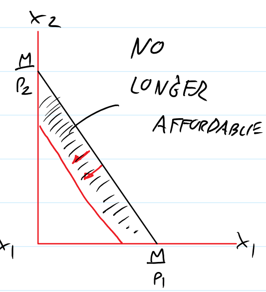
IF $P_1 \uparrow$ ...

$$\frac{P_1}{P_2} < \frac{P_1'}{P_2}$$

(OLD) (NEW)

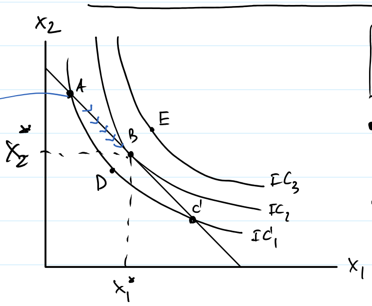


IF $P_2 \downarrow$ ...



IF $M \downarrow$ ...

UTILITY MAXIMIZATION PROBLEM (UMP)



$$\boxed{\begin{array}{ll} \text{MAXIMIZE} & U(x_1, x_2) \\ \text{SUBJECT} & P_1 x_1 + P_2 x_2 = M \end{array}}$$

- BASKET $B(x_1^*, x_2^*)$ MAXIMIZE HIS UTILITY
- AT B, SLOPE OF IC' = SLOPE OF BL

$$MRS_{12} = -\frac{P_1}{P_2}$$

$$-\frac{MU_1}{MU_2} = -\frac{P_1}{P_2}$$

$$\boxed{\frac{MU_1}{MU_2} = \frac{P_1}{P_2}}$$

OR

$$\boxed{\frac{MU_1}{P_1} = \frac{MU_2}{P_2}}$$

|SLOPE OF IC| > |SLOPE OF BL|

$$|MRS| > \left|-\frac{P_1}{P_2}\right|$$

$$\left|\frac{MU_1}{MU_2}\right| > \left|\frac{P_1}{P_2}\right|$$

$$\left|\frac{MU_1}{P_1}\right| > \left|\frac{MU_2}{P_2}\right| \quad !!! \quad :(\quad \Rightarrow$$

BUY MORE OF 1 AND LESS OF 2

$\Downarrow$

UTILITY WILL IMPROVE UNTIL HE ARRIVES AT BASKET B!

=

" TANGENCY " CONDITION

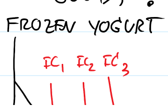
EXTRA UTILITY FROM SPENDING LAST BAHT ON GOOD 1

EXTRA UTILITY GAINED FROM SPENDING LAST BAHT ON GOOD 2

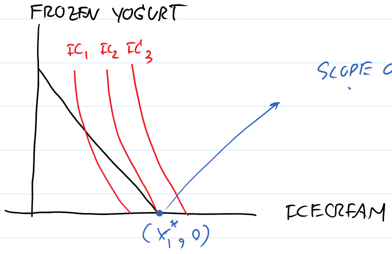
" THIS IS RATIONAL SPENDING RULE "

CORNER SOLUTION

- SOMETIMES, OPTIMAL BASKET CONTAINS ONLY ONE OF THE TWO GOODS.



SLOPE OF IC > SLOPE OF BL !



SLOPE OF IC > SLOPE OF BL !

$|MRS| > \left|\frac{P_1}{P_2}\right|$

Ex $|MRS| = 10$

$\left|\frac{P_1}{P_2}\right| = \left|\frac{2}{1}\right| = 2$

AT THIS POINT, EVENTHOUGH HE SPENT UP HIS INCOME ALREADY, HE STILL WANT TO EXCHANGE 10 UNITS OF YOGURT TO GAIN 1 EXTRA UNIT OF ICECREAM.

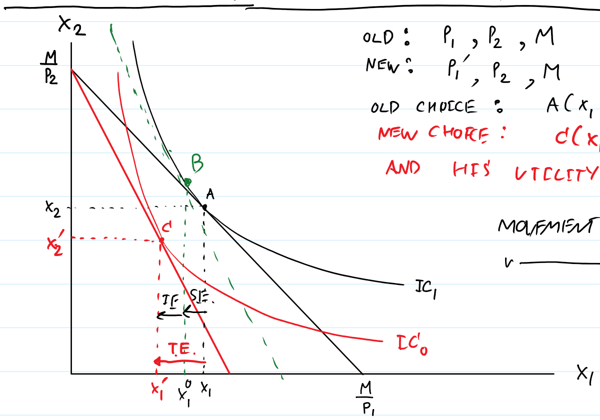
SUBSTITUTION AND INCOME EFFECTS

EE 211 → HICKSIAN APPROACH USED TO DECOMPOSE T.E. INTO S.E. AND I.E..

EE 311 → SLUTSKY APPROACH WILL BE INTRODUCED AND COMPARE W/ HICKSIAN APPROACH.

→ SLUTSKY EQUATION

HICKSIAN APPROACH Vs. SLUTSKY APPROACH



OLD : P_1, P_2, M

NEW : P_1', P_2, M WHERE $P_1' > P_1$

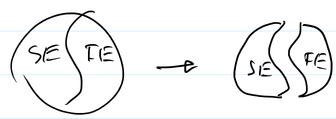
OLD CHOICE : $A(x_1, x_2)$

NEW CHOICE : $C(x_1', x_2')$

AND HIS UTILITY FALLS...

MOVEMENT FROM $A \rightarrow B$: S.E. (HICKS' COMPENSATION)

" ——— " $B \rightarrow C$: I.E.



$\boxed{\text{T.E} = \text{S.E.} + \text{I.E.}}$

$P_1 \uparrow$ →

- $\left(\frac{P_1}{P_2}\right)\uparrow \equiv$ OPP. COST OF BUYING GOOD 1 $\uparrow$ $\xrightarrow{\text{VIA S.E.}}$ BUY LESS OF 1 ($x_1 \downarrow$) (AND MORE OF 2)
- HIS PURCHASING POWER FALLS (OR REAL INCOME FALLS) ≡ EFFECTIVELY POORER $\xrightarrow{\text{VIA I.E}}$ BUY LESS OF 1 ($x_1 \downarrow$) (AND LESS OF 2) ($x_2 \downarrow$) (IF 1 AND 2 ARE NORMAL GOOD)

→ $X_1 \downarrow$ (TOTAL EFFECT)

FOR HICKS,

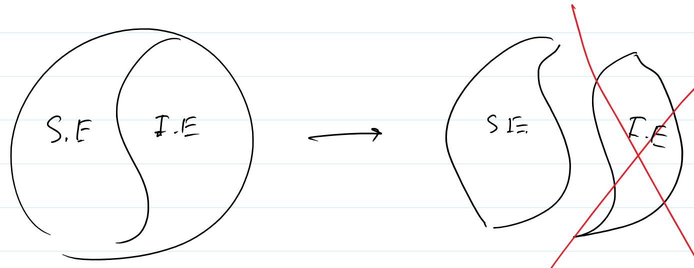
S.E. = Δ IN $Q^d_{x_1}$ DUE TO Δ IN RELATIVE PRICE $\left(\frac{P_1}{P_2}\right)$,

HOLDING REAL INCOME OR PURCHASING POWER

I.E = Δ IN $Q^d_{x_1}$ DUE TO Δ IN CONSUMER'S INCOME CONSTANT. WHEN HE IS FACING WITH THE NEW RELATIVE PRICE.

$$\boxed{\underset{\text{(TOTAL EFFECT) OR PRICE EFFECT}}{\Delta Q^d_{x_1}} = \Delta Q^d_{x_1,\text{ VIA S.E}} + \Delta Q^d_{x_1,\text{ VIA I.E}}}$$

JOB: ISOLATE INCOME EFFECT TO SEE PURE SUBSTITUTION EFFECT



TO ISOLATE I.E, HICKS ASKS THE FOLLOWING QUESTION:

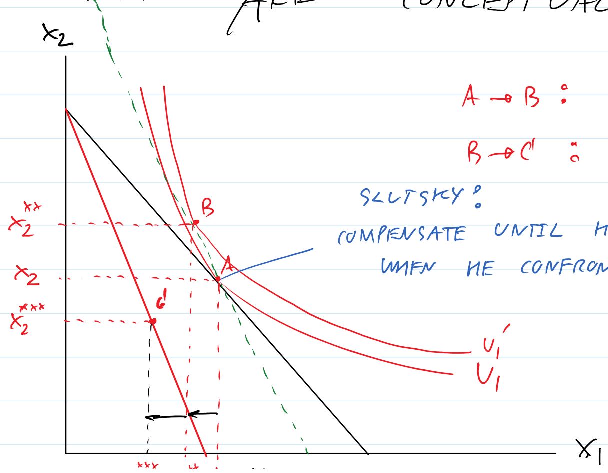
"HOW MUCH INCOME THIS GUY NEEDS IN ORDER TO GET BACK TO HIS OLD UTILITY CURVE WHEN HE IS FACING NOW W/ THE NEW RELATIVE PRICE (= SLOPE OF THE RED BL)?"

BUT FOR SLUTSKY... TO ISOLATE I.E, HE ASKS INSTEAD THE FOLLOWING QUESTION:

"HOW MUCH INCOME THIS GUY NEEDS IN ORDER TO "AFFORD HIS ORIGINAL BASKET" WHEN HE IS FACING W/ THE NEW RELATIVE PRICE?"

IN SUMMARY, TO HOLD REAL INCOME CONSTANT, OR PURCHASING POWER

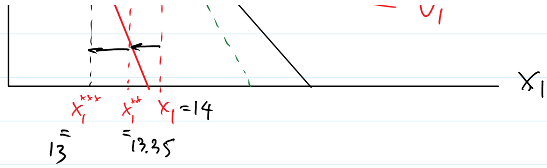
HICKS' VIEW AND SLUTSKY'S VIEW OF DOING THIS ARE CONCEPTUALLY DIFFERENT!



A → B : S.E. (SLUTSKY COMPENSATION)

B → C' : I.E.

SLUTSKY: COMPENSATE UNTIL HE CAN AFFORD HIS ORIGINAL CHOICE (CHOICE A) WHEN HE CONFRONTS W/ THE NEW PRICE RATIO.



EXAMPLE : CONSIDER DEMAND FUNCTION FOR MILK :

$$x_1 = 10 + \frac{M}{10 \cdot p_1} \Rightarrow x_1(p_1, m)$$

INITIALLY, $M = 120$ BAHT/WK, $p_1 = 3$ BAHT/LITRE

$$x_1 = 10 + \frac{\cancel{120}^{\cancel{12}\,4}}{\cancel{10}\cdot\cancel{3}_1} = 10 + 4 = 14 \text{ LITRES/WK}$$

THAT IS, EXPENDITURE ON MILK $= p_1 \cdot x_1 = 3 \cdot 14 = 42$ BAHT/WK

" ——— " ALL OTHER GOODS $= M - p_1 x_1$
$= 120 - 3 \cdot 14$
$= 120 - 42$
$= 78$ BAHT/WK

NOW, LET'S SAY PRICE OF MILK INCREASES TO 4 BAHT/LITRE (p_1')

QUESTION: W/ THE NEW RELATIVE PRICE HE FACES, HOW MANY BAHT HE WOULD NEED IN ORDER TO BE ABLE TO BUY THE ORIGINAL BASKET ?

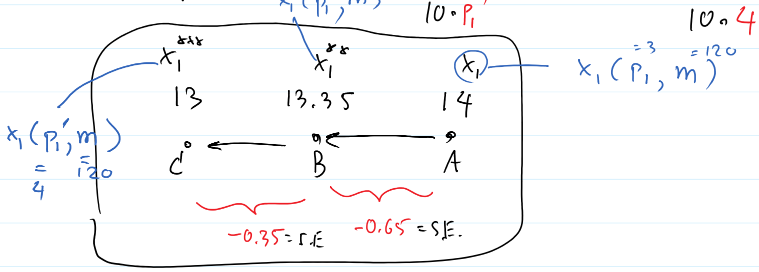
ANSWER : $78 + 14 \cdot 4 = 78 + 56 = 134$ BAHT/WK !

THIS GUY WILL BUY $x_1^{**} = 10 + \frac{134}{10 \cdot 4} = 13.35$ LITRES/WK

THEREFORE, $\underbrace{13.35}_{x_1^{**}(p_1', m')} - \underbrace{14}_{x_1(p_1, m)} = -0.65$ LITRE/WK → THIS IS PURE SUBSTITUTION EFFECT (S.E.) !

NEXT, HOW ABOUT INCOME EFFECT ?

$$x_1^{***} = \underbrace{10 + \frac{M}{10 \cdot p_1'}}_{x_1(p_1', m)} = 10 + \frac{120}{10 \cdot 4} = 13 \text{ LITRES/WK}$$



GENERAL FORM :

THE SUBSTITUTION EFFECT IS

$$\Delta x_1^{S.E} = x_1(p_1', m') - x_1(p_1, m) \Leftrightarrow 13.35 - 14 \ (= -0.65)$$

$$\Delta x_1^{S.E} = x_1(p_1', m') - x_1(p_1, m) \iff 13.35 - 14 \ (= -0.65)$$

THE INCOME EFFECT IS

$$\Delta x_1^{I.E} = x_1(p_1', m) - x_1(p_1', m') \iff 13 - 13.35 \ (= -0.35)$$

SO, THE TOTAL EFFECT IS

$$\Delta x_1 = \Delta x_1^{S.E} + \Delta x_1^{I.E}$$

$$= [x_1(\cancel{p_1', m'}) - x_1(p, m)] + [x_1(p_1', m) - x_1(\cancel{p_1', m'})]$$

$$\boxed{\Delta x_1 = x_1(p_1', m) - x_1(p, m)} \iff 13 - 14 = 1$$

IN TERMS OF DERIVATIVE (OR RATE OF CHANGE)

$$\frac{dx_1}{dp_1} = \frac{dx_1^{S.E}}{dp_1} - \frac{dx_1}{dm} \cdot \frac{dm}{dp_1}$$

SINCE $m = p_1 x_1 + p_2 x_2$, $\frac{dm}{\partial p_1} = x_1$

SO

$$\boxed{\underbrace{\frac{dx_1}{dp_1}}_{T.E} = \underbrace{\frac{dx_1^{S.E}}{dp_1}}_{S.E} \underbrace{- \frac{dx_1}{m} \cdot x_1}_{I.E}}$$

$\oplus$ THE WELL-KNOWN SLUTSKY'S EQUATION

DEPENDS ON WHETHER x_1 IS NORMAL OR INFERIOR GOOD

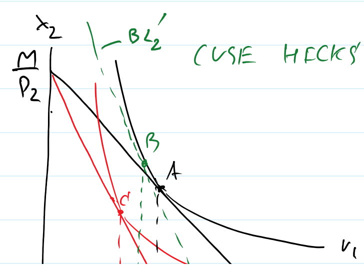
- FOR NORMAL GOOD : $\frac{dx_1}{dm} > 0$
- FOR INFERIOR GOOD : $\frac{dx_1}{dm} < 0$

(SINCE $\frac{dx_1}{dm}$ IS $\ominus$)

	T.E	S.E	I.E
WHEN x_1 IS NORMAL GOOD	$\downarrow x$ $\ominus$	$\downarrow x_1$ $\ominus$	$\downarrow x_1$ $\ominus$
WHEN x_1 IS INFERIOR GOOD $(\lvert S.E \rvert > \lvert I.E \rvert)$	$\downarrow x$ $\ominus$	$\downarrow\downarrow x_1$ $\ominus$	$\uparrow x$ $\oplus$
WHEN x_1 IS GIFFEN GOOD $(\lvert I.E \rvert > \lvert S.E \rvert)$	$\uparrow x$ $\oplus$	$\downarrow x$ $\ominus$	$\uparrow\uparrow x$ $\oplus$
IF $\lvert S.E \rvert = \lvert I.E \rvert$	x CONSTANT	$\downarrow x$ $\ominus$	$\uparrow x$ $\oplus$

HICKSIAN DEMAND CURVE VS MARSHALLIAN DEMAND CURVE

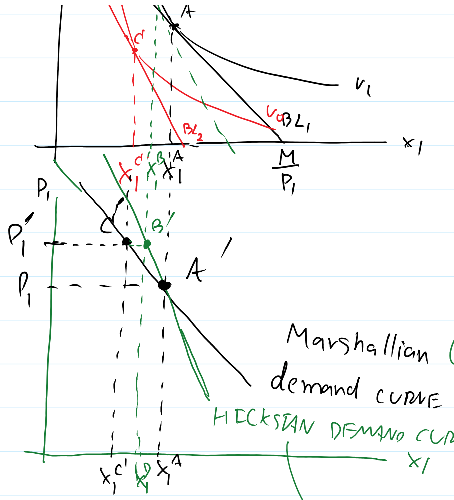
(USE HICKS' APPROACH)

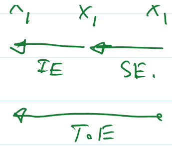


(NEW CHOICE) C' B A (OLD CHOICE)

$x_1^{C'} \xleftarrow{IE} x_1^B \xleftarrow{SE} x_1^A$

UTILITY FALLS





UTILITY FALLS

SLOPE OF BL_1 : $-\frac{P_1}{P_2}$

SLOPE OF BL_2 : $-\frac{P_1'}{P_2}$

WHERE $P_1' > P_1$

Marshallian demand curve (TAKE INTO A/C BOTH SE AND SE ON CONSUMPTION CHOICE

HICKSIAN DEMAND CURVE (TAKE INTO A/C ONLY S.E ON CONSUMPTION CHOICE)

UTILITY IS CONSTANT ON HICKSIAN DEMAND CURVE (WHY?)