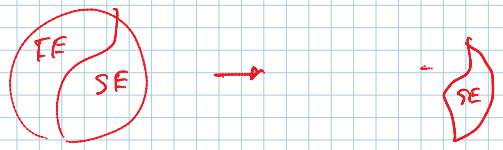
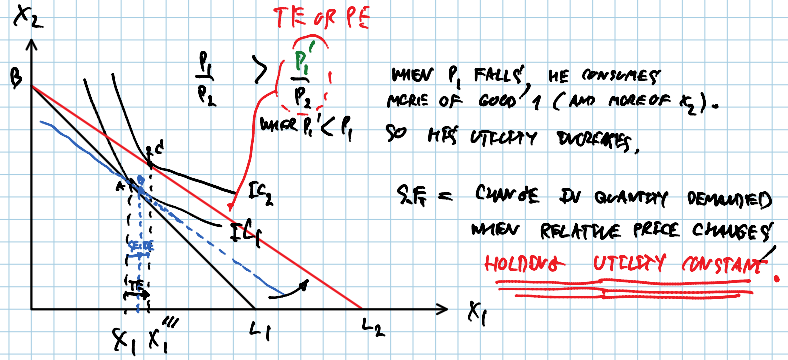
SLUTSKY'S APPROACH TO DECOMPOSE THE PRICE EFFECT INTO SE AND IE.

RECALL THAT WHEN WE WOULD LIKE TO DECOMPOSE THE PRICE EFFECT INTO S.E. AND I.E., WE HAVE TO ASK THE FOLLOWING QUESTION:

> WHEN THE BUYER FACES W/ THE NEW RELATIVE PRICE, HOW MUCH INCOME WE HAVE TO EITHER COMPENSATE OR TAKE AWAY FROM THIS GUY SO THAT HE GETS BACK TO HIS ORIGINAL UTILITY LEVEL (OLD IC)?



TE OR PE



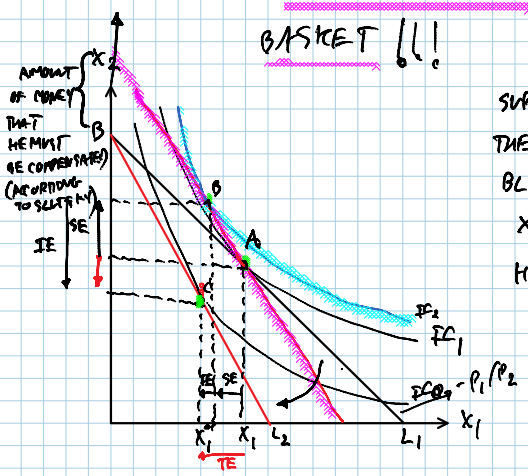
WHEN P_1 FALLS, HE CONSUMES MORE OF GOOD 1 (AND MORE OF X_2). SO HIS UTILITY INCREASES.

SE = CHANGE IN QUANTITY DEMANDED WHEN RELATIVE PRICE CHANGES HOLDING UTILITY CONSTANT.

HICK: TO HOLD UTILITY CONSTANT, YOU MUST SLIDE THE IMAGINARY BUDGET LINE UNTIL IT "TOUCHES" AT THE OLD INDIFFERENCE CURVE.

(THIS IS THE WAY TO REMOVE INCOME EFFECT)

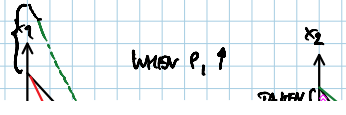
SLUTSKY: TO HOLD UTILITY CONSTANT, YOU MUST SLIDE THE IMAGINARY BUDGET LINE SUCH THAT THE CONSUMER CAN AFFORD THE ORIGINAL BASKET !!!

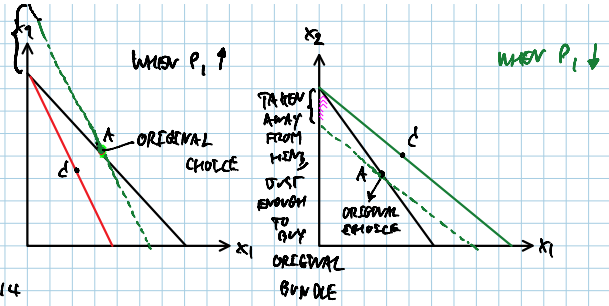


SUPPOSE X_1 BECOMES MORE EXPENSIVE. THE BUDGET LINE SWINGS IN FROM BL_1 TO BL_2. HE BUYS LESS OF X_1 : $X_1 \rightarrow X_1''$. HIS UTILITY LEVEL FALLS ∴.

CV: COMPENSATING VARIATION
EV: EQUIVALENT VARIATION

⇒ LATER ON...





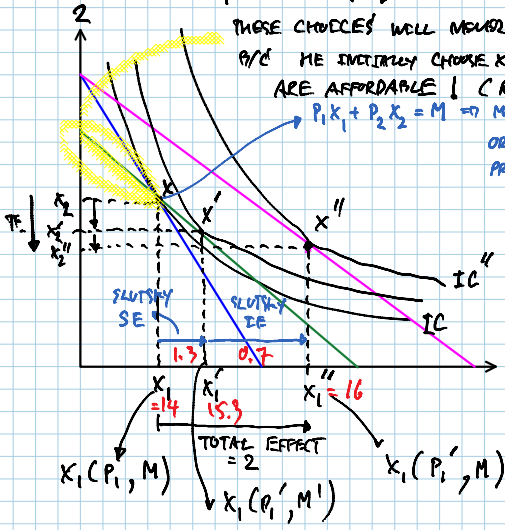
7.2.14

SLUTSKY EQUATION:

SLUTSKY ISOLATED "THE CHANGE IN QUANTITY DEMANDED DUE ONLY TO THE CHANGE IN RELATIVE PRICE BY ASKING:

> WHAT IS THE CHANGE IN QUANTITY DEMANDED WHEN THE CONSUMER'S INCOME IS ADJUSTED SO THAT AT THE NEW (RELATIVE) PRICE, SHE CAN JUST BUY THE ORIGINAL BUNDLE?

SUPPOSE P_1 FALLS ...



THESE CHOICES WILL NEVER BE CHOSEN B/C HE INITIALLY CHOSE X WHEN THESE CHOICES ARE AFFORDABLE ! (CRP).

$P_1x_1 + P_2x_2 = M$ ⇒ MONEY SPENT TO BUY ORIGINAL BUNDLE B/F PRICE OF 1 FALLS (BLUE BUDGET LINE)

AFTER P_1 FALLS, $M' = P_1'x_1 + P_2x_2$ IS SUFFICIENT TO BUY THE ORIGINAL BUNDLE

THEREFORE, $M' < M$.

* IF LESS INCOME IS NEEDED TO BUY THE ORIGINAL BUNDLE, IT IMPLIES THAT CONSUMER'S REAL INCOME HAS INCREASED.

WHERE $P_1' < P_1$.

EXAMPLE SUPPOSE DEMAND FUNCTION FOR ICECREAM IS:

$$x_1 = 10 + \frac{M}{10P_1} \qquad x_1(P_1, M)$$

INITIALLY, $M = 120$, $P_1 = 3$.

$$x_1 = 10 + \frac{120}{10 \cdot 3} = 10 + 4 = 14 \text{ SCOOPS / WK.}$$

$14 \cdot 3 = 42$ AMT SPENT ON ICECREAM

$120 - 42 = 78$ AMT SPENT ON OTHER GOODS.

NOW SUPPOSE $P_1' = 2$.

QUESTION: HOW MUCH INCOME IS NEEDED TO BUY THE INITIAL BUNDLE?

ANSWER: $78 + 2 \cdot 14 = 106$! ↗ M'

THIS BUY WILL BUY $x_1' = 10 + \frac{106}{10 \cdot 2} = 10 + 5.3 = 15.3$ SCOOPS WITH THAT MONEY!

(P_1')

THEREFORE $15.3 - 14 = 1.3$ IS THE SUBSTITUTION EFFECT.

$x(P_1', M')$ $x(P_1, M)$

$x_1(p_1', M')$ $\qquad$ $x_1(p_1, M)$

QUESTION: WHAT ABOUT THE INCOME EFFECT?

$$x_1'' = 10 + \frac{M}{10 \cdot p_1'} = 10 + \frac{120}{10 \cdot 2} = 16 \rightarrow \text{IS THE FINAL CONSUMPTION.}$$

THERE IS A CHANGE OF $(16-14) = 2$ SCOOPS.

- $+1.3$ DUE TO THE SUBSTITUTION EFFECT
- $+0.7$ DUE TO THE INCOME EFFECT

THE SUBSTITUTION EFFECT IS (15.3, 14)

$$\Delta x_1^S = x_1(p_1', M') - x_1(p_1, M)$$

THE INCOME EFFECT IS (16, 15.3)

$$\Delta x_1^N = x_1(p_1', M) - x_1(p_1', M')$$

THE TOTAL EFFECT IS

$$\Delta x_1 = \Delta x_1^S + \Delta x_1^N$$

$$= \left[x_1(p_1', M') - x_1(p_1, M) \right] + \left[x_1(p_1', M) - x_1(p_1', M') \right]$$

$$\Delta x_1 = x_1(p_1', M) - x_1(p_1, M)$$

IN TERMS OF DERIVATIVE (OR RATE OF CHANGE)

$$\frac{dx_1}{dp_1} = \frac{dx_1^S}{dp_1} - \frac{dx_1}{dM}\frac{dM}{dp_1}$$

SINCE $M = p_1 x_1 + p_2 x_2$

$$\frac{dM}{dp_1} = x_1$$

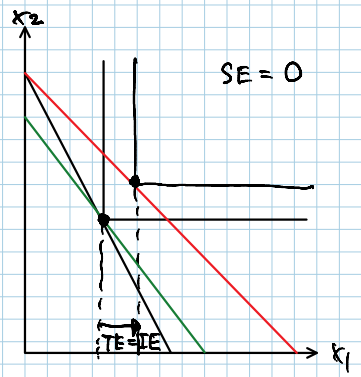
$$\frac{dx_1}{dp_1} = \frac{dx^s}{dp_1} - \frac{dx_1}{dM} \cdot x_1$$

SLUTSKY'S EQUATION

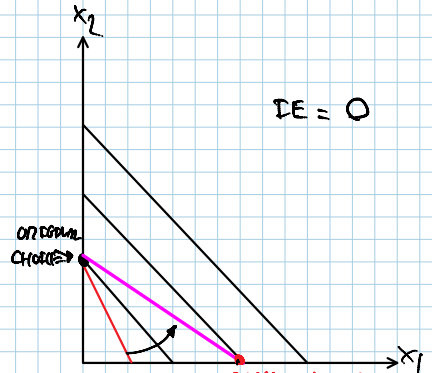
$\frac{dx^s}{dp_1}$ → ALWAYS NEGATIVE (−)
: WHEN $p \downarrow$, $Q^D \uparrow$, DUE TO Δ IN RELATIVE PRICE.

$\frac{dx_1}{dM}$ → + FOR NORMAL GOOD ; − FOR INFERIOR GOOD

APPLICATION

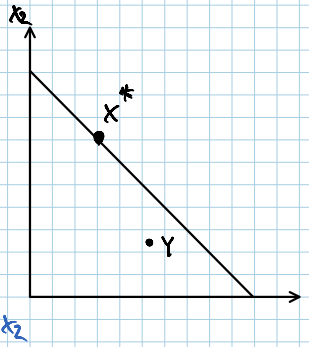


PERFECT COMPLEMENTS'



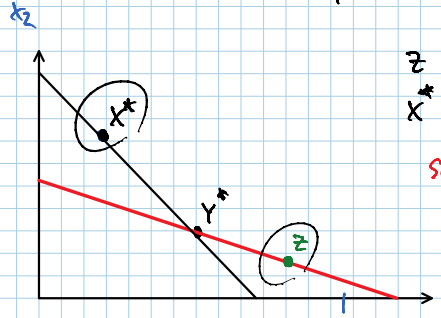
PERFECT SUBSTITUTES

NEXT TOPIC : REVEALED PREFERENCE (RP)



SUPPOSE THAT THE BUNDLE X^* IS CHOSEN WHEN THE BUNDLE Y IS AFFORDABLE.

THEN X^* IS REVEALED DIRECTLY AS PREFERRED TO Y (OTHERWISE Y WOULD HAVE BEEN CHOSEN)



Z IS NOT AFFORDABLE WHEN X^* IS CHOSEN.
X^* IS NOT AFFORDABLE WHEN Y^* IS CHOSEN.

SO X^* AND Z CANNOT BE COMPARED DIRECTLY.

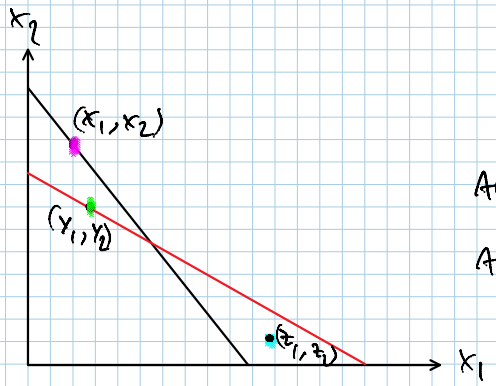
HOWEVER,

IF $X^* \overset{D}{\succ} Y^*$,

AND $Y^* \overset{D}{\succ} Z$

BY TRANSITIVITY, $X^* \succ Z$.

I



BY TRANSITIVITY, $X \succ Z$.

$\uparrow$ "INDIRECTLY PREFERRED TO"

ACCORDING TO RP: $(x_1, x_2) \succ (y_1, y_2)$

ACCORDING TO RP: $(y_1, y_2) \succ (z_1, z_2)$

BY TRANSITIVITY: $(x_1, x_2) \succ (z_1, z_2)$

INDIRECTLY PREFERRED TO

NEXT TOPIC: NETWORK EXTERNALITIES.

Q: ARE YOU GOING TO BUY MOBILE PHONE / OR TO SUBSCRIBE TO FACEBOOK/IG/LINE IF YOU KNOW THAT YOU ARE THE ONLY ONE WHO USE IT?

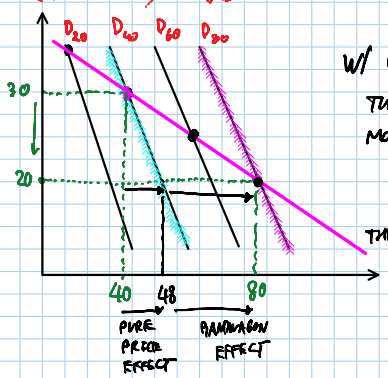
NETWORK EXTERNALITY: WHEN EACH INDIVIDUAL'S DEMAND DEPENDS ON THE PURCHASES OF OTHER INDIVIDUALS.

A POSITIVE NETWORK EXTERNALITY EXISTS IF THE QUANTITY OF A GOOD DEMANDED BY A TYPICAL CONSUMER INCREASES IN RESPONSE TO THE GROWTH IN PURCHASES OF OTHER CONSUMERS.

"THE BANDWAGON EFFECT"

↓

POSITIVE NETWORK EXTERNALITY IN WHICH CONSUMER WISHES TO POSSESS A GOOD IN PART BECAUSE OTHERS DO!



W/ BANDWAGON EFFECT, THE DEMAND CURVE BECOMES MORE ELASTIC.

NEGATIVE NETWORK EXTERNALITY: SNOB EFFECT.