

#1 Demonstrate how PCC with varying price  $P_y$ , ( $P_x$  and Income are fixed) can give us the price elasticity of  $Y$  to be equal to, less than, or greater than 1 in absolute value

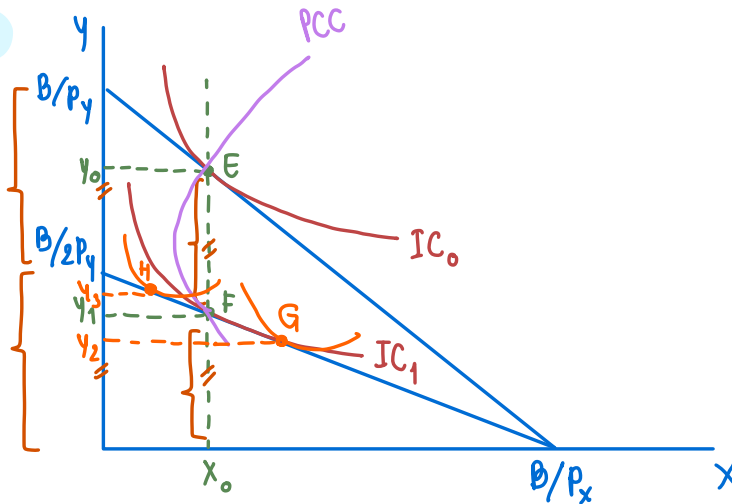
#2

7. A college student has two options for meals: eating at the dining hall for \$6 per meal, or eating a Cup O' Soup for \$1.50 per meal. Her weekly food budget is \$60.
- Draw the budget constraint showing the trade-off between dining-hall meals and Cups O' Soup. Assuming that she spends equal amounts on both goods, draw an indifference curve showing the optimum choice. Label the optimum as point A.
  - Suppose the price of a Cup O' Soup now rises to \$2. Using your diagram from [part \(a\)](#), show the consequences of this change in price. Assume that our student now spends only 30 percent of her income on dining-hall meals. Label the new optimum as point B.
  - What happened to the quantity of Cups O' Soup consumed as a result of this price change? What does this result say about the income and substitution effects? Explain.
  - Use points A and B to draw a demand curve for Cup O' Soup. What is this type of good called?

#3

11. Economist George Stigler once wrote that, according to consumer theory, "if consumers do not buy less of a commodity when their incomes rise, they will surely buy less when the price of the commodity rises." Explain this statement using the concepts of income and substitution effects.

1.



$$\% \Delta P_Y = \frac{\Delta P_Y}{\frac{3}{2} P_Y} = \frac{P_Y}{\frac{3}{2} P_Y} = \frac{2}{3}$$

$$\% \Delta Y = \frac{-Y_0/2}{\frac{3}{4} Y_0} = -\frac{2}{3}$$

$$\therefore n_Y = \frac{\% \Delta Y}{\% \Delta P_Y} = \frac{-2/3}{2/3} = -1$$

$$|n_Y| = |-1| = 1 \Rightarrow \text{From E to F}$$

$$|n_Y| > 1 \Rightarrow \text{From E to G}$$

$$|n_Y| < 1 \Rightarrow \text{From E to H}$$

Note:

$$P_0 = P_Y$$

$$P_1 = 2P_Y$$

$$\Delta P_Y = 2P_Y - P_Y = P_Y$$

$$\frac{P_1 + P_0}{2} = \frac{2P_Y + P_Y}{2} = \frac{3P_Y}{2}$$

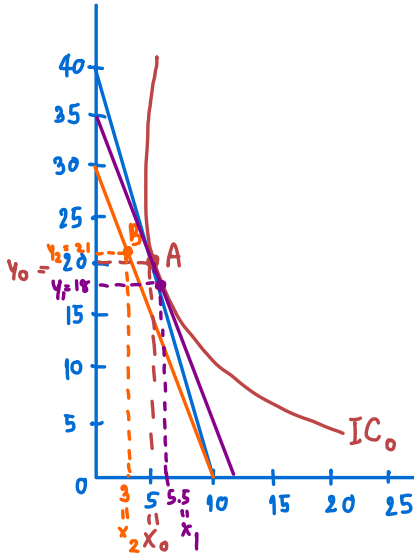
$$Y_1 = \frac{Y_0}{2}, Y_0$$

$$\Delta Y = Y_1 - Y_0 = -\frac{Y_0}{2}$$

$$\frac{Y_1 + Y_0}{2} = \frac{\frac{Y_0}{2} + Y_0}{2} = \frac{3}{4} Y_0$$

2.

a) Cup O' Soup



$$6X + 1.5Y = 60$$

$$\text{if } X = 0; 1.5Y = 60$$

$$Y = 40$$

$$\text{if } Y = 0; 6X = 60$$

$$X = 10$$

spend equal amounts

$$6X = \frac{1}{2} \times 60$$

$$1.5Y = \frac{1}{2} \times 60$$

$$6X = 30$$

$$1.5Y = 30$$

$$X = 5$$

$$Y = 20$$

 $\therefore$  point A is at (5, 20)

Dining-hall meals

b) Spends only 30% of her income on dining-hall meals

$$6X = \frac{30}{100} \times 60$$

$$6X = 18$$

$$X = 3$$

$$2Y = \frac{70}{100} \times 60$$

$$2Y = 42$$

$$Y = 21$$

$$\text{Note: } 6X + 2Y = 60$$

$$\text{if } X = 0; 2Y = 60$$

$$Y = 30$$

$$\text{if } Y = 0; 6X = 60$$

$$X = 10$$

c) The quantity of Cups O' Soup consumed increased by 1 as a result of price change.

The substitution effect is:

$$SE = \begin{cases} \Delta X = X_1 - X_0 = 5.5 - 5 = 0.5 > 0 \\ \Delta Y = Y_1 - Y_0 = 18 - 20 = -2 < 0 \end{cases}$$

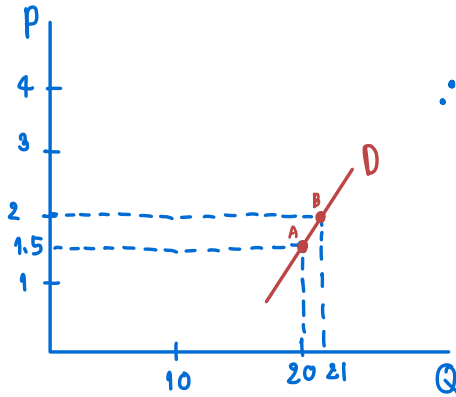
The income effect is:

$$IE = \begin{cases} \Delta X = X_2 - X_1 = 3 - 5.5 = -2.5 < 0 \\ \Delta Y = Y_2 - Y_1 = 21 - 18 = 3 > 0 \end{cases}$$

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

$$= \begin{cases} \Delta x = (x_1 - x_0) + (x_2 - x_1) = x_2 - x_0 = 3 - 5 = -2 < 0 \\ \Delta y = (y_1 - y_0) + (y_2 - y_1) = y_2 - y_0 = 21 - 20 = 1 > 0 \end{cases}$$

d.)



$\therefore$  Cup O'Soup is giffen good because the demand curve has positive slope.

3. If consumers don't buy less of a commodity when their income rise, the good is considered as normal good. So, when the price increase, the substitution effect makes the consumer buy less of a commodity because they can substitute it with cheaper one. On another side, the consumers have less power to purchase because of the rise in price. Therefore, the substitution effect and income effect of price rises make consumers to buy less of a commodity.