

#1 If the price P_x and P_y increase 10% at the same time, with income Remaining unchanged, show that this is equivalent to a reduction in income.

#2 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

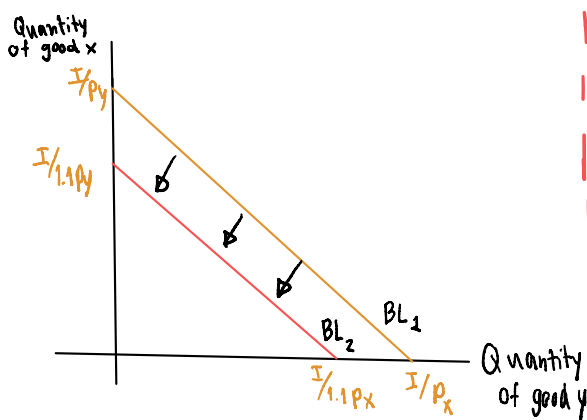
7. A college student has two options for meals: eating at the dining hall for \$6 per meal, or eating a Cup O' Soup for \$1.50 per meal. Her weekly food budget is \$60.

- 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?

①

$$P'_x = 1.1 P_x$$

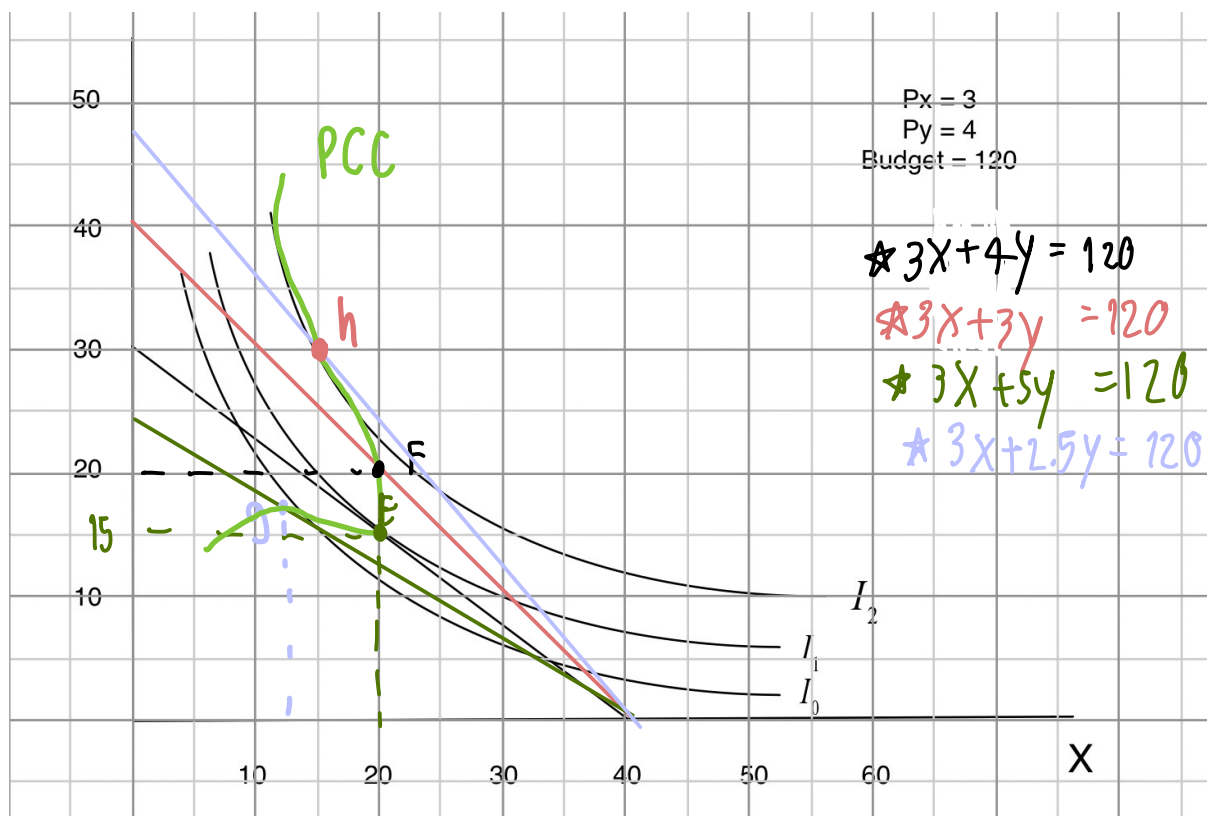
$$P'_y = 1.1 P_y$$



When price P_x and P_y increase 10% to $P'_x (1.1 P_x)$ and $P'_y (1.1 P_y)$ with income Remaining unchanged due to price increase the same amount of income can afford less quantity of good X and Y from quantity I/P_x or I/P_y to $I/1.1P_x$ or $I/1.1P_y$ therefore the budget line shift downward which mean even though the income remain the same but increased in price is equivalent to a reduction in income

②

#2 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.



$$3X + 4Y = 120 \quad E = (20, 15)$$

$$P_y = 4 \text{ change to } P'_y = 3$$

$$3X + 3Y = 120$$

$$\% \Delta P_y = \frac{3-4}{(3+4)/2} = \frac{-1}{3.5} = -0.29$$

$$\text{if } |\eta_y| = 1$$

$$1 = \frac{\% \Delta Q_y}{\% \Delta P_y}$$

$$0.29 = \% \Delta Q_y$$

$$\frac{Q_1 - Q_0}{(Q_1 + Q_0)/2} = 0.29$$

$$(Q_1 + 15)/2$$

$$\frac{Q_1 - 15}{(Q_1 + 15)/2} = 0.29$$

$$(Q_1 + 15)/2$$

$$Q_1 \approx 20$$

$$3X + 3(20) = 120$$

$$3X = 60$$

$$X = 20$$

$$F = (20, 20)$$

$P_y = 4$ Change to $P''_y = 5$

$$\% \Delta P_y = \frac{5-4}{(5+4)/2} = \frac{1}{4.5} = 0.22$$

if $|n_y| = 0.5$ ($n_y > 1$)

$$0.5 = \% \Delta Q_y$$

$$(0.5)/(0.22) = \% \Delta Q_y$$

$$0.11 = \frac{Q_1 - 15}{Q_1 + 15/2}$$

$$31.65 = 1.89 Q_1$$

$$Q_1 \approx 16.75$$
$$\approx 17$$

$$3X + 5Y = 120$$

$$3X = 35$$

$$X \approx 11.6$$

$$g = (11.6, 17)$$

$P_y = 4$ Change to $P'''_y = 2.5$

$$\% \Delta P_y = \frac{2.5-4}{(2.5+4)/2} = \frac{-1.5}{3.25} = -0.46$$

if $|n_y| = 1.5$ ($n_y < 1$)

$$1.5 = \% \Delta Q_y$$

$$0.69 = \frac{Q_1 - 15}{Q_1 + 15/2}$$

$$Q_1 \approx 30$$

$$3X + 2.5Y = 120$$

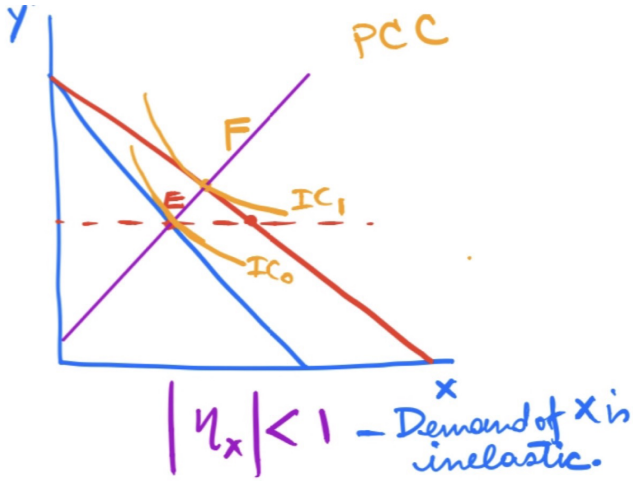
$$3X = 45$$

$$X = 15$$

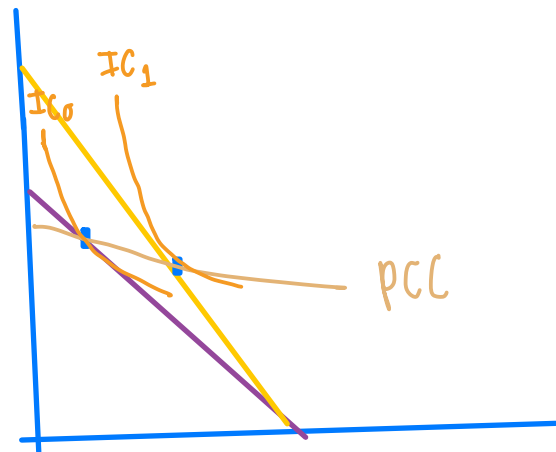
$$h = (15, 30)$$

$\therefore$ PCC with Varying P_y graph will look like opposite elasticity from what they actually are

for example



PCC with varying P_x
inelastic

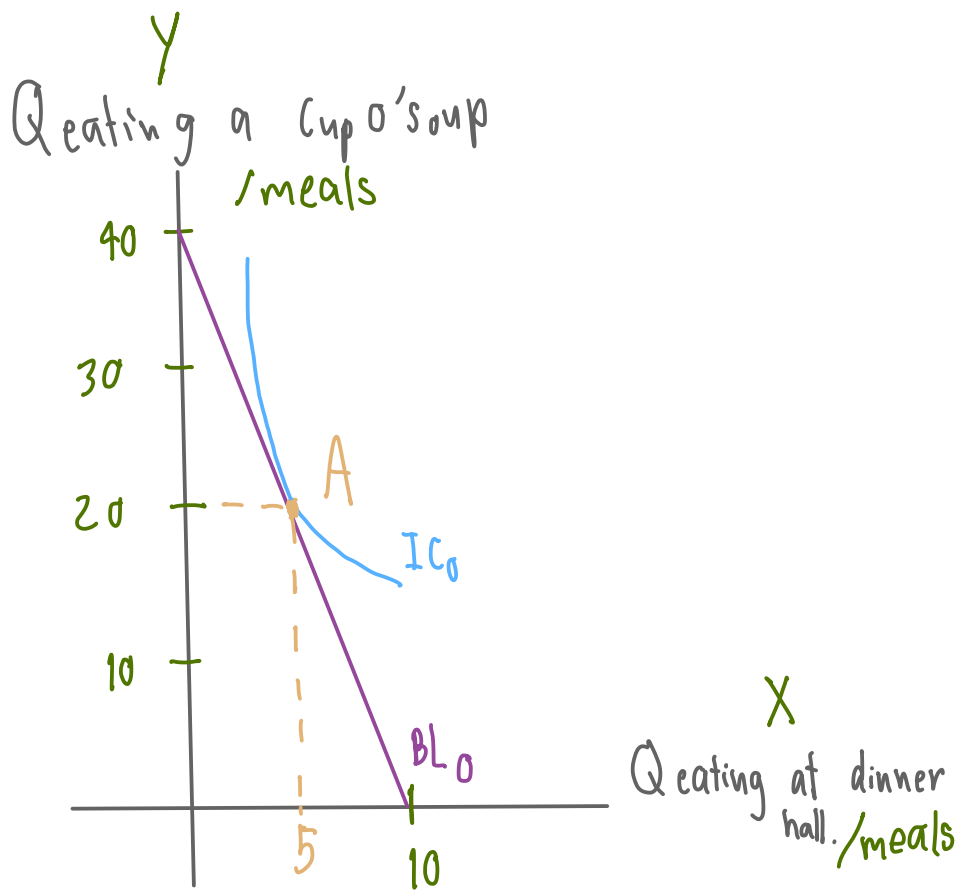


PCC with Varying P_x
elastic

③

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.
 - a. 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.
 - b. 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.
 - c. 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.
 - d. Use points A and B to draw a demand curve for Cup O' Soup. What is this type of good called?

①

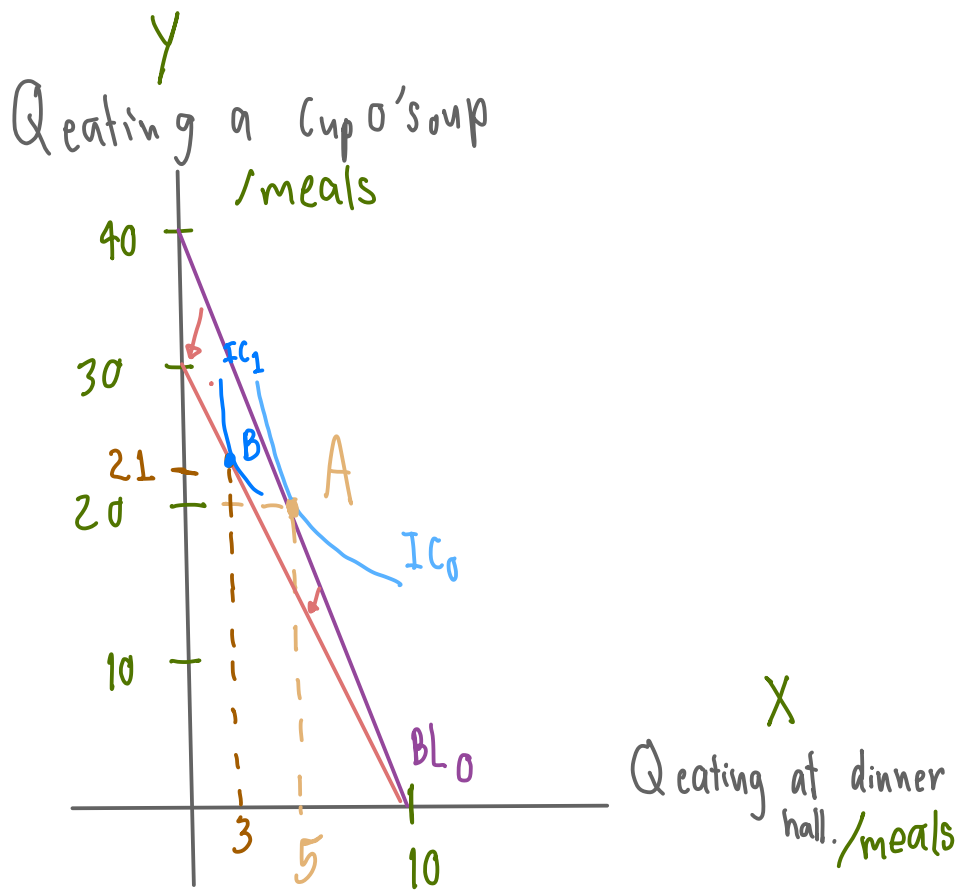


X	Y
10	0
0	40

trade off between eating at dinner hall and cup o'soup
 : cost of 1 more dinner hall is 4 less of eating a cup o'soup

Assumption that she spends equal amounts on both goods
 30\$ on eating at dinner hall → 5 meals
 30\$ on eating a cup o'soup → 20 meals
 point A = optimum choice

- ⑥ suppose that the price of cup o'soup rise from 1.5 \$ per meal to 2 \$ per meal

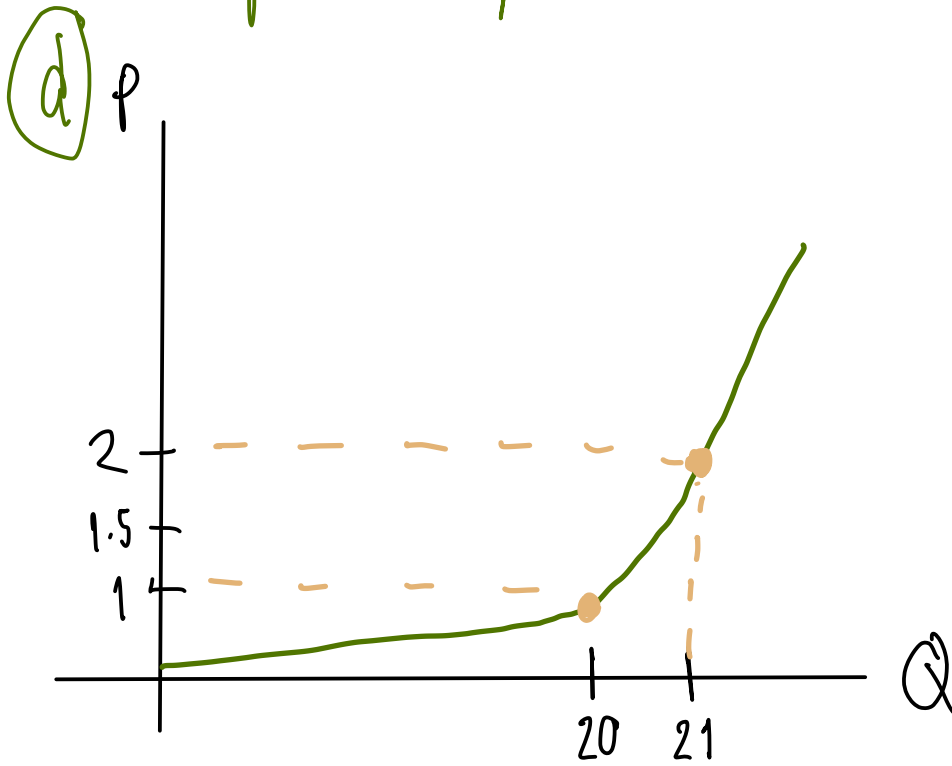


she spend 30% of her income at dinner hall
 $60 \times 30\% = 18\$$ which can consume 3 dinner hall meals
 $60 - 18 = 42\$$ which can consume 21 cup o'soup

- ⑦ As a result of price change quantity of demand of cup o'soup increased from 20 cup o'soup to 21 cup o'soup
 substitution effect is not occur because even

the cup o'soup price increased consumer still demand more cup o'soup

Income effect is the total amount of the cup o'soup a collage student can buy using all of her income decreases from 40 cup o'soup to 30 cup o'soup



cup o'soup is a "giffen goods". the good that violate the law of demand. increase in price rise quantity of demand so the demand slope upward.