Consumer’s Problem

The consumer maximizes Utility from consuming two goods X & Y subject to budget constraint (BC).

At equilibrium:

\[
\frac{MU_X}{P_X} = \frac{MU_Y}{P_Y} (*)
\]

Or: \[- \frac{MU_X}{MU_Y} = MRS = - \frac{P_X}{P_Y}\]

(Slope of IC = Slope of BC)

[ LN. C3, p. 21 & p. 32 for more detail on (*)]

Price of X decreases, ceteris paribus
(by (*): \(MU_X\) decreases \(\rightarrow\) \(Q_x\) increases)
(by law of diminishing returns)

Quantity of good X demanded increases

Own-price Elasticity
\[
E = \frac{dQ_x}{Q_x} / \frac{dP_x}{P_x}
\]
- Always negative (downward sloping demand)
  Greater than 1 in absolute value \(\rightarrow\) elastic
  Smaller than 1 in absolute value \(\rightarrow\) inelastic

(Changing own price \(\rightarrow\) moving along one demand curve)
Price of Y decreases, ceteris paribus

(At any price), demand for good X change:
- May increase or decrease depending on the relationship between two goods:
  - Shift to the right if X & Y are complements;
  - Shift to the left if X & Y are substitutes.

Cross-price Elasticity

\[ E = \frac{dQ_x/Q_x}{dP_y/P_y} \]

Can be:
- Positive
- Negative

Income increases, ceteris paribus

(At any price), demand for good X change:
- Shift to the right if X is normal good;
- Shift to the left if X is inferior good.

Income Elasticity

\[ E = \frac{dQ_x/Q_x}{dBUD/BUD} \]

Can be:
- Positive
- Negative

(this is how you derive the Engel curve)