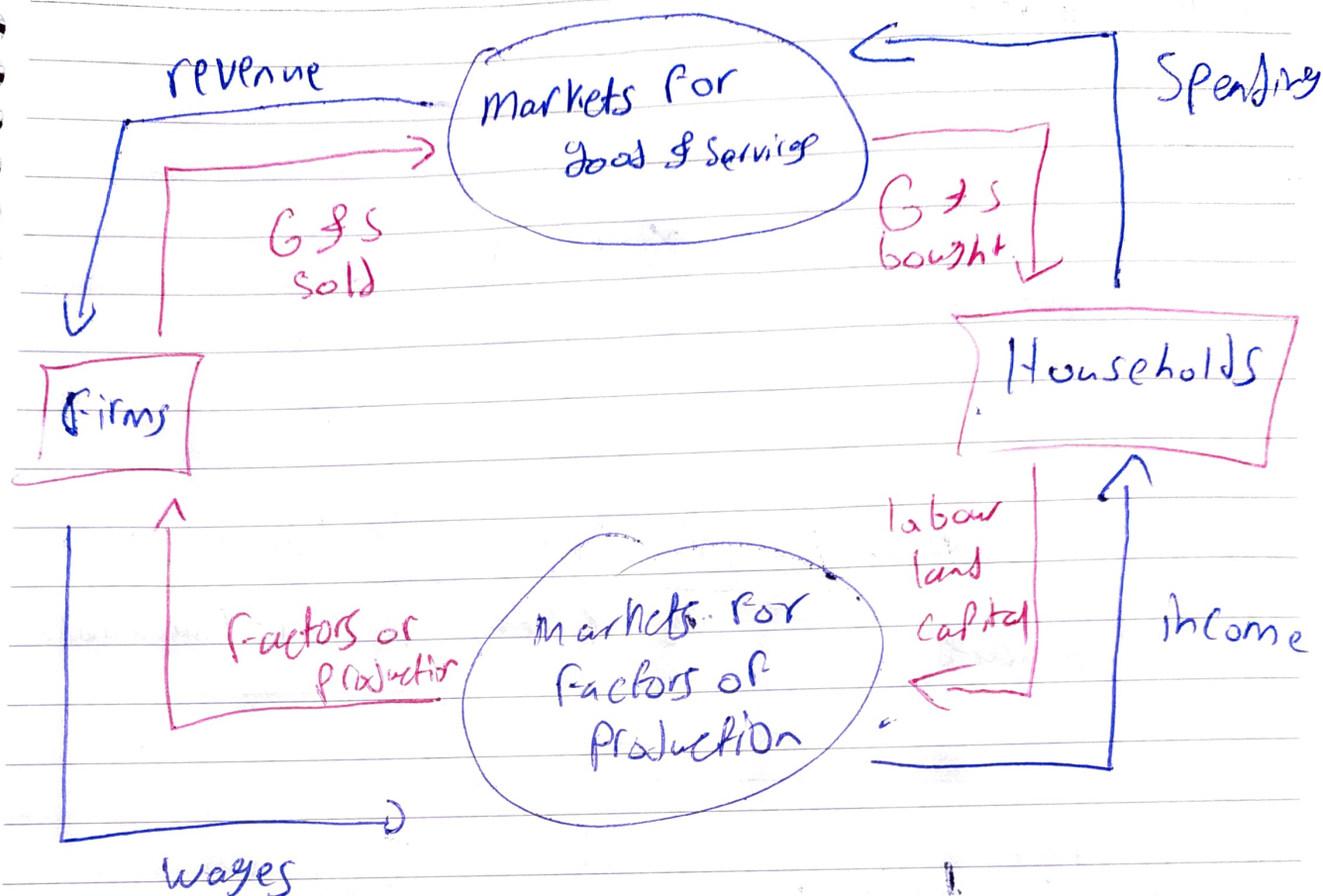


# Economics



$$\text{Price elasticity of demand} = \frac{\% \text{ change in } Q^d}{\% \text{ change in } P}$$

$$\text{Price elasticity of supply} = \frac{\% \text{ change in } Q^s}{\% \text{ change in } P}$$

$$\text{Percentage change} = \frac{\text{end value} - \text{start value}}{\text{mid point}} \times 100$$

$$\text{Revenue} = P \times Q$$

$$\text{income elasticity of demand} = \frac{\% \text{ Change in } Q^d}{\% \text{ Change in Income}}$$

$$\text{Cross Price elast of demand} \rightarrow \frac{\% \text{ Change in } Q^d \text{ For good 1}}{\% \text{ Change in Price for good 2}}$$

$$\text{Profit} = \text{total Revenue} - \text{total cost}$$

$$\text{Accounting Profit} = \text{total Revenue} - \text{total explicit cost}$$

$$\text{Economic Profit} = \text{total revenue} - (\text{explicit} + \text{implicit})$$

$$\text{marginal Product of Labor} = \frac{\Delta Q}{\Delta L}$$

$$\text{total cost} = \text{Fixed cost} + \text{Variable cost}$$

$$\text{Marginal Cost} = \frac{\Delta TC}{\Delta Q}$$

$$\text{average total cost} = \frac{TC}{Q}$$

when  $MC < ATC$   $ATC$  falls as  $Q$  rises

if  $MC > ATC$   $ATC$  rises as  $Q$  rises

$$\text{average revenue} = \frac{\text{Total Revenue}}{Q} = P$$

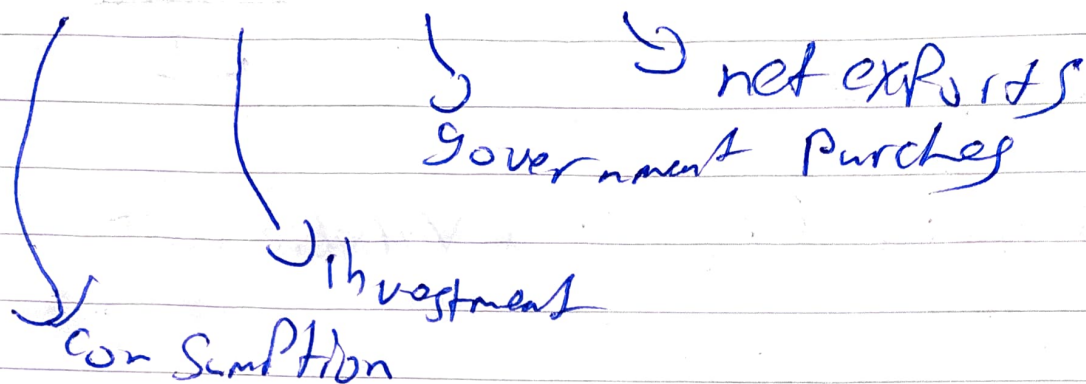
$$\text{marginal revenue} = \frac{\Delta TR}{\Delta Q} \quad (= P \text{ in competitive market})$$

if  $MR > MC$  increase  $Q$  to raise profit

$$\Delta \text{Profit} = MR - MC$$

Shut down if  $TR < VC$  exit if  $TR < TC$   
 $P < AVC$   $P < ATC$

$$Y = C + I + G + NX$$



nominal GDP: using current Prices

$$P \times Q + P \times Q = X$$

$X_2$

$$\frac{X_2 - X_1}{X_1} \times 100$$

real GDP: use base year of Price

GDP deflator:  $100 \times \frac{\text{nominal GDP}}{\text{real GDP}}$

inflation rate between GDP deflator on this Year to second