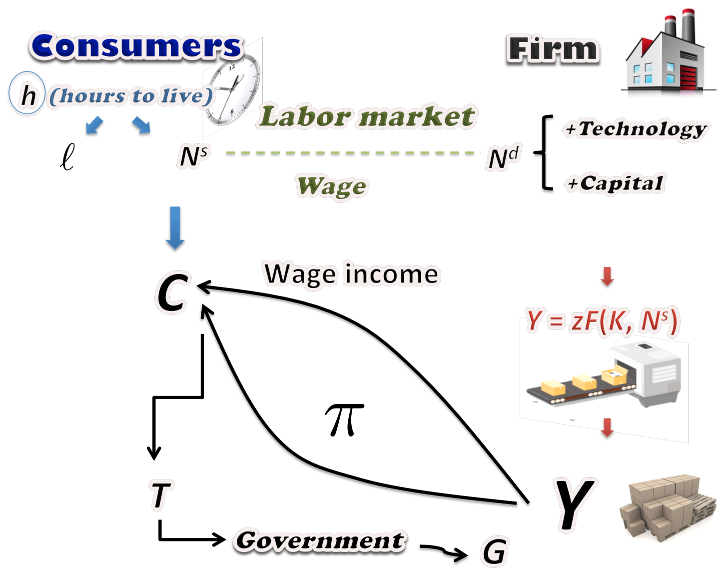
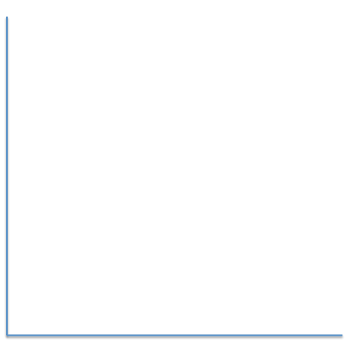
EE312 Macroeconomics, 2/2015 (Sec. 046402)
A Short Note: Ch.3 A Closed Economy One-Period Macroeconomic Model

1 One-period decisions:

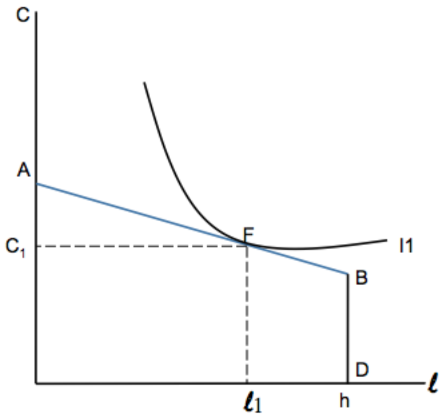


2 Consumers : A representative consumer

- Utility Function : $U = U(C, \ell)$,$MU_C \downarrow$ as $C \uparrow MU_\ell \downarrow$ as $\ell \uparrow$
- Budget constraint :
  $C =$ ....
  $C + w\ell =$ ....
- From the budget constraint the maximum ℓ will be equal to ....
  The household (consumer) budget constraint may have a kink when $(\pi - T)$.....0.
  Putting together, since $\ell \leq h$, the budget constraint has a kink at ($\ell =$ ......, $C =$ ....)
  w is "the market price" of ....



- Optimization : tangency point between .... and the ...., corner solution is .... because?
  - Change in non-wage income $(\pi - T)$.



An increase in π−T

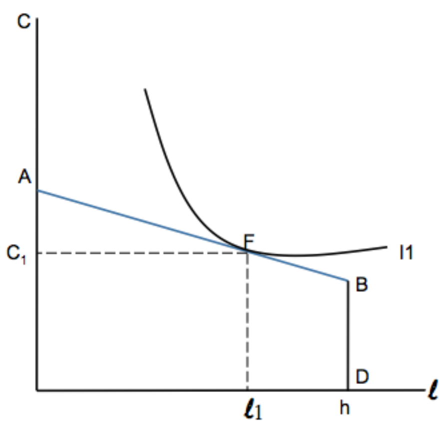
- An increase in π−T (by JB) causes the consumer to increase both C and ℓ.
- For a given real wage, $(\pi - T) \uparrow \Rightarrow C \uparrow$ and $\ell \uparrow$
- This is called .... effect.

  - Change in real wage (w)

    * **w**↑ ⇒ Income Effect ⇒ *wage income........* ⇒ *income* ↑ ⇒ C...., ℓ......
      ⇒ Substitution Effect ⇒ ℓ becomes relatively more expensive ⇒ C...., ℓ......

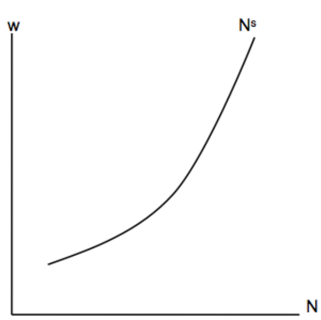
    (Note: A good is normal to consumer if its consumption .... when income rises.
    A good is inferior to consumer if its consumption........ when income rises.)

Stronger substitution effect



* The budget line rotates clockwise (the slope ..... and the vertical intercept ......) from
* The optimal point changes from ..... to ....
* Draw JM, JM is paralell to the .... budget line (relative price change).
* JM is tangent to ..... (the .... IC). (keeping income constant)
* Point O is where JM is tangent to the .... IC.
* FO is .... effect
* OH is .... effect
* FO > OH, C increases and ℓ decreases.
* So N^s increases.

  - Derive Labor supply function $N^s(w) = h - \ell(w)$.
    * $w \uparrow$ (keeping non-wage income $(\pi - T)$ constant $\Rightarrow \ell \downarrow$ (stronger substution effect) $\Rightarrow N^s \uparrow$)
    * As non-wage income $(\pi - T)$ increases, ℓ ...... for all levels of real wage (a pure income effect). As a result, N^s .... for all levels of wage.



3 Firm : A representative firm

- $Y = zF(K, N^d)$;
  - Y = output of consumption goods;
  - K = capital input;
  - N^d= labor input (hours);
  - z = total factor productivity (TFP).
  - $\frac{\partial Y}{\partial K} = \frac{\Delta Y}{\Delta K} = MP_K$....0, $\frac{\partial Y}{\partial N} = \frac{\Delta Y}{\Delta N} = MP_N$....0 ; upward slope production function
  - $\frac{\partial^2 Y}{\partial^2 K}$....0, MP_K ..... as $K \uparrow$; concave production function
  - $\frac{\partial^2 Y}{\partial^2 N}$....0 , MP_N ..... as $N \uparrow$; concave production function
  - $\frac{\partial Y}{\partial K} = z\frac{\partial F}{\partial K}, \frac{\partial Y}{\partial N} = z\frac{\partial F}{\partial N}$
- Constant returns to scale:
  - $zF(xK, xN^d) = xzF(K, N^d)$
  - Increase each input by x times will raise the total output by x times.
- production function : (Y, N)

- production function : (Y, K)

- Marginal Product of labour

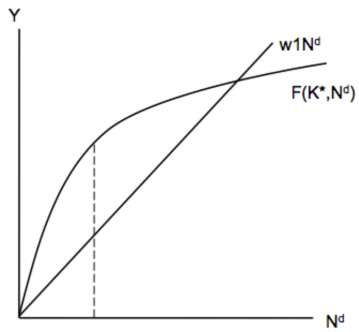
- production function : (Y, N), [$K \uparrow$ or $Z \uparrow$]

- Profit maximization condition

  $\pi =$ .... ,

  Profit maximization condition : Slope of .... = slope of ....; $VMPL$ = real wage , MP_L = ...

Profit Maximization

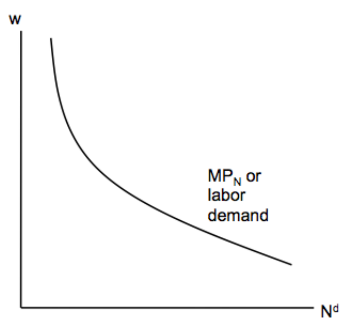


- Y = revenue;
- MP_N = marginal revenue;
- wN^d = variable cost;
- w = marginal cost;
- Profit = $Y - wN^d$;
- Max profit = AB where $MP_N = w$.
- $N^* = N^d$ for the given w

- Labour Demand Function : Creation

- As $w \uparrow$, Max profit : $MP_{N*} = w$, $MP_{N*} \uparrow$, N^*.........
- As $w \uparrow$, N^d.....
- Profit-max: the firm hires labor up to the point where $MP_N = w$.

- What will happen to N^d if $z \uparrow$? What will happen to N^d if $K \uparrow$?



  - An increase in K causes MP_N to rise for all levels of N.
  - Profit-max: the firm hires labor up to the point where $MP_N = w$.
  - For all levels of N^d, MP_N....... and w ....
  - labour demand increases for all w
  - (or in other words, for all levels of labor employed, the real wage the firm is willing to pay increases.)