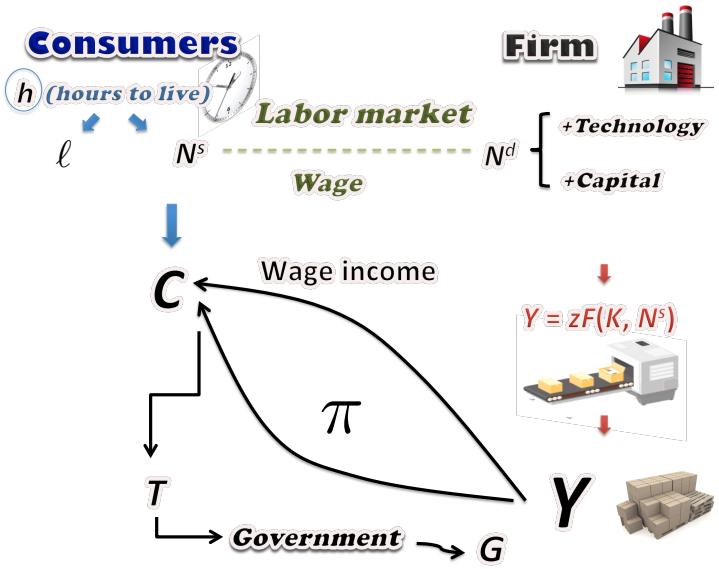
EE312 Macroeconomics, 1/2014 (Sec. 046402)
A Short Note: Ch.3 A Closed Economy One-Period Macroeconomic Model

1 One-period decisions:

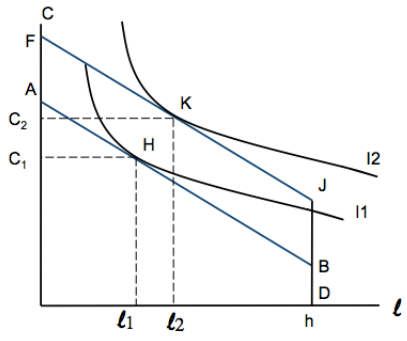


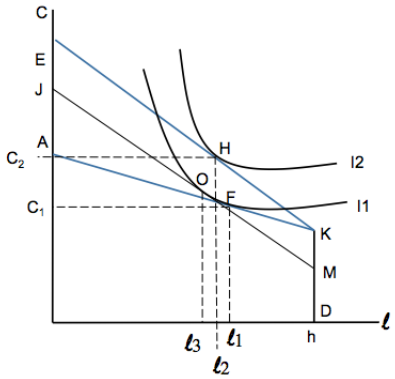
2 Consumers : A representative consumer

- Utility Function : $U = U(C, \ell)$
- Budget constraint :

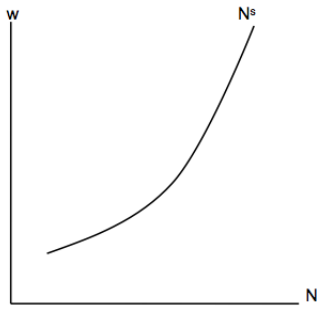
  $C =$ .....

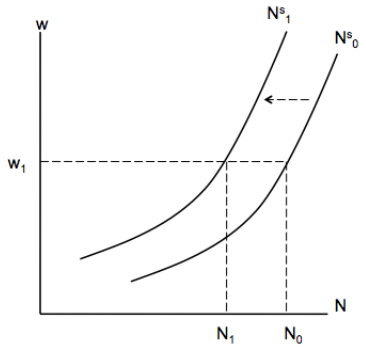
  $C + w\ell =$ .....
- Change in non-wage income $(\pi - T)$.





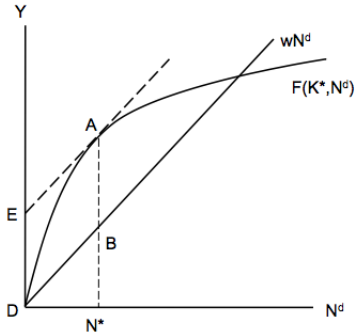
  - Derive Labor supply function $N^s(w) = h - \ell(w)$.
    - $w \uparrow$ (keeping non-wage income $(\pi - T)$ constant $\Rightarrow \ell \downarrow$ (stronger substution effect) $\Rightarrow N^s \uparrow$)
    - As non-wage income $(\pi - T)$ increases, ℓ ..... for all levels of real wage (a pure income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

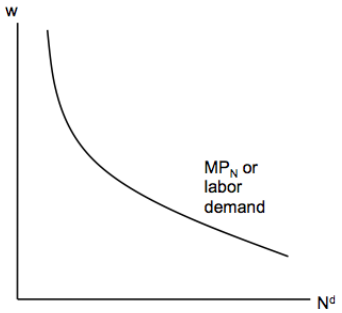




3 Firm : A representative firm

- $Y = zF(K, N^d)$; diminishing returns and constant returns to scale
- Profit maximization condition : $\pi = zF(K, N^d) - wN^d$
  $MP_N = w$. The MP_N is the firm's labor demand curve.

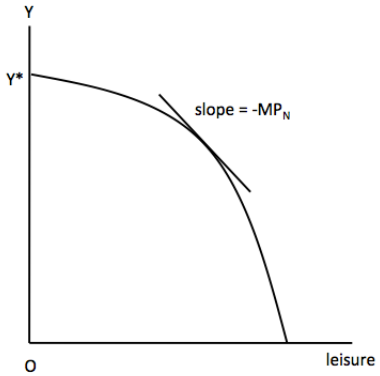


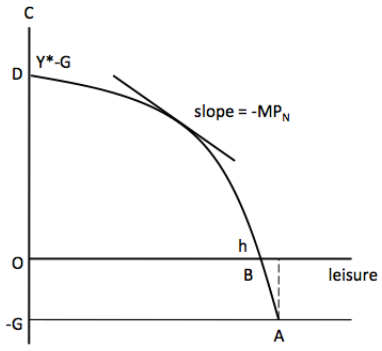


- What will happen to N^d if $z \uparrow$? What will happen to N^d if $K \uparrow$ or z $\uparrow$?

4 Competitive Equilibrium

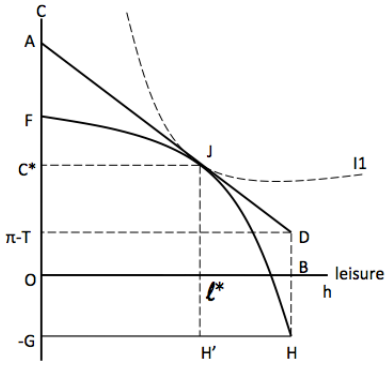
4.1 PPF



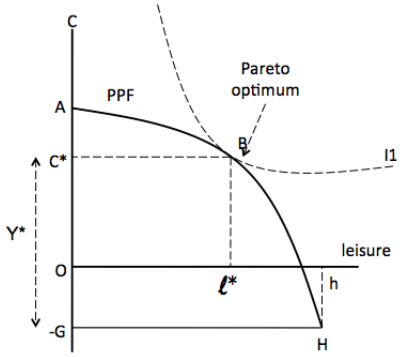


4.2 Competitive Equilibrium VS. Social Planner Problem

Competitive Equilibrium



Social Planner



- In equilibrium,

  $MP_N = w = MRT_{\ell,C} = MRS_{\ell,C}$

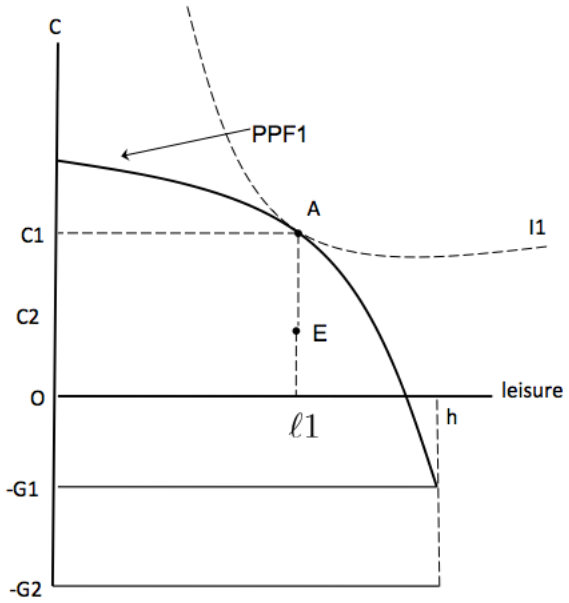
- The Pareto optimum is at B where

  $MRS_{\ell,C} = MRT_{\ell,C} = MP_N$

the same condition for a competitive equilibrium.

- Comparison: Representative consumer faces a linear or kinked budget constraint. Social planner faces a concave PPF.
- **The first and second fundamental theorem of welfare economics**
- In the real-world social inefficiencies may arise from many possible sources; for example, externalities, distorting taxes, imperfect competition, imperfect information, etc.

4.3 Effects of an increase in G



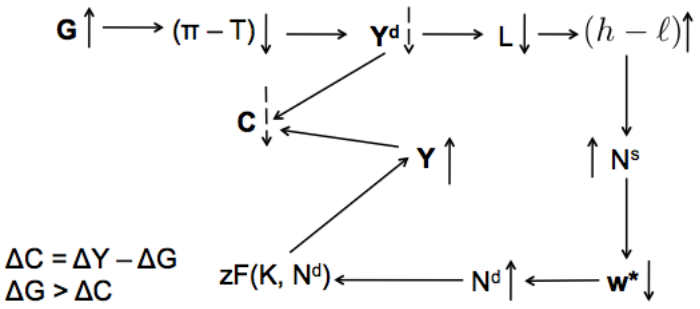
- Consider an ↑ in G from G_1 to G_2 .
- Since G = T, T ↑ of the same amount.
- G ↑, the PPF shifts from PPF_1 to PPF_2.
- This shift leaves the slope of the PPF constant for each ℓ.
- Effects on C, Y, N, w

- Private consumption is **crowded out** by government purchases.
- The consumer works more, receives a lower real wage and consume less.
- *Y*..... but *C*..... This means that when government increases its spending, the firm produces more. The government's share of total output is ..... while the consumer's share of total output is .....

- In sum, The consumer's utility ..... as the governmet expenditure increases.

  As the representative consumers pay higher taxes, his or her disposable income falls, and in equilibrium he or she spends less on consumption goods, and work harder to support a larger government.

- Chained effect : an increase in G



- Note on business cycle :
- Model Prediction

$G\uparrow \Rightarrow Y^*$.....

N^*..... procyclical
w^*..... countercyclical
C^*..... countercyclical

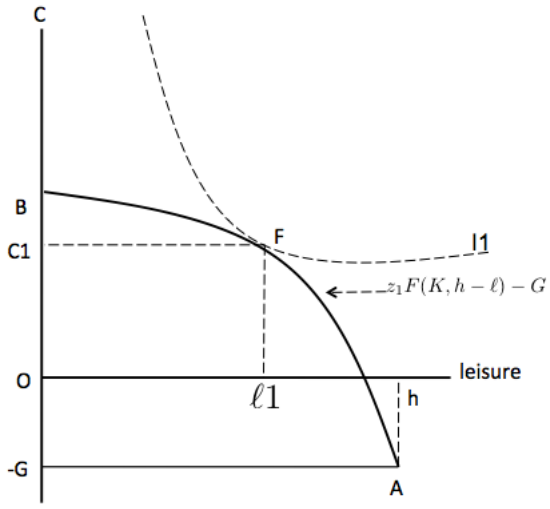
- facts

$Y^*\uparrow$

$N^*\uparrow$ procyclical
$w^*\uparrow$ procyclical
$C^*\uparrow$ procyclical

- Therefore, it is unlikely that governement spending could be the primary cause of business cycle fluctuation.

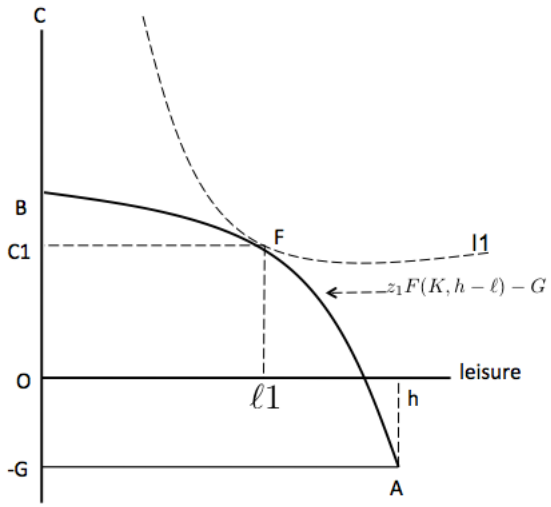
4.4 Effects of an increase in z (or K)



- The production function rotates upwards with higher MP_N
- **substitution effect and income effect :**
  - **substitution effect** : ℓ ..... and C..... ,
  - **income effect** : ℓ ..... and C.....
- **Total Effect**

  C..... (for sure) , ℓ depends
- Assume **Equal effects**

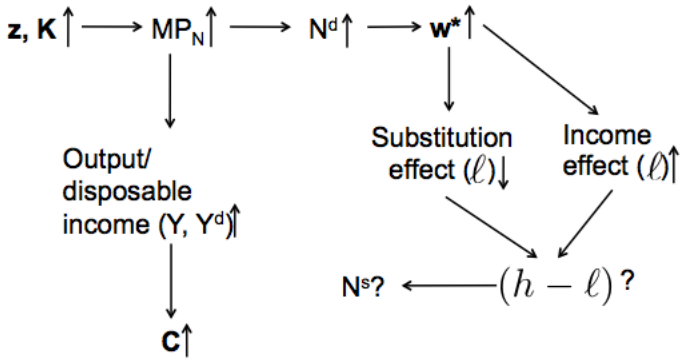
"tells a story about the long-term economic effects of long-run improvement in technology, such as that have occured in the United States since WWII. ... some keys observations from post-WWII US data are that aggregate output has increased steadily, consumption has increased, the real wage has increaed, and the hours worked per employed person has remained roughly constant."



Stronger Substitution Effect

- ..... = substitution effect (rising C and N, falling ℓ).
- ..... = income effect (rising C and ℓ).
- Stronger substitution effects: ℓ^* ..... and N^*.....
- Wage .....

- **Chain Effect : an increase in total factor productivity**



If SE = IE, N^s ..... .
If SE > IE, N^s ..... .
If SE < IE, N^s ..... .

- Note on business cycle :
- Model Prediction

$G\uparrow \Rightarrow Y^*$.....

N^*..... procyclical(SE....IE) ,uncertain (SE....IE)
w^*..... procyclical
C^*..... procyclical

- facts

$Y^*\uparrow$

$N^*\uparrow$ procyclical
$w^*\uparrow$ procyclical
$C^*\uparrow$ procyclical

- Therefore, fluctuations in total factor productivity could be the primary cause of business cycle.