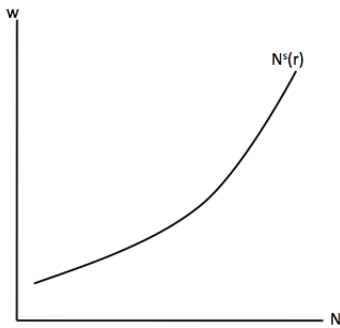


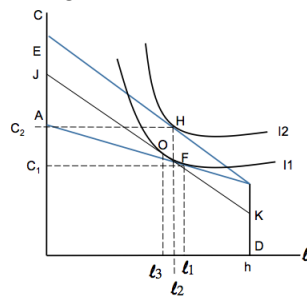
# 1 Representative Consumer

1. **current budget constraint** :  $C + S^P = \dots$  . **future budget constraint** :  $C' = w'(h - \ell') + \pi' - T' + (1+r)S^P$
2. **life-time budget constraint** :  $C + \frac{C'}{1+r} = \dots + \frac{w'(h - \ell') + \pi' - T'}{1+r}$
3. **Current period optimal condition** :  $MRS_{\ell,C} = w$  . **Future period optimal condition** :  $MRS_{\ell',C'} = w'$  .  
**Intertemporal optimal condition** :  $MRS_{C,C'} = 1+r$
4. **current labour supply** : Current labor supply increases with the real wage, given r (assuming the dominant substitution effect).

labour supply curve



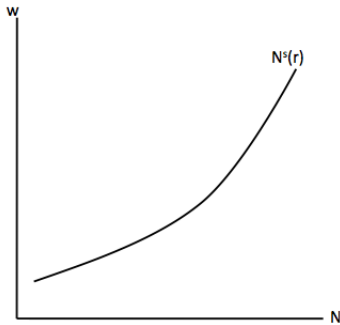
Stronger SE



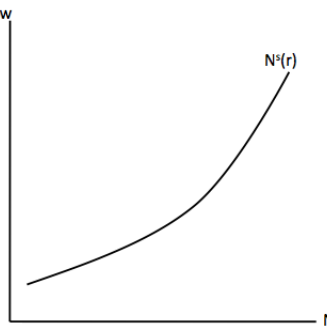
$w \uparrow$

- income effect =  $C \dots$
- substitution effect =  $C \dots$
- income effect =  $\ell \dots$
- substitution effect =  $\ell \dots$

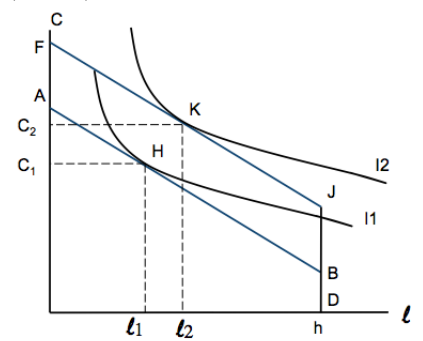
an increase in real interest rate:  $SE > IE$



an increase in life time wealth



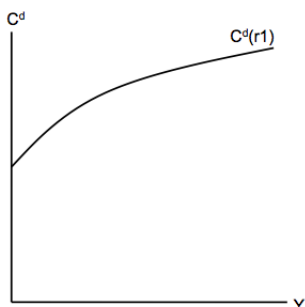
$(\pi - T) \uparrow$



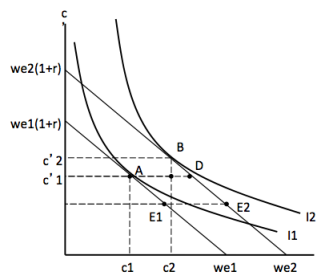
- IE:  $r \uparrow$  income from saving  $\uparrow \ell \uparrow$
- SE:  $r \uparrow$ , current leisure is more expensive,  $\ell \downarrow$

5. Demand for current consumption goods

An increase in  $r$

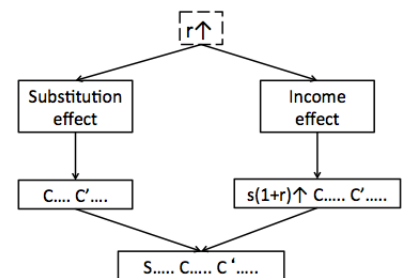


$y \uparrow$

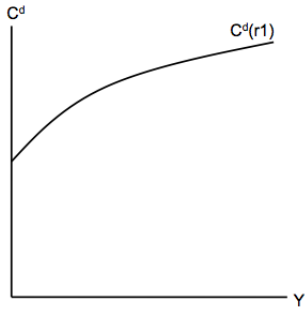


$r \uparrow$ , stronger SE  $\Rightarrow c \downarrow$ , lender

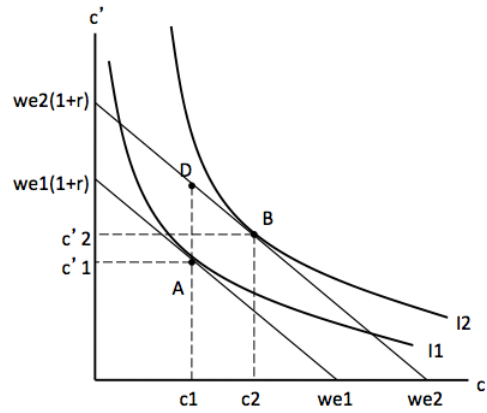
The consumer is a lender



an increase in life time wealth ( $y' \uparrow$  or  $(t + \frac{t'}{1+r}) \downarrow$ )

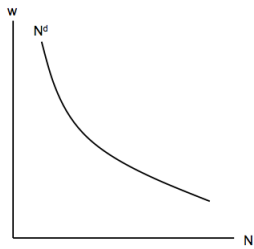


Chapter 5 :  $y' \uparrow$

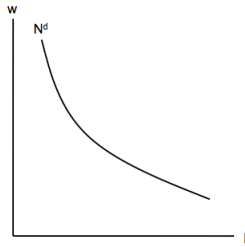


## 2 Representative firm

1. current production function :  $Y = zF(K, N)$ . future production function :  $Y' = z'F(K', N')$
2. change in capital stock :  $K' = (1 - d)K + I$
3. firm's current profit :  $\pi = Y - wN - I$ . firm's future profit :  $\pi' = Y' - w'N' + (1 - d)K'$
4. firm's present value of profit :  $V = \pi + \frac{\pi'}{1 + r}$ .
5. current labour demand

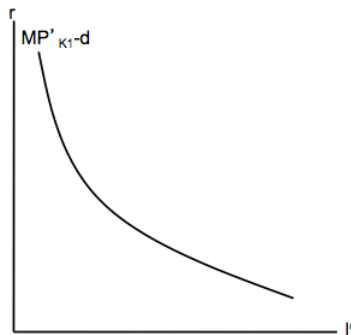


an increase in  $z$  or  $K$



### 6. Investment Decision

- Optimal Investment Decision :  
..... = 1.
- $MP'_K - d = r$ .
- effect of an increase in  $z'$  or  $K$



## 3 Government Sector

- $G + \frac{G'}{1 + r} = T + \frac{T'}{1 + r}$ .