Notes, Jan 20th, 2021

d_i, $i = 0, \dots, N(\infty)$

d_0 d_1 d_2 . — —

0 1 2 3 . - — — N - - -

interest rate r

⇓

discount 1 period $\frac{1}{1+r}$

(discount rate β)

$\sum_{i=0}^{N/\infty} \frac{d_i}{(1+r)^i}$

$\prod_{j=0}^{i} \frac{1}{(1+r_j)}$

Cobb-Douglas

$A^{\alpha} B^{\beta}$ - - - (production function)

A, B - production factors

k - capital

L - Labor

z - productivity (Hicks-neutral)

$Y = z \cdot k^{\alpha} L^{\beta}$

⇓ output (GDP)

$\alpha + \beta = 1$

⇓ constant returns to scale

$\alpha+\beta \begin{cases} < & - \text{decreasing} \\ = 1 & \\ > & - \text{increasing} \end{cases}$

marginal product labor $\frac{\partial Y}{\partial L} = \lim_{\varepsilon \to 0} \frac{Y(k, L+\varepsilon) - Y(k, L)}{\varepsilon}$

capital $\frac{\partial Y}{\partial k}$