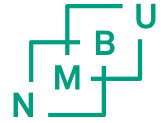


# ECN 122

## Langsiktig økonomisk vekst

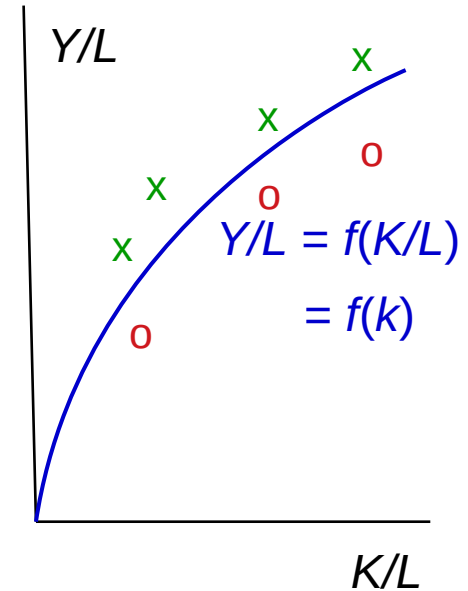
### Innhold

- Solowmodellen – fit og funksjonell form
- Solowmodellen - utvidelser
- kapitalslit og vedlikeholdskapital

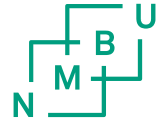


# Solowmodellen - basis

- Solow-modellen  $Y/L = f(K/L)$   
fanger bare opp  $K/L \rightarrow$   
modellen “treffer” dårlig
  - $x$  = positiv faktor,  $o$  = negativ faktor
- Kapitalintensiteten  $k = K/L$
- $BNP/EMP = Y/L = A(..) f(k)$ 
  - $A(..)$  andre relevante faktorer = totalfaktorprod.

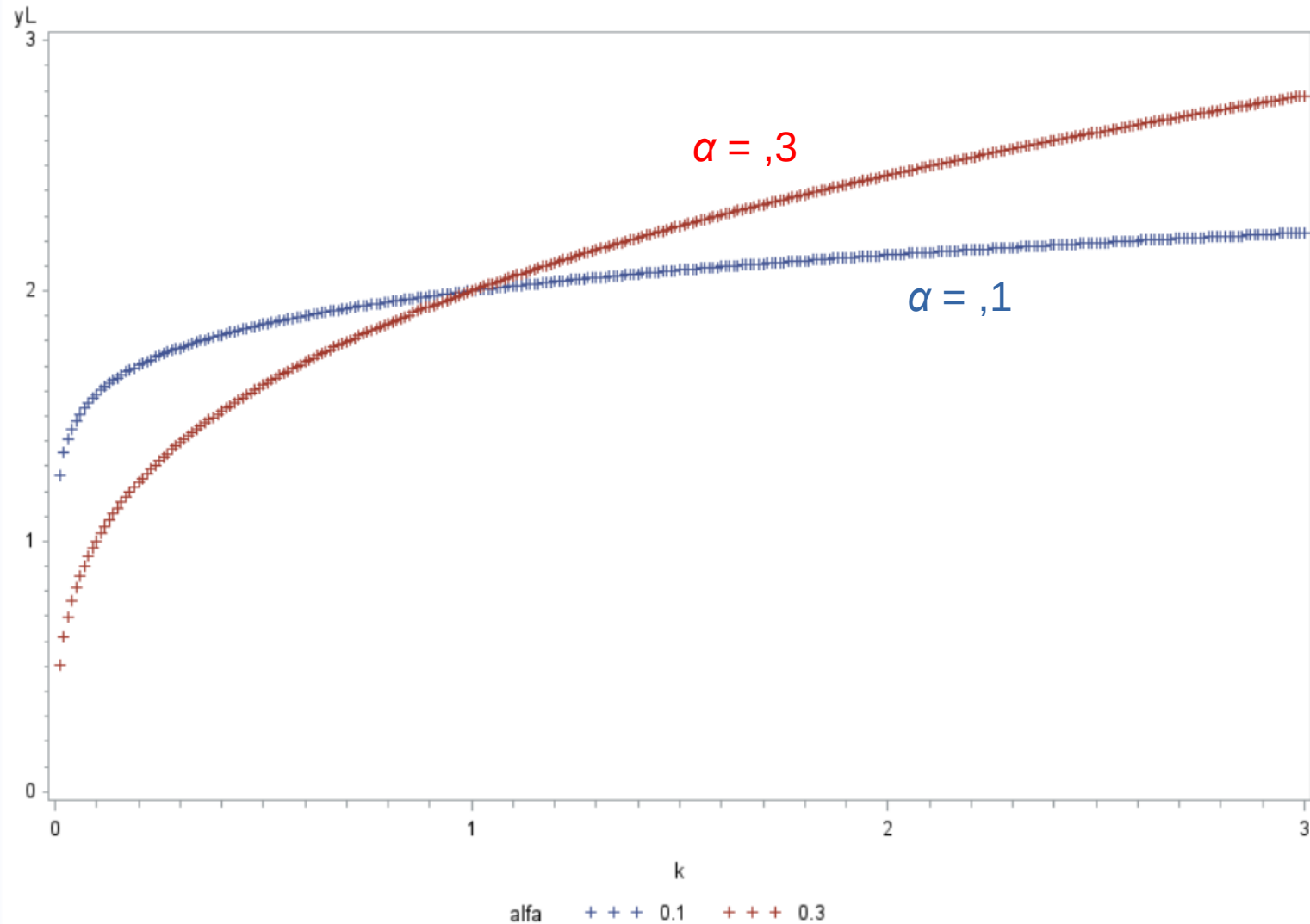
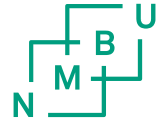


## ... Solowmodellen – funksjonell form

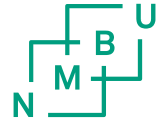


- Funksjonell form kriterier  $f'(k) > 0$ ,  $f''(k) < 0$ 
  - $Y/L = f(k) = B k^\alpha$ ,  $0 < \alpha < 1$ ,  $B > 0$
  - $f'(k) = \alpha B k^{\alpha-1} > 0$ ,
  - $f''(k) = (\alpha - 1) \alpha B k^{\alpha-2} < 0 \leftarrow (\alpha - 1) < 0$
- Økonometrisk analyse
  - OLS mulig, log-transformasjon
  - $\log(Y/L) = \log(B k^\alpha) = \log(B) + \alpha \log(k)$

# ... Solowmodellen – funksjonell form



# Solowmod. – velferd og kapitalslit



- Maksimere langsiktig (diskontert) velferd

- diskontering =  $(1 + r)^{-t}$ ,  $r$  = rente
- kun forbruk  $\rightarrow$  nytte =  $U_t(C_t + G_t)$
- Likevekt u/ int handel:  $Y_t = C_t + G_t + I_t$   
 $\rightarrow Y_t - (C_t + G_t) = I_t$

- Formelt oppsett

$$\text{Max}_{\{C_t, G_t\}} \sum_{t=0}^T \left( \frac{1}{1+r} \right)^t U_t(C_t, G_t) \quad \text{objektfunksjon}$$

$$Y(K_t) = C_t + G_t + I_t \quad \text{likevekt}$$

$$K_t = (1 - \delta) K_{t-1} + I_{t-1} \quad \text{transversalitet}$$