

ECN 222 Formelsamling

Diverse formler:

Arbeidsproduktivitet: A = verdiskaping per time, likevekt $A = W/P = w$

Lønnskampmodellen; $A W(u^*, z^W) = \frac{W}{P} = \frac{A^*}{1+\mu}$ (7.3 + 7.4)

Solowmodellen: $Y = A f(K, L)$ (samling 8-2)

Totalfaktorproduktivitet: $Y_t = A_t K_t^\alpha L_t^{S-\alpha}$, $0 < \alpha < 1$ (samling 8-2)

Realvalutakurs: $\epsilon = E \frac{P^F}{P}$ (14.1), % endring: $\frac{\Delta \epsilon}{\epsilon} = \frac{\Delta E}{E} + \frac{\Delta P^F}{P^F} - \frac{\Delta P}{P}$ (14.2)

Handelsrelatert (samling 7-1):

$$Q^v = Q^v(Y, \epsilon) \quad (16.1), \quad X = X(Y^F, \epsilon) \quad (16.2)$$

$$NX(Y, Y^F, \epsilon) = X(Y^F, \epsilon) - Q^v(Y, \epsilon) \quad (16.3)$$

$$E = E^e + \kappa(i^F - i) \text{ der } \kappa > 0 \quad (16.7)$$

Phillipskurver

$$(1) \pi = \pi^e - b(u - u^T) + z^\pi \quad (8.12)$$

$$(2) \pi^C = \theta \frac{(\pi^e + \beta(Y - Y^n))}{y^n} + (1 - \theta) \left(\frac{E - E_{-1}}{E_{-1}} + \pi^F + z^\pi \right) \quad (6.13)$$

Phillipskurva: Fra funksjon av arbeidsløyse til funksjon av BNP-gap:

$$u - u^n = -\frac{Y/A - Y^n/A}{L} = -\frac{Y - Y^n}{AL} = \frac{-Y^n}{AL} \frac{Y - Y^n}{Y^n} = \frac{-Y^n}{AL} \frac{Y - Y^n}{Y^n} \quad (8.15)$$

$$\pi = \pi^e - b\left(\frac{-Y^n}{AL} \frac{Y - Y^n}{Y^n}\right) + z^\pi = \pi^e + \left(\frac{bY^n}{AL} \frac{Y - Y^n}{Y^n}\right) + z^\pi = \pi^e + \beta \frac{Y - Y^n}{Y^n} + z^\pi \quad (8.16)$$

Keynes-modeller – IS-multiplikatorer

Lang rekke ulike utvidelser med aukende kompleksitet)

“Nesten” enkleste modell:

$$FM_1 = 1 - c_1(1 - t) - b_1 > 0$$

$$Y = \frac{1}{(1 - c_1(1 - t) - b_1)} (z^C - c_1 z^T + z^I + G) = \frac{1}{FM_1} (z^C - c_1 z^T + z^I + G) \quad (6.9)$$

$$\begin{aligned} \Delta Y &= \frac{1}{(1 - c_1(1 - t) - b_1)} (\Delta z^C - c_1 \Delta z^T + \Delta z^I + \Delta G) \\ &= \frac{1}{FM_1} (\Delta z^C - c_1 \Delta z^T + \Delta z^I + \Delta G) \end{aligned}$$

Utvidelse 1 – med nominell rente og inflasjonsforventninger:

$$Y = \frac{1}{FM_1} (z^C - c_1 z^T - c_2(i - \pi^e) + z^I - b_2(i - \pi^e) + G) \quad (9.5)$$

Utvidelse 2 – med handel:

$$FM_2 = 1 - c_1(1 - t) - b_1 + \alpha_1 = FM_1 + \alpha_1$$

$$\Delta Y = \frac{1}{FM_2} (\Delta z^C - c_1 \Delta z^T + \Delta z^I + \Delta G + \Delta X) \quad (6.32)$$

Utvidelse 3 – kombinasjon av utvidelse 1 og 2, faste kurser:

$$Y = \frac{1}{FM_2} \left(z^C - c_1 z^T - c_2(i - \pi^e) + z^I - b_2(i - \pi^e) + G + z^{NX} + \alpha_2 E - \alpha_3 P \right) \quad (16.12)$$

Utvidelse 4 – utvidelse 3 med endogene priser:

$$FM_{endoP} = FM_2 + \alpha_3 \frac{\beta}{Y^n} = (1 - c_1(1 - t) - b_1 \alpha_1) + \alpha_3 \frac{\beta}{Y^n} > 0$$

$$Y = \frac{1}{FM_{endoP}} \quad (16.21)$$

$$\left(z^C - c_1 z^T - c_2(i - \pi^e) + z^I - b_2(i - \pi^e) + G + z^{NX} + \alpha_2 E - \alpha_3 (1 + \pi^e - \beta + z^\pi) \right)$$

Utvidelse 5 – utvidelse 4 med flytende valutakurser:

$$FM_{endoP} = FM_2 + \alpha_3 \frac{\beta}{Y^n} = (1 - c_1(1 - t) - b_1 \alpha_1) + \alpha_3 \frac{\beta}{Y^n} > 0 \quad (\text{gjentatt forr. side})$$

(16.24, forenkla med FM_{endoP} under):

$$Y = \frac{1}{FM_{endoP}} \left(z^C - c_1 z^T - c_2(i - \pi^e) + z^I - b_2(i - \pi^e) + G + z^{NX} \right) \\ + \frac{1}{FM_{endoP}} \left(\alpha_2(E^e + \kappa(i^F - i)) - \alpha_3(1 + \pi^e - \beta + z^\pi) \right)$$

Dette får vel holde :-)

RR-multiplikatorer

$$i = z^i + d_1 (\pi^C - \pi^*) + d_2 \frac{Y - Y^n}{Y^n} \quad (9.10 \text{ og } 16.26)$$

(16.27 under)

$$i = \frac{1}{1 + d_1 (1 - \theta) \frac{\kappa}{E_{-1}}} \left(z^i + d_1 (\theta \pi^e + (1 - \theta) \pi^F + z^\pi - \pi^*) + d_1 (1 - \theta) \frac{E^e + \kappa i^F - E_{-1}}{E_{-1}} + (d_2 + d_1 \theta \beta) \frac{Y - Y^n}{Y^n} \right)$$

(16.28 under)

$$\Delta i = \frac{d_2 + d_1 \theta \beta}{\left(1 + d_1 (1 - \theta) \frac{\kappa}{E_{-1}} \right) Y^n} \Delta Y > 0$$

(16.29 under)

$$\Delta Y^{skift} = \frac{1}{FM_{endoP}} > 0 \Rightarrow \text{RR flytter ned.}$$