Problem on LSF, Fischer & monetary policy – answers

Under passive, $m_t = \bar{m} + v_t$

$$m_{t+j} = \bar{m} + v_{t+j} = \bar{m} + v_t + \sum_{\tau=1}^{j} u_\tau$$

$$E_t[m_{t+j}] = \bar{m} + v_t + E_t[\Sigma u] = \bar{m} + v_t$$

Under active, $m_t = -v_{t-1} + v_t = -v_{t-1} + v_{t-1} + u_t = u_t$

$$m_{t+j} = u_{t+j}$$

$$E_t[m_{t+j}] = E_t[u_{t+j}] = 0$$

1) LSF: $y_t = \frac{b}{1+b}(m_t - E_{t-1} m_t) = \frac{b}{1+b} u_t$

$$p_t = E_{t-1} m_t + \frac{1}{1+b}(m_t - E_{t-1} m_t) = E_{t-1} m_t + \frac{1}{1+b} u_t$$

a) i) $y_t = \frac{b}{1+b} u_t$

ii) $p_t = \bar{m} + v_{t-1} + \frac{1}{1+b} u_t$

iii) $\sigma_y^2 = \left(\frac{b}{1+b}\right)^2 \sigma_u^2$ (note this is $V_m$ in the model)

b) i) $y_t = \frac{b}{1+b} u_t$

ii) $p_t = 0 + \frac{1}{1+b} u_t$

iii) $\sigma_y^2 = \left(\frac{b}{1+b}\right)^2 \sigma_u^2$

Problem on LSF....



1) c) Same, since $V_z$ & $V_m$ same.

2) Fischer: $y_t = \frac{1}{1+\phi}(E_{t-1} m_t - E_{t-2} m_t) + (m_t - E_{t-1} m_t)$

$$p_t = E_{t-2} m_t + \frac{\phi}{1+\phi}(E_{t-1} m_t - E_{t-2} m_t)$$

a) i) $y_t = \frac{1}{1+\phi}(\bar{m} + V_{t-1} - (\bar{m} + V_{t-2})) + (\bar{m} + V_t - (\bar{m} + V_{t-1}))$

$$= \frac{1}{1+\phi}(u_{t-1}) + u_t$$

ii) $p_t = \bar{m} + V_{t-2} + \frac{\phi}{1+\phi}(\bar{m} + V_{t-1} - (\bar{m} + V_{t-2}))$

$$= \bar{m} + V_{t-2} + \frac{\phi}{1+\phi} u_{t-1}$$

iii) $\sigma_y^2 = \left(\frac{1}{1+\phi}\right)^2 \sigma_{u_{t-1}}^2 + \sigma_{u_t}^2 = \left(\left(\frac{1}{1+\phi}\right)^2 + 1\right) \sigma_u^2$

Recall $u$ is iid, so no covariance between $u_{t-1}$ & $u_t$

b) i)

$$y_t = \frac{1}{1+\phi}(0 - 0) + u_t = u_t$$

ii) $p_t = 0 + \frac{\phi}{1+\phi}(0 - 0) = 0$

iii) $\sigma_y^2 = \sigma_u^2$

c) Smaller