Practice questions for Exam #2 Answer Key

Economics 808: Macroeconomic Theory

Fall 2001

1 The Fischer model

a)

$$\begin{aligned} p_t^1 &= E_{t-1}\hat{p}_t \\ &= E_{t-1}(\phi m_t + (1-\phi)\frac{p_t^1 + p_t^2}{2}) \\ &= \phi E_{t-1} m_t + \frac{1-\phi}{2}(p_t^1 + p_t^2) \\ &= \frac{2\phi}{1+\phi} E_{t-1} m_t + \frac{1-\phi}{1+\phi} p_t^2 \end{aligned}$$

b)

$$\begin{aligned} p_t^2 &= E_{t-2}\hat{p}_t \\ &= \phi E_{t-2} m_t + \frac{1-\phi}{2}(E_{t-2}p_t^1 + p_t^2) \\ &= \frac{2\phi}{1+\phi} E_{t-2} m_t + \frac{1-\phi}{1+\phi} E_{t-2} p_t^1 \end{aligned}$$

c)

$$\begin{aligned} E_{t-2}p_t^1 &= E_{t-2}\left[\frac{2\phi}{1+\phi} E_{t-1} m_t + \frac{1-\phi}{1+\phi} p_t^2\right] \\ &= \frac{2\phi}{1+\phi} E_{t-2} m_t + \frac{1-\phi}{1+\phi} p_t^2 \end{aligned}$$

Substituting back in, we eventually get:

$$p_t^2 = E_{t-2} m_t$$

d)

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

e)

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

f)

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

2 A simple coordination game

a) Worker 1's best response function is:

$$e_1(e_2) = \begin{cases} 0 & e_2 < 1 \\ [0, \bar{e}] & e_2 = 1 \\ \bar{e} & e_2 > 1 \end{cases}$$

b)

c) The symmetric NE are 0, 1, and $\bar{e}$.

d) The symmetric NE can be (weakly) Pareto ranked, with $\bar{e}$ Pareto dominant.

e) The payoffs exhibit strategic complementarity:

$$\frac{\partial^2 \pi_1}{\partial e_1 \partial e_2} = 1 > 0$$

f) The game exhibits positive spillovers for $e_1 > 0$:

$$\frac{\partial \pi_1}{\partial e_2} = e_1$$

g) The payoffs exhibit strategic complementarity (and positive spillovers if $e_1 > 0$). However, there is only one SNE for the game, 0.

3 True, false, or uncertain

a) False. The baseline RBC model predicts that measured productivity will be procyclical, because productivity shocks drive business cycles.

b) True. Capital fluctuates little at business-cycle frequencies, and productivity has less variability than employment.

c) True. Output potentially affects the money supply as central banks respond to movements in the real economy. As a result, a correlation between output growth and money growth doesn't necessarily imply money non-neutrality.

d) False. People prefer to smooth consumption, and as a result vary investment much more when they experience a temporary income shock.