

EC 202 03 Spring 2001
Macroeconomic Theory
Solutions to Problem Set 2

Point values given in [].

Ch. 6 #7 [10]

- a. $W/P=1/(1+\mu)=1/1.05=0.95$.
- b. Price setting: $u=1-W/P=5\%$.
- c. $W/P=1/1.1=0.91$, $u=1-0.91=9\%$.

Ch. 7 #4 [9]

- a. After an increase in the level of money supply, output and the interest rate eventually return to the same level. However, monetary policy is useful, because it can accelerate the return to the natural level of output.
- b. In the medium run, investment and the interest rate both change with fiscal policy.
- c. False. Labor market policies, such as unemployment insurance, can affect the natural level of output.

Ch. 7 #6 [12]

- a. The natural level of output is Y_n . Assuming that output starts at its natural level, $P_0=M_0-(1/c)Y_n$.
- b. Assuming that $P^e=P_0$: $Y=2cM_0-cP=2cM_0-cP_0-cdY+cdY_n$. Recalling that $Y_n=c(M_0-P_0)$: $Y=Y_n+(c/(1+cd))M_0$.
- c. Investment goes up because output is higher and the interest rate is lower.
- d. In the medium run, $Y=Y_n$.
- e. In the medium run, investment returns to its previous level, because output and the interest rate return to their previous levels.

Ch. 8 #3 [13]

- a. $u_n=0.1/2=5\%$.
- b. $\pi_t=0.1-2*0.03=4\%$ every year beginning with year t .
- c. $\pi^e_t=0$ and $\pi_t=4\%$ forever. Inflation expectation will be forever wrong. This is unlikely.
- d. θ might increase because people's inflation expectations adapt to persistently positive inflation. The increase in θ has no effect on u_n .
- e. $\pi_5=\pi_4+0.1-0.06=4\%+4\%=8\%$. For $t>5$, repeated substitution implies, $\pi_t=\pi_5+(t-5)*4\%$. So, $\pi_{10}=28\%$, $\pi_{15}=48\%$.
- f. Inflation expectation will again be forever wrong. This is unlikely.

Ch. 8 #4 [10]

- a. $\pi_t = \pi_{t-1} + 0.1 - 2u_t = \pi_{t-1} + 2\%$. $\pi_t = 2\%$, $\pi_{t+1} = 4\%$, $\pi_{t+2} = 6\%$, $\pi_{t+3} = 8\%$.
- b. $\pi_t = 0.5\pi_t + 0.5\pi_{t-1} + 0.1 - 2u_t$, or, $\pi_t = \pi_{t-1} + 4\%$.
- c. $\pi_t = 4\%$, $\pi_{t+1} = 8\%$, $\pi_{t+2} = 12\%$, $\pi_{t+3} = 16\%$.
- d. As indexation increases, low unemployment leads to larger increase in inflation over time.

Ch. 8 #5 [5]

- a. A higher cost of production means a higher markup.
- b. $u_n = (0.08 + 0.1\mu)/2$. Thus, the natural rate of unemployment increases from 5% to 6% as μ increases from 20% to 40%.

Ch. 9 #2 [6]

- a. The unemployment rate will increase by 1% per year when $g = 0.5\%$. Unemployment will increase unless the growth rate exceeds the sum of productivity growth and labor force growth.
- b. We need growth of 4.25% per year for each of the next four years.
- c. Okun's law is likely to become: $u_t - u_{t-1} = -0.4 * (g_{yt} - 5\%)$.