Nanyang Technological University
School of Social Sciences

HE2002 Macroeconomics II AY23-24 SEMESTER 2

Tutorial 7

1. **Chapter 8, Q5. Mutations of the Phillips curve**

   Suppose that the Phillips curve is given by

   $$\pi_t = \pi_t^e + 0.1 - 2u_t$$

   and expected inflation is given by

   $$\pi_t^e = (1 - \theta)\bar{\pi} + \theta\pi_{t-1}$$

   and suppose that θ is initially equal to 0, and that $\bar{\pi}$ is given and does not change. It could be zero or any positive value.
   Suppose that the rate of unemployment is initially equal to the natural rate. In year t, the authorities decide to bring the unemployment rate down to 3% and hold it there forever.

   (a) Determine the rate of inflation in periods $t+1$, $t+2$, $t+3$, $t+4$, $t+5$. How does $\bar{\pi}$ compare to π?

   (b) Do you believe the answer given in part a? Why or why not? (*Hint:* Think about how people are more likely to form expectations of inflation.)

   Now suppose that in year $t + 6$, θ increases from 0 to 1. Suppose that the government is still determined to keep u at 3% forever.

   (c) Why might θ increase in this way?

   (d) What will the inflation rate be in years $t + 6$, $t + 7$, and $t + 8$?

   (e) What happens to inflation when $\theta = 1$ and unemployment is kept below the natural rate of unemployment?

   (f) What happens to inflation when $\theta = 1$ and unemployment is kept at the natural rate of unemployment?

2. **Chapter 8, Q6. The macroeconomic effects of the indexation of wages**

   Suppose that the Phillips curve is given by

   $$\pi_t - \pi_t^e = 0.1 - 2u_t \tag{1}$$

   where

   $$\pi_t^e = \pi_{t-1} \tag{2}$$

Suppose that inflation in year $t - 1$ is zero. (There is a typo in the textbook.) In year t, the central bank decides to keep the unemployment rate at 4% forever.

(a) Compute the rate of inflation for years t, $t + 1$, $t + 2$ and $t + 3$.

Now suppose that **half** the workers (50%) have indexed labor contracts. It is introduced in Section 8.4 in the textbook:

When the inflation rate becomes high, the terms of wage agreements tend to change with the level of inflation. Wage indexation is a provision that automatically increases wages in line with inflation. Suppose λ a proportion of labor contracts that is indexed, so nominal wages move one-for-one with changes in the actual price level, the Phillips curve becomes:

$$\pi_t = [\lambda \pi_t + (1 - \lambda)\pi_{t-1}] - \alpha(u_t - u_n) \tag{3}$$

When $\lambda > 0$, equation (3) becomes:

$$\pi_t - \pi_{t-1} = -\frac{\alpha}{1 - \lambda}(u_t - u_n) \tag{4}$$

(b) What is the new equation for the Phillips curve?

(c) Based on your answer to part b, recompute your answer to part a.

(d) What is the effect of wage indexation on the relation between π and u?

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