HE2002 Macroeconomics II AY23-24 SEMESTER 2

Tutorial 8

1. **Chapter 9, Q2. Identifying if an economy is in medium run equilibrium and the necessary central bank action to return the economy to medium run equilibrium**

    Here are values for a hypothetical economy
    $Y_n = 1000; u_n = 5\%; r_n = 2\%; x = 1\%; \pi^e = 2\%$ and a table describing this economy in various situations:

Situation	Y_n	Y	C	I	G	i (%)	π(%)	u (%)	x (%)
A	1000	1000	700	150	150	4	2	5	1
B	1000	1050	730	170	150	2	3	3	1
C	1000	950	670	130	150	4	1	8	3
D	1000	950	670	150	130	4	1	8	1
E	1000	1050	730	150	170	4	3	3	1

   (Let's assume that investment only depends on the borrowing rate and it is independent of the output. In fact, this assumption is supported by the investments in Situation A, D and E.)

   (a) Explain why Situation A is a medium run equilibrium and Situation B, C, D and E are not a medium run equilibrium.

   (b) What is the action to be taken by the central bank to move from Situation B to medium run equilibrium?

   (c) What is the action to be taken by the central bank to move from Situation C to medium run equilibrium?

   (d) What is the action to be taken by the central bank to move from Situation D to medium run equilibrium?

   (e) What is the action to be taken by the central bank to move from Situation E to medium run equilibrium?

2. **Chapter 9, Q3**

The medium-run equilibrium is characterized by four conditions: Output is equal to potential output $Y = Y_n$ and the real policy rate r_n must be chosen by the central bank so: The unemployment rate is equal to the natural rate $u = u_n$. The real policy interest rate is equal to the natural rate of interest r_n where r_n is defined as the policy rate where $Y_n = C(Y_n - T) + I(Y_n, r_n + x) + G$. The expected and actual rate of inflation π^e is equal to the anchored or target rate of inflation $\bar{\pi}$. This implies the nominal policy rate $i = r_n + \bar{\pi}$.

(a) If the level of expected inflation is formed so π^e equals $\bar{\pi}$, characterize the behavior of inflation in a medium-run equilibrium.

(b) Write the IS relation as $Y = C(Y - T) + I(Y, r + x) + G$. Suppose r_n is 2%. If x increases from 3 to 5%, how must the central bank change r_n to maintain the existing medium run equilibrium. Explain in words.

(c) Suppose G increases permanently. In what direction must the central bank change r to maintain the existing medium-run equilibrium? Explain in words.

(d) Suppose T decreases permanently. In what direction must the central bank change r to maintain the existing medium run equilibrium? Explain in words.

(e) Discuss: In the medium run, a fiscal expansion leads to an increase in the natural rate of interest.

3. **Chapter 9, Q4**

Begin in medium-run equilibrium where actual and expected inflation equals 2% in period t. Suppose there is an increase in consumer confidence in period $(t + 1)$.

Parts (a), (b) and (c) assume expected inflation in each period equals lagged inflation from the previous period. For example, in period $(t + 2)$, $\pi^e_{t+2} = \pi_{t+1}$ and in period $(t + 1)$, $\pi^e_{t+1} = \pi_t$.

(a) How does the IS curve shift from period t to period $(t + 1)$? What is the value of expected inflation in period t? How does the short-run equilibrium output and inflation rate in period $(t + 1)$ compare to the equilibrium output and inflation rate in period t if the central bank does not change the real policy rate from period to period $(t + 1)$?

(b) Now advance the economy to the period $(t + 2)$ equilibrium under the assumption that $\pi^e_{t+2} = \pi_{t+1}$ and consumer confidence remains high. If the central bank leaves the real policy rate unchanged will inflation be higher or lower in period $(t + 2)$ than in period $(t + 1)$?

(c) What do you conclude about the central bank policy of keeping the real policy rate unchanged in period $(t + 2)$? Is it sustainable?

Parts (d), (e) and (f) assume expected inflation remains equal to target inflation, so $\pi^e = \bar{\pi}$ in all periods.

(d) Consider the period $(t + 1)$ equilibrium given the assumption that $\pi^e = \bar{\pi}$. If the central bank leaves the real policy rate unchanged, how does inflation in period $(t + 1)$ compare to inflation in period t? Is output higher or lower in period $(t + 1)$ than in period t?

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(e) Consider the period $(t+2)$ equilibrium given the assumption that $\pi^e_{t+2} = \bar{\pi}$. If the central bank leaves the real policy rate unchanged, how does actual inflation in period $(t+2)$ compare to inflation in period $(t+1)$? Is output higher or lower in period $(t+2)$ than in period $(t+1)$?

(f) Explain why the policy choice to maintain the real policy rate at the original level in period $(t+1)$ is not a sustainable policy?

     Comparing the economic outcomes in parts (a), (b), and (c) to the economic outcomes in (d), (e), and (f)

(g) Compare the inflation, expected inflation and output outcomes in parts (a), (b), and (c) to that in parts (d), (e), and (f).

(h) Which assumption about expected inflation, do you think is more realistic. Discuss.