THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY

ECON 3123 Final Exam

Solutions and Grading Rubrics

Multiple Choice Questions Wrong answers ony earn 0 point.

1. (4 points) C. Note that by log approximation,

$$\frac{\Delta\epsilon}{\epsilon} \approx \frac{\Delta E}{E} + \frac{\Delta P}{P} - \frac{\Delta P^*}{P^*}.$$

The changes in the 5 options are -12%, 12%, 0, 3%, 4%. So we choose C.

2. (4 points) A. Assume that

$$C = c_0 + c_1 Y$$
$$I = b_0 + b_1 Y$$
$$IM = m_1 Y \epsilon$$
$$X = m_2 Y^*.$$

Then

$$Y = \frac{1}{1 - c_1 - b_1 + m_1}[c_0 + b_0 + G + m_2 Y^*].$$

When $m_1 \downarrow$, the multiplier increases. A is correct. Y^* has no effect on the multiplier. B is wrong. $MPS = 1 - c_1$. Increase in $1 - c_1$ will lower the multiplier. C is wrong.

3. (4 points) D. By the UIP condition and log approximation,

$$i = i^* - \pi_E^e,$$

where π_E^e is the expected yearly rate of depreciation. If the foriegn bond is still attractive, then $\pi_E^e < 2\%$. Otherwise an "arbitrage" will cause a loss.

4. (4 points) C. Consider the equilibrium domestic output:

$$Y = \frac{1}{1 - c_1 - b_1 + m_1}[c_0 + b_0 + G + m_2 Y^*].$$

When Y^* increases, Y tend to increase. A is possible. As Y increases, $C = c_0 + c_1 Y$ increases. B is possible. Increase in Y^* causes export to increase. This cannot make the domestic country's trade balance to worsen. C is impossible.

5. (4 points) C. $g_Y = g_A + g_N = g_{AN}$.

Question 6 (15 points) General grading rule: If the direction is flipped but the analysis makes sense on the opposite way, give roughly half grade.

(1) (5 points) Substitute the first equation into the second. We get the Phillips curve:

$$\pi_t = 2.6\% + \pi_t^e - 0.5u_t.$$

At equilibrium, $\pi_t = \pi_t^e$. Then $u_n = 5.2\%$.

Grading: 3 points for writing out the correct Phillips curve. 1 point for the equilibrium condition. 1 point for the result.

(2) (5 points) Note that $\pi_{t+1} = 5\% + 0.4\pi_t - 0.5u_{t+1}$. Substitute $\pi_t = 5\%$ and $u_{t+1} = 5.2\%$ into the equation. We have $\pi_{t+1} = 4.4\%$.

Grading: 3 points for writing out the correct equation. 2 point for the result. If steps are correct but the natural level of unemployment is wrong, 2 points.

(3) (5 points) Note that $\pi_{t+1} = 5\% + 0.4\pi_t - 0.5u_{t+1}$. Substitute $\pi_t = 5\%$ and $\pi_{t+1} = 4\%$ into the equation. We have $u_{t+1} = 6\%$.

Grading: 3 points for writing out the correct equation. 2 point for the result. This part is irrelevant from the previous two parts.

Question 7 (35 points) General grading rule: If the direction is flipped but the analysis makes sense on the opposite way, give roughly half grade.

(1) (5 points) Key points for graph grading:

- Downward-sloping IS curve. Flat LM curve **on the axis** due to ZLB. Upward-sloping PC curve.

- Axes labels should be (Y, i) and $(Y, \pi_t - \pi_{t-1})$.
- Matching the two point A's with the same Y.
- Notations for the coordinates.

Grading: Correct curves gain 2 points where 1 point is for ZLB LM curve. Correct labels and notations gain 2 points where using r or $\pi - \bar{\pi}$ or both loses 1 point. Graph matching gains 1 point. If the graph is essentially wrong, that is, for example, upward-sloping LM curve, 0 point.

(2) (10 points) Key points for graph grading:

- Downward-sloping WS curve. Flat PS curve.
- Axes labels should be $(u, W/P)$.
- The WS curve should shift downward.
- Notations for the coordinates.

Effect: The natural rate of unemployment u_n decreases. The real wage remains unchanged.

Grading: Correct curves gain 1 points. Correct labels and notations gain 3 point. Correct shift gains 2 point. Effect on natural rate of unemployment 2 points, on real wage 2 points.

(3) (10 points) Key points for graph grading:

- PC curve shifts to the right.
- Output still stays at the original level.
- The corresponding equilibirum point will have negative inflation change.

Effect: Since u_n decreases, Y_n will increase. There will be disinflation.

Grading: Correct shift gain 2 points. Correct labels and notations gain 2 point. Correct matching gains 2 point. Effect on natural level of output 2 points, on inflation 2 points.

(4) (10 points) Inflation decreases. Output remains unchanged. No policy, no change in output. The equilibrium point does not change so that $\pi_{t+2} - \pi_{t+1} < 0$ which causes continuous disinflation.

Grading: Correct direction 2 points each. Correct explanation 3 points each.

Question 8 (30 points) General grading rule: If the direction is flipped but the analysis makes sense on the opposite way, give roughly half grade.

(1) (5 points) Key points for graph grading:

- 45-degree line, ZZ_0, DD_0, NX_0.
- Correct slope comparison and intersection matching.
- Correct label of quantitative relationship.
- Labels. (Only deduction when great than or equal to 3 of them are missing/wrong.)

Grading: Correct curves with slopes earn 2 points. Correct correspondence earns 2 points. Labels earn 1 point.

(2) (10 points) Key points for graph grading:

- $ZZ_0 \uparrow$, $DD_0 \uparrow$, $NX_0 \uparrow$.
- ZZ_1, DD_1, and the 45-degree line intersect at the same point.
- This point corresponds to $Y_{nA} = Y'_{TB}$.

Policy mix: Lower real exchange rate. Increase government spending.

Explanation: A lower real exchange rate increases net export under the ML condition. A higher government spending increases domestic output.

Grading: Correct curves with shift earn 2 points. Correct intersection earn 1 points. Matching earns 1 point. Correct policy mix earns 1 point each. Correct explanation earns 2 points each, where the ML condition must be mentioned for 1 point.

(3) (15 points) Key points for graph grading:

- Downward-sloping $IS \rightarrow$, flat $LM \downarrow$, upward-sloping $UIP-$.
- Axes (Y, i), (E, i). Point (E^e, i^*).
- Correct and complete notations and labels.

Monetary policy: Conduct expansionary monetary policy. Lower the targeted interest rate. Increase money supply. By UIP, the nominal interest rate will decrease, which leads to a decrease in the real exchange rate when the price levels are fixed.

Consumption increases since Y increases.

Investment increases since both Y increases and underline$i$ decreases.

Net export decreases since there are more import leakage.

Grading: Correct curves with shift earn 2 points. Correct intersection earns 1 points. Correct labels 2 points where 1 point is for (E^e, i^*). Lower interest target / Expansionary monetary policy earns 2 points. Increase money supply earns 1 point. Correct direction 1 point each, correct explanation 1 point each with the decreasing i earns 1 more point.