Exercise I. True/False? Explain

1) Assume that the Marshall-Lerner condition holds and \( \frac{P}{P^*} = 1 \) so that \( \varepsilon = E \) (real and nominal exchange rates are the same). In the short run, in an open economy with flexible exchange rates and constant expectations about the future exchange rate (\( \bar{E}^e \)), an expansionary monetary policy has an ambiguous effect on the trade balance.

2) In an open economy, an increase in the foreign interest rate always shifts up the LM curve. Assume constant expectations of the exchange rate \( \bar{E}^e \).

3) Adopting a fixed exchange rate regime implies necessarily that the Central Bank gives up the monetary policy as a policy tool.

4) In the medium run, the choice of the exchange rate regime does not affect the equilibrium output level, but it does affect the equilibrium price level.

5) The AD curve in an open economy is unambiguously flatter than in a closed economy.

6) A group of countries is an optimal currency area if two conditions are both satisfied: the countries experience similar shocks and there is high factor mobility between them.

Exercise II. Open economy IS-LM

Consider the following open economy:
\[
\begin{align*}
C &= 215 + 0.3(Y - T) \\
I &= 100 + 0.2Y - 750r \\
IM &= 0.1Y\varepsilon + 100\varepsilon^2 \\
X &= 0.01Y^* - 110\varepsilon \\
T &= 50 \\
G &= 50 \\
Y^* &= 10000 \\
M^s &= 500 \\
M^d &= PY - 2500i \\
i^* &= 4\%
\end{align*}
\]

Suppose that \( P = P^* = 1 \) and there is no inflation \( \pi^* = \pi = 0 \).
Assume that the country has a fixed exchange rate regime.
1) Is the Marshall-Lerner satisfied in this economy?
2) Calculate the equilibrium \((Y, i, \varepsilon, TB)\).
3) Assume that \(G\) increases by 55. What does the Central Bank have to do in order to keep the exchange rate fixed?
4) How does the trade balance change after the expansionary fiscal policy? Comment.

**Exercise III. Open-Economy AS-AD**

Consider the following open economy:
\[
C = 375 + 0.3(Y - T) \\
I = 210 + 0.2Y - 750r \\
IM = 0.1Y\varepsilon + 100\varepsilon^2 \\
X = 0.01Y^* - 110\varepsilon \\
T = 50 \\
G = 50 \\
Y^* = 10000 \\
M^* = 500 \\
M^d = PY - 2500i
\]

\(W = P^c(z - 10u)\) where \(z = 10.1\) is a parameter that represents the workers’ bargaining power and \(u\) is the unemployment rate.

The following is the price setting relation \(P = (1 + \mu)W\) where \(\mu = 0.25\) is the markup.

The production function is: \(Y = N\)

The labor force is \(L = 10000\).

1) Derive the AS relation in this open economy.
2) Derive the AD relation assuming that the economy has a flexible exchange rate. Express \(Y\) as a function of \(P_t, P^e_{t+1}\), and \(\varepsilon_t\), using the approximation \(r = i - \pi^e\).
3) Calculate the medium run equilibrium \((Y, P, E)\). Assume that in the medium run trade is balanced, \(P^* = 1\), and \(P^e_{t+1} = P^e_t = P\).
4) Now assume that the country has a fixed exchange rate regime with \(E = \overline{E}\). Foreign countries have \(i^* = 0.36\), \(P^* = 1\), and \(\pi^* = 0\). Derive the AD relation.
5) Assume again \(P^e_{t+1} = P^e_t = P\) and calculate the medium run equilibrium \((Y, P, E)\).
   Can you pin down a unique value for \(E\)? Compare with part 3). What is the value of the Trade Balance in the medium run?
6) Assume that the economy is in a short run equilibrium with \(Y = 500\). Describe with words and graphs the dynamics to the medium run equilibrium under the two scenarios (flexible exchange rate and fixed exchange rate).