Final Exam

IMPORTANT: read the following notes

• You may not use calculators, notes, or aids of any kind.

• Note the points each question is worth and plan your time accordingly. The total number of points possible is 100, and the number of points per question is indicated in parentheses.

• Explain your answers carefully in clear English. We are particularly interested in whether you understand the underlying economic intuition. Supplement what you say with liberal use of diagrams. Use the diagrams to prove or illustrate what you say.

• Write neatly and label all diagrams. We cannot give you credit if we cannot read your answer.
Following are the equations of the model we developed in class:

Money Market Clearing : \( \frac{M}{P} = L(R, Y) \)

Uncovered Interest Parity : \( R = R^* + \frac{E_e - E}{E} + \rho \left( \frac{B^d}{B} \right) \)

Goods Market Clearing : \( Y = C(Y - T) + I + G + CA(q, Y - T) \)

Here, \( L \) (‘money demand’) is decreasing in its first argument and increasing in its second argument. Also, \( \rho \) is a risk premium which is increasing in its argument, \( B \) is the total stock of interest-bearing assets held by the public and \( B^d \) is domestic component of that stock. Finally, assume that \( CA \) (the current account) is increasing in its first argument and decreasing in its second argument. Also, \( q \) is relative price of foreign to domestic goods.

The \( DD \) curve describes the \( E, Y \) combinations where the goods market is in equilibrium. The \( AA \) curve describes the \( E, Y \) combinations where the money market clearing and UIP equations are satisfied.

1. (5) Explain why it is hard to say, without studying the data, whether the current account is increasing or decreasing in the real exchange rate. What assumptions on the components of the current account justify our assumption that the current account is in fact increasing in \( q \)? Explain why the real exchange rate is measured by \( q = E \frac{P^*}{P} \), where \( P^* \) is the foreign price level and \( P \) is the domestic price level.

2. (25) Suppose that a long run equilibrium is interrupted by a sudden rise in \( P \) and \( E_e \) by 5 percent each. This situation could occur because for some reason people expect a general rise in prices, and this leads them to post higher actual prices. Consider two scenarios:

(a) In the first scenario, the central bank responds by raising the money supply immediately and permanently by 5 percent. Do the analysis of short and long-run equilibrium for this case. In writing your answer, first explain the impact of the shock to \( P \) and \( E_e \) on the \( AA \) and \( DD \) curves that summarize the situation in the short run. Then, work out mechanically how output, the interest rate and the price level evolve over time. Finally, discuss the intuition for your answers.
(b) In the second scenario, the central bank keeps the money supply fixed at a constant level. Redo your answer to part (a).

(c) It is said that the situation in this question is less likely if the central bank has a reputation for not caring about the level of output and employment. Explain.

3. (10) Suppose investors get nervous about a country’s financial assets, and the country’s risk premium, \( \rho \), increases suddenly, but temporarily. What is likely to happen to output and the exchange rate, assuming the money supply remains constant? What can the central bank do to the money supply to prevent output from changing? (Here, you can assume that \( \rho \) goes from one constant value to a higher one in the short run.)

4. (5) Explain why a country with a bad banking system is more likely to have a currency crisis.

5. (20) The country of Lapan started in a long-run equilibrium in which the interest rate is positive and the money stock constant. In an effort to stimulate the economy, the government increases the money supply, \( M \), to the point where the nominal rate of interest is zero. The central bank now considers the option of further increasing the money supply.

(a) Suppose the public believes that the increase in the money supply is only temporary. Perhaps they believe this because they think the leadership of the central bank is completely committed to maintaining the old price level. Explain carefully what the effect, through time, of the monetary action is on all the variables. Suppose that \( \rho = 0 \).

(b) Redo your answer to (a), under the assumption that \( \rho \) is an increasing function of \( B^d/B \).

(c) Redo your answer to (a), but now imagine that the leadership structure of the central bank is replaced by people who are known not to have the same commitment to tight money. The new leadership also increases \( M \), but now everyone expects this to be permanent. Explain how this will impact on the economy.
6. (15) Suppose the foreign economy increases $R^*$ temporarily and the domestic economy is on a fixed exchange rate. Explain what happens in the short and long run to $R, Y, q, E, CA, M$? Do so both for the case when desired investment is a function of $R$ and when desired investment is a decreasing function of $R$.

7. (15) Suppose there is a temporary bad shock to aggregate demand. Suppose the central bank is committed to a fixed exchange rate. Suppose investment is a decreasing function of $R$.

(a) Suppose $\rho = 0$. What happens to $R, Y, q, E, CA, M$?

(b) Suppose $\rho$ is an increasing function of $B^d/B$, and that $I$ is a decreasing function of $R$. Describe a set of operations the central bank can do to defend the exchange rate and prevent output from falling.

8. (5) Consider Suppose portfolio managers expect the currency to depreciate by 10% in the next month. By how much does the domestic interest rate have to be increased to prevent them from trying to sell their domestic financial assets? Express the magnitude of the required increase in terms of annualized rate of return. Explain carefully the basis for your answer.