ECOS3010: Tutorial 6 (Answer Key)

Question 1-5. Answer True, False or Uncertain. Briefly explain your answer.

1. The exchange rate is determined in the foreign exchange rate market. So the government cannot impose a fixed exchange rate at which one currency can be exchanged for another.

False. Without foreign currency controls, the exchange rate is indeterminate. In our two-country OLG model, one world money market clearing condition cannot determine the values of two monies. Therefore, any exchange rate is possible in equilibrium. In this case, the government can impose a fixed exchange rate as long as the government can defend the fixed exchange rate through either cooperative stabilization or unilateral defense.

2. While maintaining a fixed exchange rate through cooperative stabilization, countries cannot choose its preferred level of seigniorage.

Uncertain. If two countries choose to fix the exchange rate through cooperative stabilization, the fixed exchange rate and the world money market clearing condition will determine the values of two monies. When one country chooses to use money creation to generate seigniorage revenue, the values of both monies will decrease and citizens of both countries will be taxed. Countries may still choose its level of seigniorage, but countries need to agree to limit the growth rate of money supply. Such coordination is important in maintaining the fixed exchange rate through cooperative stabilization.

(Note that if a country imposes foreign currency controls and wants to fix the exchange rate, then it is not possible to both fix the exchange rate and choose a preferred level of seigniorage. In this question, there is no foreign currency controls in effect.)

3. Suppose that country a fixes its exchange rate with country b through a unilateral defense. Whenever people turn in country a currency to country a government for country b currency, country a essentially transfer resources to country b.

True. Whenever people turn in country a currency for country b currency, country a government needs to tax its own citizens to purchase country b currency to meet the demand for country b currency. The unilateral defense implies that the stock of country a currency will decrease while the stock of country b currency stays the same. As a result, the values of both currencies will increase. Citizens of country b benefit because their consumption will increase, but citizens of country a are worse off because their after-tax consumption is lower. Overall, country a citizens effectively make a transfer to country b citizens.

4. The main cause of the Asian Financial Crisis was the speculative attack on the Thai baht.

False. The Asian Financial Crisis started from the speculative attack on Thai baht, but this is the symptom rather than the cause of the Asian Financial Crisis. The main reason that triggered the Asian Financial Crisis is the investors' concern about the economic growth in the south east countries. Prior to the crisis, all these countries grew very fast and attracted a huge amount of capital inflow. Due to the inefficient use of the capital inflow and the decline of competitiveness of these countries' products in the world market, investors began to worry about the values of these countries' currencies, which eventually triggered the speculative attack on Thai baht.

5. The optimal international monetary system is to form a currency union and adopt a single currency for all countries.

Uncertain. To reduce the costs of money changing and facilitate international trade, adopting a single currency for all countries might be optimal. However, since different countries have different economic conditions, adopting a single currency might not be suit-

able to all countries. In general, it is more beneficial for countries with similar economic backgrounds to adopt a single currency. For example, it might be optimal for the European countries to adopt a single currency and relegate monetary policy to a single central bank. But for small countries like Panama or Ecuador, it is optimal for them to simply dollarize. So there is no single optimal international monetary system that suits all countries.

6. Consider two identical countries in our standard OLG model. In each country, the population of every generation is 100, and each young person wants money balances worth 10 goods. There are \$400 of country a money and £100 of country b money. Country b unilaterally fixes its exchange rate with country a at $\bar{e} = 1$. There are no foreign currency controls, and the monetary authorities do not cooperate. Country b is willing to raise up to 500 goods in taxes on their old citizens to defend the exchange rate.

(a) What is the value in goods of a dollar? Of a pound?

From the world money market clearing condition

$$\bar{e}v_t^b M_t^a + v_t^b M_t^b = N^a\left(y^a - c_1^a\right) + N^b(y^b - c_1^b),$$

we can derive the value of country b money as

$$v_t^b = \frac{N^a\left(y^a - c_1^a\right) + N^b(y^b - c_1^b)}{\bar{e}M_t^a + M_t^b} = \frac{100 \times 10 + 100 \times 10}{1 \times 400 + 100} = 4.$$

From the definition of the exchange rate,

$$v_t^a = \bar{e}v_t^b = 1 \times 4 = 4.$$

(b) Find the value of a dollar if people abandon use of the pound.

If people abandon use of the pound, people will exchange £100 for \$100. Country b government needs to raise resources to purchase \$100 to meet the demand for dollar. It implies that $M_t^b = 0$ and $M_t^a = 400$. The world money market clearing condition becomes

$$v_t^a M_t^a = N^a\left(y^a - c_1^a\right) + N^b(y^b - c_1^b).$$

It follows that

$$v_t^a = \frac{N^a\left(y^a - c_1^a\right) + N^b(y^b - c_1^b)}{M_t^a} = \frac{2000}{400} = 5.$$

(c) To be free from a speculative attack, a country's commitment to defend the exchange rate must be sufficient to purchase all of its currency if it is offered for foreign exchange. Is country b's commitment sufficient to defend its exchange rate from a speculative attack? (Hint: in answering, you will need to use your answers to part (b).)

If there is a speculative attack on country b money – the pound, the maximum amount of pound that will be exchanged for dollar is £100. The government of country b needs to raise resources to purchase \$100. When all people turn in pound for dollar, \$100 is worth of $100v_t^a = 500$ goods. That is, country b government needs to tax 500 goods to purchase \$100 to meet the demand for dollar. Since country b government is willing to tax 500 goods from its citizen, country b government can successfully defend its fixed exchange rate.

7. Late in the afternoon of 1 July 1997, the Thai baht exchange rate was 25 baht per U.S. dollar. Twenty-four hours later, late in the afternoon of 2 July 1997, the exchange rate was 28.8 baht per U.S. dollar.

(a) Has the baht appreciated or depreciated? Has the U.S. dollar appreciated or depre-

ciated?

The baht has depreciated. The U.S. dollar has appreciated.

(b) Let's imagine a (typical?) day in the life of George Soros. Suppose that it is late in the afternoon 1 July 1997 and some of his wealth is held in the form of baht currency. Imagine that on 1 July 1997 he sells all the baht he owns (25 billion baht). How many U.S. dollars will he receive? Imagine that 24 hours later, i.e., late in the afternoon of 2 July 1997, he then sells that amount of U.S. dollars and buys baht. How many baht will he receive? Measured in bahts, has he gained or lost by these transactions? How much?

On 1 July he will he receive 1 billion U.S. dollar. On 2 July he will receive 28.8 billion baht. He has gained 3.8 billion baht.

(c) Maybe Mr. Soros is not all that interested in buying houses in Bangkok (i.e., holding his wealth in Thai currency or other assets) and is more concerned about how many houses he can buy in Manhattan (i.e., he is concerned about his wealth in U.S. dollars). Imagine that late in the afternoon on 1 July 1997 he takes 1 billion of his many billions of U.S. dollars and buys baht. How many baht will he receive? Imagine that 24 hours later, i.e., late in the afternoon of 2 July 1997, he then sells that amount of baht and buys U.S. dollars. How many U.S. dollars will he receive? Measured in U.S. dollars, has he gained or lost by these transactions? How much?

On 1 July he will receive 25 billion baht. On 2 July he will receive 0.868056 billion U.S. dollar. He has lost 0.131944 billion U.S. dollar. Clearly he would not behave this way.

(d) Maybe (for obvious. reasons), it would not be a smart idea for Mr. Soros to proceed along the lines set out in (c). So let's consider an alternative. We continue on the assumption that he is not all that interested in buying houses in Bangkok and is more concerned about his wealth in U.S. dollars. Imagine that late in the afternoon on 1 July 1997 he borrows 25 billion baht from a bank in Thailand and promises to pay them back their 25 billion baht in 24 hours time. If he immediately (i.e., late in the afternoon of the 1st of July, immediately after the Thai bank has deposited the baht in his account) buys U.S. dollars, how many U.S. dollars will he receive? Now, lets move on 24 hours to late in the afternoon of 2 July 1998. Mr. Soros has to pay back the loan this afternoon – a loan denominated in baht. In other words, on 2 July he has to obtain 25 billion baht and transfer that amount of baht to the bank in Thailand. How many U.S. dollars will he have to sell in order to raise that amount of baht? Measured in U.S. dollars, has he gained or lost by these transactions? How much?

On 1 July he will he receive 1 billion U.S. dollar. On 2 July he will need 0.868056 billion U.S. dollar to repay the loan. He has gained 0.131944 billion U.S. dollar.