CONFIDENTIAL
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question paper

Student Number: _____
Student Name:_____

YORK UNIVERSITY

Atkinson College

Department of Economics

ECON 3580 – International Economics II

Suggested Solutions

Midterm Examination

May 26, 2008

Instructor: Sharif F. Khan

Time Limit: 2 Hours

Instructions:

Important! Read the instructions carefully before you start your exam.

Mark your selections for **PART A** on the multiple choice answer card in PENCIL. If you make changes, be sure to erase completely. Please record your name and student number on the multiple choice answer card. Hand in the card inside your answer booklet.

Write your answers for **Part B** and **Part C** in the booklet provided. Please record your name and student number on the booklet. Hand in the card for Part A inside the answer booklet.

Marking Scheme:

Part A [40 marks] TWENTY multiple-choice questions – 2 marks each

Part B [20 marks] TWO of Three True/ False/Uncertain questions – 10 marks each

Part C [20 marks] ONE problem solving question

Calculators:

Non-programmable calculators are permitted

Part B [20 marks]

Answer two of the following three questions in the answer booklet.

For the questions B1 and B2, *explain why the following statement is True, False, or Uncertain according to economic principles. Use diagrams and/or numerical examples where appropriate. Unsupported answers will receive no marks. It is the explanation that is important.*

B1.

In the short-run, under the fixed-price monetary approach, a permanent increase in Canadian nominal money supply results in overshooting of Canadian dollar against euro. [Diagrams Required]

True

In the short-run, under the fixed-price monetary approach, a permanent increase in Canadian nominal money supply results in overshooting of Canadian dollar against euro.

Figure 1 shows both the short-run (Figure 1a) and long-run (Figure 1b) effects of a permanent increase in Canadian nominal money supply. Figure 1a assumes Canadian price level is initially given at P^1_{CAN}. An increase in the nominal money supply from M^1_{CAN} to M^2_{CAN} therefore raises the real money supply from M^1_{CAN}/P^1_{CAN} to M^2_{CAN}/P^1_{CAN} in the short run, lowering the interest rate from $R^1_{\$}$ (point 1) to $R^2_{\$}$ (point 2). As a result, the vertical schedule, which measures the dollar return on dollar deposits, shifts leftward in the top part of panel (a). Because the U.S. money supply change is permanent, people expect a long-run increase in all dollar prices, including the exchange rate, which is the dollar price of euros. A rise in the expected future dollar/euro exchange rate (from) raises the expected dollar return on euro deposits; it thus shifts the downward-sloping schedule, which measures the expected dollar return on euro deposits, in the top part of Figure 1a to the right. The dollar depreciates against the euro, moving from an exchange rate of $E^1_{\$/€}$ (point $1'$) to $E^2_{\$/€}$ (point $2'$).

Figure 1b shows how the interest rate and exchange rate behave as the price level rises during the economy's adjustment to its long-run equilibrium. The price level begins to rise from the initially given level P^1_{CAN}, eventually reaching P^2_{CAN}. Because the long-run increase in the price level must be proportional to the increase in the money supply, the final real money supply, M^2_{CAN}/P^2_{CAN}, is shown equal to the initial real money supply, M^1_{CAN}/P^1_{CAN}. Since output is assumed to be fixed at the given level and the real money supply has returned to its original level, the equilibrium interest rate must again equal $R^1_{\$}$

in the long run (point 4). The interest rate therefore rises from $R_{\$}^{2}$ (point 2) to $R_{\$}^{1}$ (point 4) as the price level rises from P_{CAN}^{1} to P_{CAN}^{2}. In this process of adjustment the dollar gradually appreciates against the euro as the foreign exchange market moves to its long-run position at $4'$ along the down-ward sloping schedule. The market's path is just the path traced out by the vertical dollar interest schedule as it moves rightward because of the price level's gradual rise. In the long run (point $4'$) the equilibrium exchange rate, $E^{3}_{\$/€}$, is higher than at the original equilibrium, point $1'$. Like the price level, in the long run, the dollar/euro exchange rate has risen in proportion to the increase in the money supply. But the long-run equilibrium exchange rate, $E^{3}_{\$/€}$ (point $4'$), is lower than the short-run equilibrium exchange rate, $E^{2}_{\$/€}$ (point $2'$). In other words, in its initial depreciation after a money supply rise, the exchange rate jumps from $E^{1}_{\$/€}$ to $E^{2}_{\$/€}$, a depreciation greater than its long-run depreciation from $E^{1}_{\$/€}$ to $E^{2}_{\$/€}$. The exchange rate is said to overshoot when its immediate response to a disturbance is greater than its long-run response.

In this model, overshooting is a direct consequence of the short-run rigidity of the price level. In a hypothetical world where the price level could adjust immediately to its new long-run level after a money apply increase, the dollar interest would not fall because prices would adjust immediately and prevent the real money supply from rising. Thus, there would be no need for overshooting to maintain equilibrium in the foreign exchange market. The exchange rate would maintain equilibrium simply by jumping to its new long-run level right away.

B2.

In the long-run, under the flexible-price monetary approach, a permanent increase in the future rate of Canadian nominal money supply growth leads to a decrease in Canadian interest rates and the price level, and results in an appreciation of Canadian dollar against euro. [Diagrams Required]

False

In the long-run, under the flexible-price monetary approach, a permanent increase in the growth rate of Canadian nominal money supply leads to an increase in Canadian interest rates and the price level, and results in a depreciation of Canadian dollar against euro. [Diagrams Required]

See Appendix to Chapter 15 in the textbook (7^{th} or 8^{th} ed.) for the explanation and diagrams.

B3.

1) Explain how each of the following transactions would enter the Canadian balance of payment accounts. Discuss only transactions described. Do not be concerned with possible offsetting transactions. [5 marks]

(i) A Canadian company borrows from a U.S. bank.
(ii) A Canadian lumber manufacturer sells lumbers to a U.S. firm.

(i) Increase in foreign owned assets (in this case, U.S. owned) held in Canada (capital inflows): credit (+) entry in financial account.
(ii) Export of merchandise: credit (+) entry in current account.

2) For each transaction described in part (a) that by itself changes the sum of the Canadian current account balance, financial account balance and capital account balance, give an example of an offsetting transaction that would leave the sum of these three balances unchanged. Explain how the offsetting transactions would enter the Canadian balance of payment accounts. [5 marks]

There are many possible answers; an example for each is given here.

(i) That Canadian company is buying computers from a U.S. firm: Import of merchandise; debit (–) entry in current account.
(ii) That Canadian lumber manufacturer is depositing the export earnings into a U.S. bank: increase in Canadian assets held abroad (capital outflows); debit (-) entry in financial account.

Part C Problem Solving Questions [20 marks]

Answer the following question in the answer booklet.

Read each part of the question very carefully. Show all the steps of your calculations to get full marks.

C1.

Use the asset approach to exchange rate determination discussed in class to answer the following questions. The interest rate on euro denominated assets maturing in one year is 11% and the interest rate on comparable Canadian dollar denominated assets is 6%.

I. Consider two possible expectations for the direct spot exchange rate between the Canadian dollar and the euro (Canadian dollars per euro) in one year: (1) the spot rate will fall by 10 Canadian cents or (2) the spot rate will rise by 6 Canadian cents (note that these changes are in absolute levels, *not* in percentage terms). Determine the current equilibrium spot rate under each scenario. Explain which expectation for the future spot rate makes sense, justify your answer, and provide economic intuition for your result. [8 marks]

Consider Europe as a foreign country and Canada as a home country. Recall that uncovered interest parity (UIRP) can be written as follows:

$$R_{\$} = R_{euro} + \frac{E^{e}_{\$/euro} - E_{\$/euro}}{E_{\$/euro}}$$

Under the first scenario for expectations we have $E^{e}_{\$/euro} - E_{\$/euro} = -0.10$. Substituting this into the UIRP equation gives

$$R_{\$} = R_{euro} + \frac{-0.10}{E_{\$/euro}} \qquad (1)$$

Substituting in the interest rates given in the problem into this equation gives

$$0.06 = 0.11 + \frac{-0.10}{E_{\$/euro}}$$

$$\Rightarrow -0.05 = \frac{-0.10}{E_{\$/euro}}$$

$$\Rightarrow E_{\$/euro} = \frac{0.10}{0.05}.$$

So, $E_{CDN\$/euro} = 2.5$

Under the second scenario for expectations we have $E^{e}_{CDN\$/US\$} - E_{CDN\$/US\$} = 0.06$.
Substituting this into the UIRP equation gives

$$R_{CDN\$} = R_{US\$} + \frac{0.06}{E_{CDN\$/US\$}}$$

Substituting in the interest rates given in the problem into this equation gives

$$0.06 = 0.11 + \frac{0.06}{E_{\$/euro}}$$

$$\Rightarrow -0.05 = \frac{0.06}{E_{\$/euro}}$$

$$\Rightarrow E_{\$/euro} = -\frac{0.06}{0.05}$$

So, $E_{CDN\$/euro} = -1.2$

Since exchange rates must be positive, only the first scenario for expectations makes sense. The economic reason is that since the foreign (Europe) interest rate is above the home (Canada) interest rate, investors would be willing to invest in the home asset (which is paying the lower rate of return) *only* if they expect the home currency to appreciate in the
future. Hence, the only expectations which are consistent with foreign interest rates above home interest rates is a belief that the future spot rate will be below the current spot rate, that is $E^{e} < E$. This is consistent with the first scenario but not the second.

II. Using the expectation scenario from part (A) that makes sense, determine the equilibrium spot rate when the European interest rate decreases to 10%. Determine whether the Canadian dollar appreciated or depreciated in response to this change and provide economic intuition for your finding. Show the initial *and* new equilibrium current spot rates in a diagram. [8 marks]

Substituting $R_{euro} = 0.10$ and $R_{\$} = 0.06$ into equation (1) above gives us the new equilibrium spot rate.

$$0.06 = 0.10 + \frac{-0.10}{E_{\$/euro}}$$

$$\Rightarrow -0.04 = \frac{-0.10}{E_{\$/euro}}$$

$$\Rightarrow E_{\$/euro} = \frac{0.10}{0.04}$$

$$\Rightarrow E_{\$/euro} = 2.5$$

So, the new equilibrium spot rate is 2.5. It is above the spot rate of 2 calculated in part (A). Hence a decrease in the European interest rate led to a depreciation of the Canadian dollar. At first glance, this seems inconsistent with the comparative statics exercise we did in class that stated that *ceteris paribus*, a decrease in R_{euro} should lead to a fall in $E_{\$/euro}$, that is an appreciation of the home currency. So, why do we get the opposite result in this example? In this exercise, we are *not* holding expectations of the future spot rate constant. So, this is not a ceteris paribus exercise. The intuition, then, is that a fall in the European interest rate decreases the spread between home and foreign interest rates, making the home investment more attractive. Thus, investors will be willing to continue to hold the foreign asset only if they believe there will be a smaller appreciation of the home currency. Given the way we have formulated expectations here, the only way they could believe there will be a smaller appreciation in the future is if the current spot rate increases. Thus the result will be a rise in the current spot rate or a current depreciation of the home currency.

Figure 2 illustrates the foreign exchange market showing both the initial and new equilibrium current spot rates. Note that here the curve which shows the expected return on euro deposits in terms of Canadian dollars, $\left(R_{euro} + \frac{-0.10}{E_{\$/euro}} \right)$, is upward sloping because for a given level of European interest rate, R_{euro}, the relationship between $\left(R_{euro} + \frac{-0.10}{E_{\$/euro}} \right)$ and the exchange rate, $E_{\$/euro}$, is positive. A decrease in the European interest rate causes a shift in the expected return on euro deposits curve to the left and upward, resulting into an increase in the exchange rate from 2 Canadian dollars per euro to 2.5 Canadian dollars per euro.

III. Suppose interest rates are as given initially (11% in Europe and 6% in Canada) and the current spot rate equals 2.25 Canadian dollars per euro. Calculate the forward discount or forward premium. [4 marks]

We first calculate the forward rate, $F_{CDN\$/US\$}$, using covered interest parity (CIRP):

$$R_{CDN\$} = R_{US\$} + \frac{F_{CDN\$/US\$} - E_{CDN\$/US\$}}{E_{CDN\$/US\$}}$$

$$0.06 = 0.11 + \frac{F_{CDN\$/US\$} - 2.25}{2.25}$$

$$\Rightarrow -0.05 = \frac{F_{CDN\$/US\$} - 2.25}{2.25}$$

$$\Rightarrow -0.1125 = F_{CDN\$/US\$} - 2.25$$

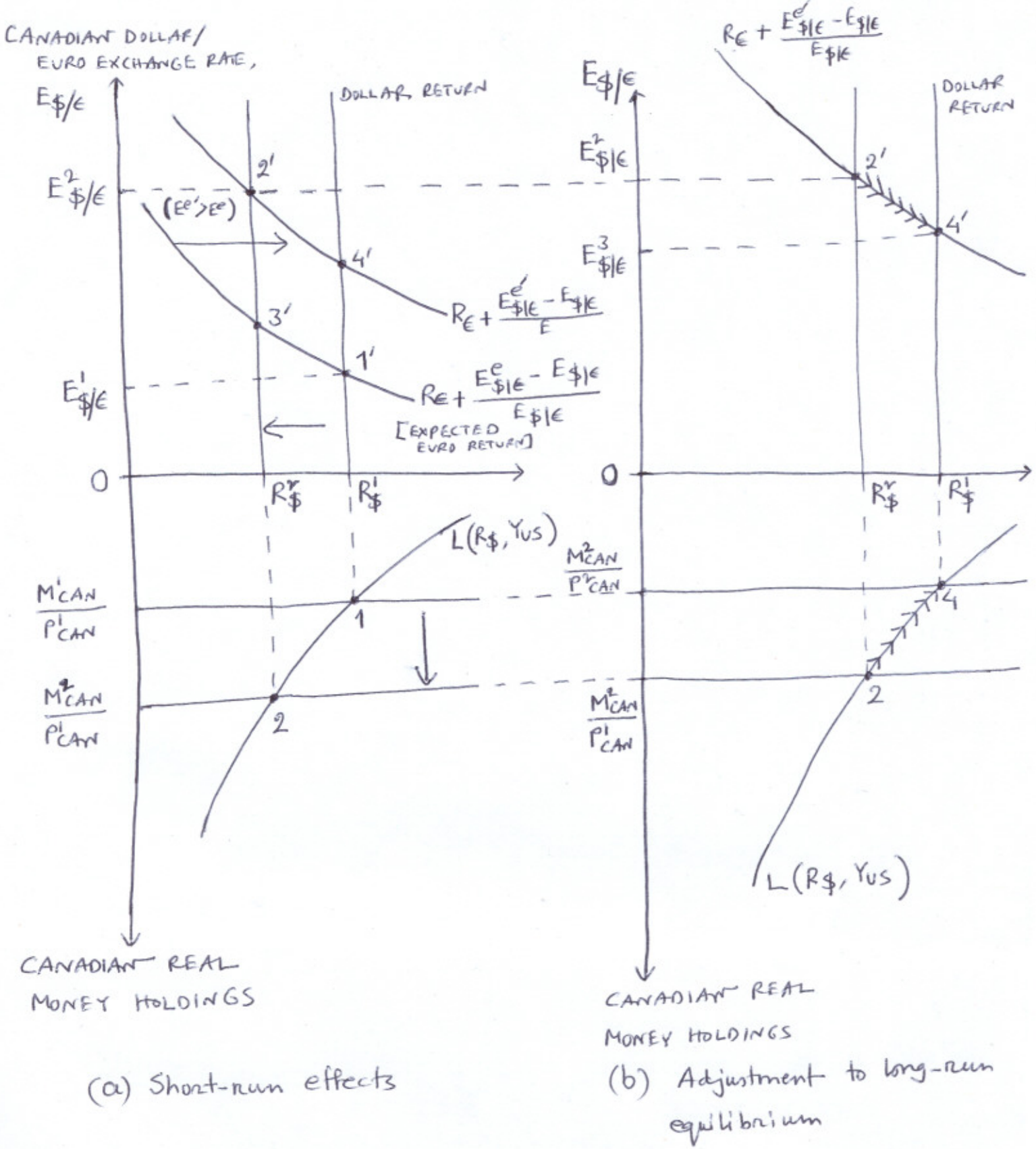
$$\Rightarrow F_{CDN\$/US\$} = 2.14$$

We calculate the forward discount rate as follows:

$$FD = \left(\frac{F_{CDN\$/US\$} - E_{CDN\$/US\$}}{E_{CDN\$/US\$}} \right) \times 100 = \left(\frac{2.14 - 2.25}{2.25} \right) \times 100 = -4.89\% .$$

Since the forward rate (2.14) is below the current spot rate (2.25), euro is said to be at forward discount of 4.89% against Canadian dollar.

FIGURE 1: EFFECTS OF A PERMANENT INCREASE IN CANADIAN MONEY SUPPLY



(a) Short-run effects

(b) Adjustment to long-run equilibrium

FIGURE-2 : EFFECTS OF A DECREASE IN EUROPEAN INTEREST RATE