

**PRELIMINARY EXAMINATION FOR THE Ph.D. DEGREE**

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Instructions: Answer any 4 of the following 6 questions.

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**Question 1: Adjustment Dynamics**

Consider the log-linear Dornbusch overshooting model discussed in class.

price adjustment  $(dp/dt) = a [e + p^* - p]$ ,  
money market equilibrium,  $m - p = b - c r + f y$   
perfect capital mobility,  $r = r^* + (de/dt)$

$p$  = log of price level

$p^*$  = log of foreign price level

$e$  = log of exchange rate

$(dx/dt)$  = rate of change in  $x$ , where  $x$  is in log form, and  $d$  is the calculus differentiation symbol

$m$  = log of money supply

$r$  = domestic interest rate

$r^*$  = foreign interest rate

$a, b, c, f$  are positive coefficients

- Show graphically the impact of an unanticipated permanent increase in  $r^*$
- Show analytically (i.e. solve algebraically) the size of the jump in the exchange rate that would occur in the case of an unanticipated permanent increase in  $r^*$
- Show graphically the impact of a permanent increase in  $r^*$  that is anticipated to occur three weeks from now

Please explain briefly the reasons behind the adjustment process.

**Question 2: Choice of Exchange Rate Regime**

Show graphically which exchange rate regime would be preferred for output stability purposes when an economy faces

- fluctuations in money demand
- fluctuations in export
- fluctuations in foreign capital inflows

(Hint: For each type of shock, show in one graph, the changes in output under different regimes each shock. This will allow you to compare the size of output deviation under each exchange rate regime for a particular shock.)

### **Question 3: The Gold Standard and the Bretton Woods Adjustable Peg**

- Explain the automaticity and mutuality features of the gold standard.
- What are some of the policies that can be followed by governments that would annihilate these automaticity and mutuality features? Why weren't these policies observed frequently during the gold standard period?
- Give three reasons why the Bretton Woods system ended in 1973?
- What were the arguments of Milton Friedman in his work, "The Case for Flexible Exchange Rates" and which one is the most correct one analytically?

### **Question 4: International Comovement**

Suppose a two-country endowment world economy under uncertainty, with a single tradable good ( $T$ ) and a single nontradable good ( $N$ ). There are shocks in each country to the endowment of each good ( $\varepsilon_T, \varepsilon_N$ ), as well as to preferences for the nontraded good ( $\tau$ ). The representative consumer of each country is infinitely lived, discounting at rate  $\beta$ . International asset trade is limited to a one-period real noncontingent bond ( $B$ ) that pays off in units of the tradable good at rate  $r$ . The relative price of nontraded goods (traded goods needed to buy a nontraded good) is denoted  $p$ . There is no investment or government spending.

Here are the preferences of the representative consumer in period  $t$ :

$$U(C_{T,t}, C_{N,t}) = \frac{\sigma-1}{\sigma} \left( C_{T,t}^{\frac{\phi-1}{\phi}} + (\tau_t C_{N,t})^{\frac{\phi-1}{\phi}} \right)^{\frac{\sigma}{\sigma-1}}$$

Here are the endowment processes for the home country:

$$(Y_{T,t} - \bar{Y}_T) = \rho(Y_{T,t-1} - \bar{Y}_T) + \varepsilon_{T,t}$$

$$(Y_{N,t} - \bar{Y}_N) = \rho(Y_{N,t-1} - \bar{Y}_N) + \varepsilon_{N,t}$$

$\varepsilon_{T,t}$ ,  $\varepsilon_{N,t}$ ,  $\tau_t$  and the foreign counterparts all are iid, with no correlation

- Set up the intertemporal optimization problem. Derive first order conditions characterizing the trade-off between the two goods, and the trade-off between the nontraded good in different periods. Interpret these conditions. What is the specific interpretation of the shock  $\tau$ , and of the parameters  $\sigma$  and  $\phi$ ?

- b) Explain in a sentence or two what the consumption correlation puzzle is. Explain briefly ALL of the ways that the model above could resolve the consumption correlation puzzle, and what general parameter values are needed for each.

### **Question 5: Real Exchange Rate Puzzles**

In 3-4 paragraphs discuss the ability of the New Open Economy Macroeconomics to explain real exchange rate volatility and persistence. Do you agree with the Rose critique that macroeconomics is unhelpful in understanding the exchange rate?

### **Question 6: Parity Conditions**

Assume the following conditions hold in the foreign exchange market between the US dollar and the euro: uncovered interest rate parity, covered interest rate parity, purchasing power parity. And suppose the Fisher relation holds, stating that

$$(1 + R_{euro,t}) = (1 + r_{euro,t}) \frac{P_{europe,t+1}}{P_{europe,t}}$$

where  $R_{euro,t}$  is the nominal net rate of return on an asset

denominated in euros,  $r_{euro,t}$  is the ex-ante real net interest rate, and  $P_{europe,t}$  is the CPI price level in the eurozone.

Suppose you read the following in the newspaper:

$$R_{euro,t} = 10\%, R_{\$,t} = 20\%$$

The forward exchange rate between euros and dollars for delivery in 1 year is:  $f_{\$/euro} = 1.1$

The expected inflation rate in the US during the next year is 12% ( $P_{US,t+1}/P_{US,t} = 1.12$ )

- a) Compute the values of the following:
- i) The current equilibrium spot exchange rate between the dollar and euro, and the market expectation for this exchange rate one year from now. Explain why the market expects the value of the exchange rate to move in this direction.
  - ii) The CPI-based real exchange rate.
  - iii) Who has the higher ex-ante real interest rate?
- b) In a couple paragraphs, describe the results in the empirical literature testing uncovered and covered interest rate parity conditions.