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#### **International Macroeconomics**

Nova SBE – Spring 2025 Miguel Lebre de Freitas, Tomás Falua Duarte Final Exam 27/05/2025 – Duration: 2h00

### I (4.5)

Define *three* of the following concepts (3-5 lines each):

i. Carry Trade

ii. Liquidity Trap

iii. Impossible Trinity

iv. Fear of Floating

v. Currency Union

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## IV (2)

In each question, choose one (correct answer: +0.5; wrong answer: -0.125):

- 1. When the covered interest rate parity holds and the uncovered interest rate parity does not hold exactly, this might be because: (i) domestic and foreign bonds are not perfect substitutes; (ii) taxes on income and on capital gains differ; (iii) agents are risk averse; (iv) none of the above.
- 2. When the sum of the price elasticities of imports and exports (in absolute value) is equal to one and private spending (C, I) does not depend on the interest rate: (i) the Marshall Lerner condition does not hold; (ii) the DD curve is horizontal; (iii) there will be no crowding out in fiscal policy; (iv) all of the above.
- 3. When an economy is at the liquidity trap with low employment, restoring full employment cannot be achieved with: (i) temporary fiscal expansion under float; (ii) devaluation under fix; (iii) permanent monetary expansion under float; (iv) none of the above.
- 4. The FIX Line will shift to the right if: (i) the country has an experience of high inflation; (ii) the country has a highly rigid labour market; (iii) the country is mostly engaged in inter-industry trade; (iv) none of the above.

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# II (13,5)

#### Please present the results with, at most, 3 decimal places. Each subgroup (2A and 2B) must be answered in a different sheet.

**II.A.** Consider Twin Peaks, an economy with sticky prices under a float exchange rate regime. In this economy, interest rate parity holds instantaneously, and PPP holds in the long run (equivalent to one year). The demand for real money balances is given by  $m^D = \frac{Y}{25i}$ , output is constant at the full employment level,  $Y^f = 250$ , and the money supply is  $M^s = 100$ . The foreign price level is constant and equal to 1 and the foreign interest rate is equal to 10%.

- a) Assume, initially, that  $i = i^*$ . Determine, for Twin Peaks:
- (a1) The real money demand
- (a2) The price level
- (a3) The nominal exchange rate
- (a4) The expectations regarding the long-run level of the exchange rate
- (a5) Represent graphically in the money market and the foreign exchange market
- b) Unexpectedly, Twin Peaks suffers a **temporary contraction of output** such that output falls to Y = 100. Assume no intervention by the central bank.
- (b1) Find the real money demand
- (b2) Find the domestic interest rate

(b3) Assume (<u>only for this part of the exercise</u>) the **nominal exchange rate remained at the level found in (a3)**. Assume also that you are risk-averse and willing to speculate in the spot market. If you are a carry trade investor, comparing Twin Peaks and the foreign economy, in which economy would you borrow and in which economy would you invest? Explain

(b4) Calculate the new equilibrium value for the nominal exchange rate. Comment on the adjustment process

- c) **Departing from a)**, consider now that the output shock in Twin Peaks is a **permanent contraction** such that the new full employment level is given by  $Y^f = 100$ . Assume no intervention by the central bank.
- (c1) Describe the impact on the **long-run** values of:
  - (c1.1) the domestic interest rate
  - (c1.2) the real money demand
  - (c1.3) the price level
  - (c1.4) the nominal exchange rate

(c2) Describe the impact on the **short-run** values of:

- (c2.1) the price level
- (c2.2) the real money demand
- (c2.3) the domestic interest rate
- (c2.4) the nominal exchange rate

(c3) Represent the time path for the nominal exchange rate. Explain the represented phenomenon

$$\boxed{II} \cdot A \qquad mn^{p} = \frac{Y}{2si} \qquad Y_{i} = 250 \qquad H^{s} = 100 \qquad (a.5)$$
(a)  $i = i^{*} = 0.1$ 
(a)  $m^{p} = \frac{250}{25x01} = 100 \qquad (a.5)$ 
(a2)  $m^{p} = \frac{H^{s}}{P} = 5P = \frac{H^{s}}{m^{p}} = \frac{100}{100} \qquad (a.5)$ 
(a2)  $m^{p} = \frac{H^{s}}{P} = \frac{1}{7} = 1 \qquad (a.5)$ 
(a3)  $k = \frac{P}{P} = \frac{1}{7} = 1 \qquad (a.5)$ 
(b)  $Y = 100 \quad (b) \quad Etampony I$ 
(b)  $Y = 100 \quad (b) \quad Etampony I$ 
(b)  $Y = 100 \quad (b) \quad Etampony I$ 
(c)  $m^{p} = \frac{H^{s}}{P} = \frac{100}{1} = 100$ 
(b)  $Y = 100 \quad (b) \quad Etampony I$ 
(c)  $M^{p} = \frac{H^{s}}{P} = \frac{100}{1} = 100$ 
(c)  $(b2) \quad m^{p} = \frac{Y}{2si} = s \quad 100 = \frac{100}{2si} \quad (s = 0.04)$ 
(c)  $(b3) \quad Before the Monival Declarge note adjusts, we have  $i < i^{*} + \underline{E}(p) - 1$ 
Joreign Atoms. The cary trade investor Should boreauce in Turm Reaks (domestic Reason) interst note parity, in squilbrum, (domestic Reason), (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) By the Uncare interst note parity, in squilbrum, (E4) Bu the E4) = 1 = 50.04 = 0$ 

c) Y=100 (1) [pomnament] (c1) (c1.1) In the larg-non,  $i = i^* = 0.1$ (C1.2)  $M^{D} = \frac{Y}{25i} = \frac{100}{25\times0.1} = 40$ (C1.3)  $M^{0} = \frac{H^{S}}{P} = P = \frac{H^{S}}{M^{d}} = \frac{100}{40} = 2.5$ (C1.4)  $k = \frac{P}{P^*} = \frac{2.5}{1} = 2.5$ (CZ) (CZ.1) In the shart-num, P=1 since prices are sticky  $(c_{2,2}) \quad m_{P} = \frac{H^{S}}{P} = \frac{100}{1} = 100$  $(C2.3) \quad m^{0} = \frac{Y}{25i} = 100 = \frac{100}{25i} = 5i = 0.04$  $(C2.4) \quad i = i^* + \frac{E(k)}{k} - 1 = 0.04 \pm 0.1 + \frac{2.5}{k} - 1 = 2.66$ (C3) 1 2.66 2.5 - - - -Exchange note ovusloot.

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**II.B.** Consider the open economy of Mustafar, which has **sticky** prices and a **floating exchange rate regime**. The interest rate parity holds instantaneously. The real money demand is  $m^D = \frac{Y}{10i}$ , the money supply is  $M^s = 200$ , the price level is P = 2 and expectations regarding the long-run level of the nominal exchange rate are E(e) = 4. Additionally, the goods market equilibrium is described by  $Y = 4(\overline{A} + TB)$ ,  $\overline{A} = 25$  and  $TB = 5\left(\frac{eP^*}{P} - 1\right)$ . The full employment level of output is given by  $Y^f = 100$ . The foreign interest rate is equal to  $i^* = 20\%$  and  $P^* = 1$ .

d) Given this information:

- (d1) Derive the short-run DD curve
- (d2) Derive the short-run AA curve

(d3) Calculate the short-run equilibrium. Is there internal and/or external balance?

$$(Tip:ax^{2} + bx + c = 0 \Leftrightarrow x = \frac{-b_{-}^{+}\sqrt{b^{2} - 4ac}}{2a})$$

e) Obi-Wan, the patient prime minister of Mustafar, decides to let the economy adjust to the long-run equilibrium without intervention. Determine:

(e1) The long-run price level

(e2) The long-run DD curve

(e3) The long-run AA curve

(e4) Departing from d), represent the adjustment process in the AA-DD diagram

f) Anakin, the impatient president of the central bank, worried about future inflation, does not agree with Obi-Wan. **Departing from d**), Anakin decides to **push the economy immediately to its steady state by setting a fixed value for the nominal exchange rate**. Assume this peg is credible. Find out:

(f1) The level at which the nominal exchange rate is set

(f2) The (exogenous) money supply

(f3) The new AA curve

(f4) Departing from d), represent the adjustment process in the AA-DD diagram

g) **Departing from f**), assume now that agents believe Obi-Wan will undermine Anakin' intentions to maintain the peg and **expect the long-run nominal exchange rate to stay at** E(e) = 4. However, Anakin no longer listens to Obi-Wan, and he is **committed to fixing the nominal exchange rate at the level found in (f1)**.

(*Tip: if you were not able to calculate the nominal exchange rate value in (f1), assume it is equal to 2)* (g1) Find out the interest rate and the money supply that must hold for the peg to be maintained (g2) Is it sustainable to hold this peg? Discuss

$$\begin{split} \boxed{\blacksquare} \underbrace{\blacksquare}_{q = 100} \underbrace{\square}_{q = 1000} \underbrace{\square}_{q = 10000} \underbrace{\square}_{q = 1000} \underbrace{\square}_{q = 100} \underbrace{\square}_$$

f) (f1) Sin 6 the scannony goes to the standy slote, 
$$Y = Y = 100$$
  
and, Since we are in the shart-num,  $P = 2$  (stricky prices)  
Thus, by the BD cenve,  $100 = 80 + 10 e = 2 = 2$  Therefore, the programment be  
(f2)  $m_1^B = \frac{m^5}{p} = 5 \frac{100}{10x_{02}} = \frac{m^5}{2} = 5 + 8^5 = 100$   
(f3) By the uncovered interest note parity,  $i = 0.2 + \frac{2}{4} - 1 = 5 = \frac{2}{4} - 0.8$   
By the many market,  $\frac{Y}{10i} = \frac{100}{2} = 5 + 5 = 500i$   
 $Y = 500(\frac{2}{4} - 0.8) = Y = \frac{1000}{4} - 400 = 400$ 

g) (g1) The control bonk sets e=2, but agents believe E(e)=4. Thus, by the uncerned interest note parity,  $i = 0.2 + \frac{4}{2} - 1 = 1.2$ By the money market,  $M = \frac{M^{S}}{P} = \frac{100}{10 \times 1.2} = \frac{M^{S}}{2} = M^{S} \approx 16.667$ (g2) key ideas: -> Significant increase in the interest nate puts pressure in the economy, specially if in debt -> Significant fall in Money Supply requires sufficient reserves -> May be lass costly to give up the pag (seeffieldfilling prophecy/ Speculative attack)