

# International macroeconomics (postgraduate course) 2013–2014 — Final exam

Nikolas A. Müller-Plantenberg\*

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Surnames: \_\_\_\_\_

First name: \_\_\_\_\_

ID or passport number: \_\_\_\_\_

Question	Points	Obtained
1	8	
2	8	
3	8	
4	8	
5	8	
Total	40	

## Instructions

Please do not read the questions until the professor allows you to do so.

All five questions have to be answered. Each question is worth 8 points, giving a **total of 40 points**.

Duration of the exam: **1 hour** (= 1.5 minutes per point or 12 minutes per question).

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\*E-mail: nikolas@mullerpl.net. Address: Faculty of Economics and Business Administration, Universidad Autónoma de Madrid, 28049 Cantoblanco, Madrid, Spain.

1. (a) i) Write down the balance of payments identity as it is used in the officially published balance of payments statistics. You only need to use the four main categories CA, KA, FA and EO (without their subcategories). [1]
- ii) What do the terms CA, KA, FA and EO stand for? [1]
- (b) Write down the balance of payments identity as it is used in the currency flow model studied in this course. [1]
- (c) A Spanish resident buys shares of BMW worth 1000 euros from a French resident and pays by bank transfer.
- i) How is the transaction recorded in the official Spanish balance of payments? Exactly in which balance of payments subcategories are the credit and the debit of the transaction recorded? [1]
- ii) How is the transaction recorded in the Spanish balance of payments according to the currency flow model? [1]
- (d) Is the transaction in part c of this question a "capital inflow" or a "capital outflow"? Explain briefly. [1]
- (e) Does the net external wealth of Spain rise, fall or stay constant as a result of the transaction in part c of this question? Explain briefly. [1]
- (f) In general, how is the net external wealth of a country related to the country's balance of payments? [1]

Total of question 1: [8]

2. Suppose that the long-run budget constraint holds so that  $PV_1(Y) + (1 + r)PV_1(W) = PV_1(GNE)$ . Assume that there is no investment or government spending and that consumers smooth consumption (that is, consumption is stable). Let  $Y_1 = \bar{Y} + \Delta Y_1$ , where  $\bar{Y} = 100$  and  $\Delta Y_1 = 42$ , and let  $Y_2 = Y_3 = Y_4 = \dots = \bar{Y}$  and  $W_0 = 0$ . Agents have perfect foresight. The interest rate  $r$  is 5%.

(a) Showing your calculations, compute the stable level of consumption  $C$ . [2]

(b) Showing your calculations, derive the value of the current account in period 1,  $CA_1$ . [3]

(c) Showing your calculations, derive the value of the current account in period 2,  $CA_2$ . [3]

Total of question 2: [8]

3. (a) Write down the balance of payments identity of a country as it is used in the currency flow model. [1]
- (b) Based on the balance of payments identity of the currency flow model, which options does a country have to sustain a current account deficit? [1]
- (c) i) Write down the equation that determines the change of the *nominal* exchange rate,  $\Delta s_t$ , in the currency flow model. [1]
- ii) Write down the equation that determines the change in the *real* exchange rate,  $\Delta q_t$ , in the currency flow model. Simplify this equation as much as possible. [1]
- (d) Suppose the country lets its currency float freely. What does the balance of payments identity look like in this case? [1]
- (e) Suppose the country wants to maintain a stable *real* exchange rate. What does the balance of payments identity look like in this case? [1]
- (f) Suppose the country wants to maintain a stable *nominal* exchange rate. What is the level of money inflows,  $\Delta m_t^{\text{HF}}$ , in this case? Based on your answer, what does the balance of payments identity look like in this case? [2]

Total of question 3: [8]

4. (a) According to the monetary model of exchange rate determination, why does the sale of official reserves by the central bank lead to an appreciation of the nominal exchange rate (everything else held constant). Show the causality. [4]

(b) According to the currency flow model of exchange rate determination, why does the sale of official reserves by the central bank lead to an appreciation of the nominal exchange rate (everything else held constant). Show the causality. [4]

Total of question 4: [8]

5. Suppose that a representative agent maximizes consumption over two periods:

$$\max_{C_1} u(C_1) + \beta u(C_2), \quad (1)$$

where  $C_2 = (1 + r)(Y_1 - C_1) + Y_2$ . Wealth at the beginning of period 1 or the end of period 2 is zero. The Euler equation of this problem is:

$$u'(C_1) = \beta(1 + r)u'(C_2). \quad (2)$$

(a) Assuming that  $u(\cdot) = \log(\cdot)$ , show that: [2]

$$C_1 = \frac{1}{1 + \beta} \left( Y_1 + \frac{Y_2}{1 + r} \right). \quad (3)$$

(b) Noting that  $CA_1 = Y_1 - C_1$ , derive a formula for  $CA_1$  that depends only on  $Y_1$  and  $Y_2$ . Show that the derivative of  $CA_1$  with respect to  $Y_1$  is positive and close to 0.5. What is the intuition? [4]

(c) In class, we saw that output booms preceding currency and debt crises tend to be associated with large and persistent current account deficits. What then may be wrong with the above model, or what may be missing in it? [2]

Total of question 5: [8]



