International macroeconomics (postgraduate course) 2012–2013 — Final exam

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8 January 2013

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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1. Consider the following maximization problem of a representative consumer:

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

where

$$C_2 = (1+r)(Y_1 - C_1) + Y_2. \tag{2}$$

(a) Derive the first-order condition of the above problem. [1]

(b) What is the name of the equation you have derived in part a? [1]

(c) Rewrite the equation you have derived in part a assuming that $u(C) = \log(C)$. [2]

(d) Let us assume that $\beta = \frac{1}{1+r}$. Based on this assumption, use equation (2) to derive the optimal consumption in period 1 and 2. [2]

(e) The current account is defined as the difference between saving and investment, $CA_t = S_t - I_t = (Y_t - C_t - G_t) - I_t$. In this simple model, $G_t = I_t = 0$, so $CA_t = Y_t - C_t$. What is the effect of rise in current income, Y_1, on the current accounts in both periods, CA_1 and CA_2? You may compute the answer, but you do not have to. Rather than calculating the answer, try to explain the economic intuition. [2]

Total of question 1: [8]

2. The total return on Spanish government bonds is given by:

$$\underbrace{\bar{R}_t^B + \omega_t^B}_{\text{= total return}} = \frac{P_{t+1}^B - P_t^B + R_t^B P_0^B}{P_t^B}, \tag{3}$$

where ω_t^B is a risk premium. For there to be no arbitrage opportunity, the total return on Spanish government bonds should equal the short-term interest rate (set by the European Central Bank) plus the risk premium on Spanish government bonds:

$$\bar{R}_t^B + \omega_t^B = R_t + \omega_t^B. \tag{4}$$

In the following, it shall be assumed that P_{t+1}^B is constant.

(a) As a result of the euro-zone debt crisis, the risk premium on Spanish government bonds, ω_t^B, has increased. Based on the above, what effect will this probably have had on the current price of Spanish government bonds in the secondary market? Why? [4]

(b) As a result of the euro-zone debt crisis, the ECB has reduced its short-term interest rate, R_t. Based on the above, what effect will this probably have had on the current price of Spanish government bonds in the secondary market? Why? [4]

Total of question 2: [8]

3. (a) Write down the names of two countries that currently run large current account surpluses. [1]

(b) Write down the names of two countries that currently run large current account deficits. [1]

(c) Write down the names of two international institutions that publish balance of payments data. [1]

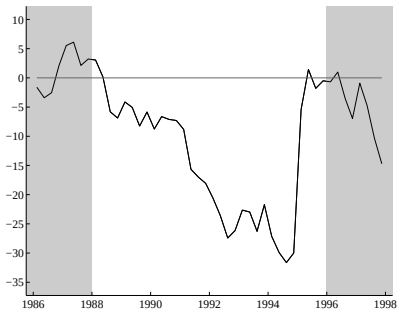
(d) Write down the accumulation equation that relates the financial account of the balance of payments with its corresponding stock variable. [1]

(e) Write down the approximate number of years a variable growing at 6% needs to rise by 300%. Indicate the formula you use for your calculation. [1]

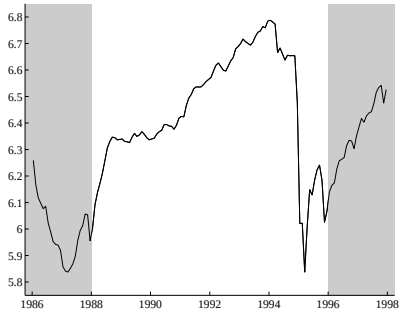
(f) Write down the interest rate parity condition. [1]

(g) Write down the balance sheets of a central bank and a commercial bank. [2]

Total of question 3: [8]



(a) Current account of Mexico (in billions of US dollars)



(b) Real effective exchange rate of Mexico (CPI-based, in logarithms)

Figure 1: **Mexico's currency crisis of 1994–1995.**

4. Consider figure 1 which plots the evolution of the Mexican current account and real effective exchange rate during the years leading up to the 1994–1995 currency crisis. Give brief answers to the questions on this and the next page. Verbal answers are not required; instead, you may use variables, arrows, equations, diagrams etc.

   (a) Why did the Mexican current account deteriorate so much during the run-up to the "tequila" crisis? [4]

(Question continued on the next page.)

(b) Why did the real exchange rate appreciate so much up until 1994 despite the very large deficit on current account? [4]

Total of question 4: [8]

5. (a) How does the sale of foreign exchange reserves by the central bank affect the exchange rate according to the *monetary model?* Explain briefly. [4]

(b) How does the sale of foreign exchange reserves by the central bank affect the exchange rate according to the *currency flow model?* Explain briefly. [4]

Total of question 5: [8]