International macroeconomics (2020–2021)
Final exam

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29 January 2021, 12.00

Surname: _____

First name: _____

ID or passport number: _____

Group: _____

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

Instructions

The exam consists of **five questions.**

In total, it is possible to obtain up to **40 points**.

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

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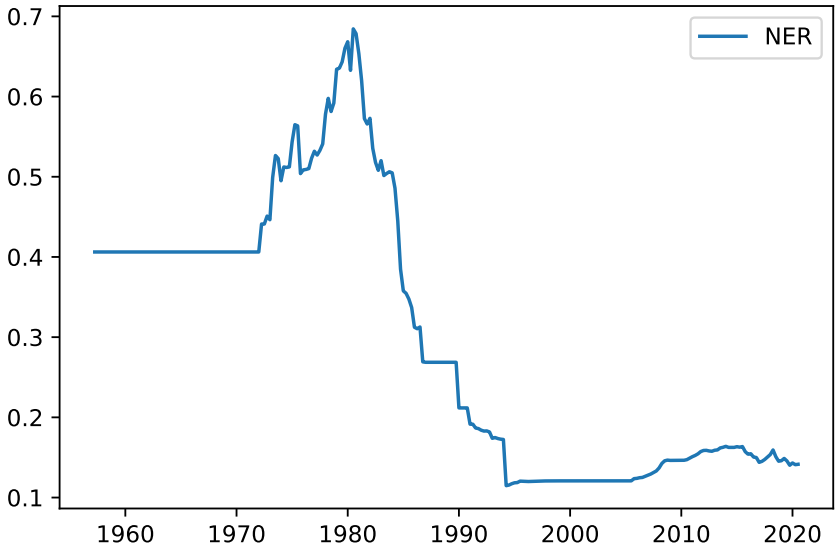

Figure 1: Nominal exchange rate of China vis-à-vis the United States, measured in US dollars per yuan. Source: International Financial Statistics (IMF)

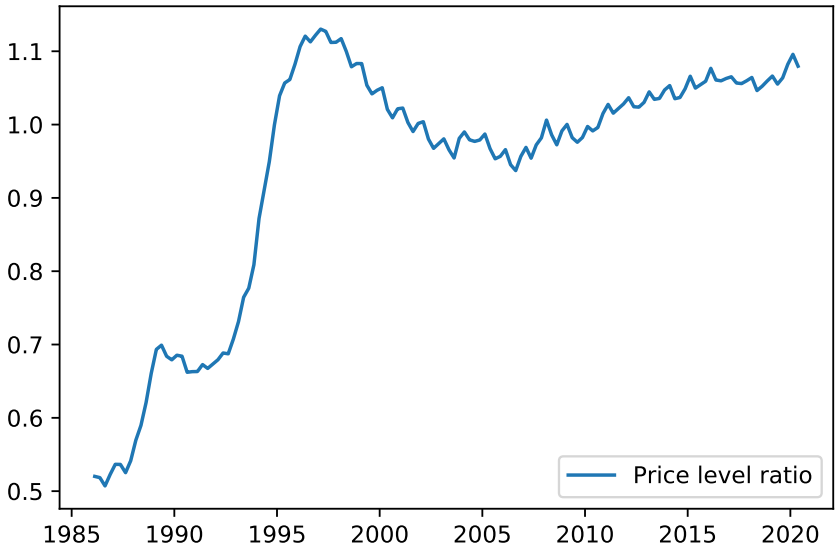

Figure 2: CPI of China divided by CPI of the United States. Source: International Financial Statistics (IMF).

1. The following questions refer to the Chinese economy during the period from 2005 onwards.

   (a) In figure 1, you can see the nominal exchange rate versus the United States, S, which is measured in US dollars per Chinese yuan. Considering the period from 2005 onwards, which saw an overall rise of the nominal exchange rate, would you say that the Chinese yuan *appreciated* or *depreciated* versus the US dollar? Explain your answer briefly. [1]

   (b) In figure 2, you can see the ratio of the Chinese and US price levels, $P^{\text{H}}/P^{\text{F}}$ (using both countries' consumer price indices, or CPIs). Note that from 2005Q1 to 2020Q2, S rose by 17% and $P^{\text{H}}/P^{\text{F}}$ by 9%. Given this information, what can you say about the change in the real exchange rate, Q, during that period. Did Q rise or fall? By how much? [2]

   (c) What kind of effect does a rising price level ratio, $P^{\text{H}}/P^{\text{F}}$, normally have on the nominal exchange rate, S, according to both the monetary model and the currency flow model? Please state briefly the intuition of this effect. [2]

   (d) Is the effect of $P^{\text{H}}/P^{\text{F}}$ on S you have stated in the previous question borne out by the data in figures 1 and 2 during the period from 2005 onwards. Explain briefly. [1]

   (e) What other economic variable may have had an important effect on the nominal exchange rate during the period from 2005 onwards? [2]

Total of question 1: [8]

2. In class, we distinguished the published balance of payments, which is based on the identity $CA_t + KA_t + FA_t = 0$, from the analytical balance of payments, which is based on the identity $CA_t = \Delta z_t^{\text{HF}} = \Delta e_t^{\text{HF}} + \Delta b_t^{\text{HF}} + \Delta m_t^{\text{HF}} + \Delta b_t^{\bar{\text{H}}\bar{\text{F}}}$. The following questions are about the relationship between the two balance of payments representations.

   (a) Which variable (or which variables) in the analytical balance of payments corresponds (correspond) to the subcategory "Reserves" in the published balance of payments? [1]

   (b) Which variable (or which variables) in the analytical balance of payments corresponds (correspond) to the subcategory "Portfolio investment" in the published balance of payments? [1]

   (c) Which variable (or which variables) in the analytical balance of payments corresponds (correspond) to the subcategory "Other investment - currency and deposits" in the published balance of payments? [1]

   (d) Which variable (or which variables) in the analytical balance of payments corresponds (correspond) to the subcategory "Income from investment" in the published balance of payments? [1]

   (e) How does a purchase of goods abroad affect the published balance of payments? [1]

   (f) How does a purchase of goods abroad affect the analytical balance of payments? [1]

   (g) How does a purchase of shares abroad affect the published balance of payments? [1]

   (h) How does a purchase of shares abroad affect the analytical balance of payments? [1]

Total of question 2: [8]

3. (a) What is the difference between a stock variable and a flow variable? [1]

(b) What is I_t? What is the corresponding stock variable? [1]

(c) What is the net international investment position (NIIP)? What is the corresponding flow variable? [1]

(d) Write down the equation that represents uncovered interest parity (UIP). Give an example of when UIP may not hold. [1]

(e) Write down (1) the formula for the nominal exchange rate, s, in the currency flow model and (2) the formula that defines the real exchange rate, q, and show that both formulas together imply that convergence of international prices may be irrelevant for real exchange rate convergence. (Note: It is sufficient to write down the relevant equations. There is no need for a verbal explanation.) [1]

(f) State the names of four types of exchange rate regimes. [1]

(g) If a given exchange rate is expected to appreciate by 4% per year in the future, approximately in how many years can we expect this exchange rate to have doubled? [1]

(h) State the countries (or regions) and years of three important currency crises that have occurred in the past. [1]

Total of question 3: [8]

4. Consider the intertemporal approach to the current account, which in its simplest version is based on the following equations:

$$\max_{C_1, C_2, z_1^{\text{HF}}} u(C_1) + u(C_2) \tag{1}$$

subject to

$$C_1 + z_1^{\text{HF}} = Y_1, \tag{2}$$
$$C_2 = Y_2 + z_1^{\text{HF}}. \tag{3}$$

(a) Use the Lagrange method to derive the Euler equation. [6]

(b) According to the intertemporal approach to the current account, is it mainly fluctuations in income or fluctuations in spending that drive the current account? [1]

(c) Very briefly, would you say that the intertemporal approach is by and large supported by the empirical evidence? [1]

Total of question 4: [8]

5. (a) Write down the balance sheet of a typical commercial bank. [2]

(b) How is the leverage coefficient defined? [1]

(c) Why is high leverage of banks considered to be a problem? [1]

(d) Write down the balance sheet of a typical central bank. [2]

(e) What are open-market operations and why do central banks engage in them? [1]

(f) What is official intervention and why do central banks engage in it? [1]

Total of question 5: [8]