International macroeconomics (2024–2025)

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21 January 2023, 16.00

Surname: _____

First name: _____

ID or passport number: _____

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 and 20 minutes** (= 2 minutes per point or 16 minutes per question).

Mobile phones must be **switched off** and placed **in your bag** before the exam begins.

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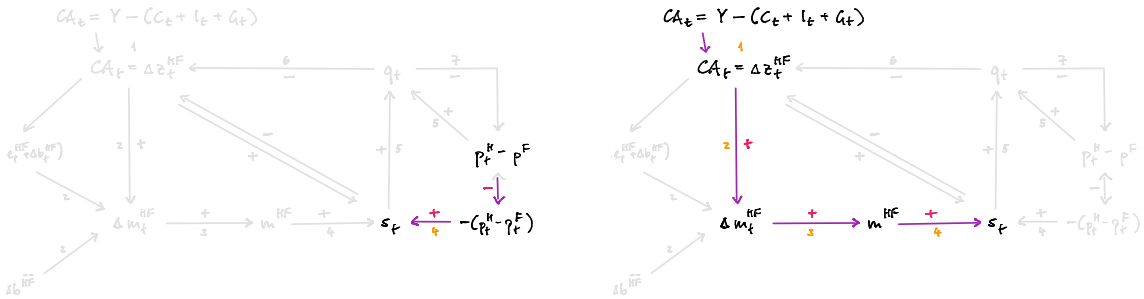


(a) Explanation 1 for currency crises

(b) Explanation 2 for currency crises

Figure 1: Two different explanations for why currency crises occur.

1. Diagrams in figure 1 contain two possible explanations of what could cause a currency crisis. Now answer the following questions.

   (a) Please interpret diagram 1a (”explanation 1”), ignoring the part that is greyed out. Describe in detail how a currency crisis comes about according to this diagram. [2]

   (b) Please interpret diagram 1b (”explanation 2”), ignoring the part that is greyed out. Describe in detail how a currency crisis comes about according to this diagram. [2]

(c) If you had data on the performance of the nominal and real exchange rates, s_t and q_t, during a given currency crisis, how could you determine which of the two explanations—explanation 1 or explanation 2—fits this currency crisis best? [2]

(d) In reality, which kind of causality of currency crises is more frequent, that of explanation 1 in diagram 1a or that of explanation 2 in diagram 1b? Explain briefly. [2]

Total of question 1: [8]

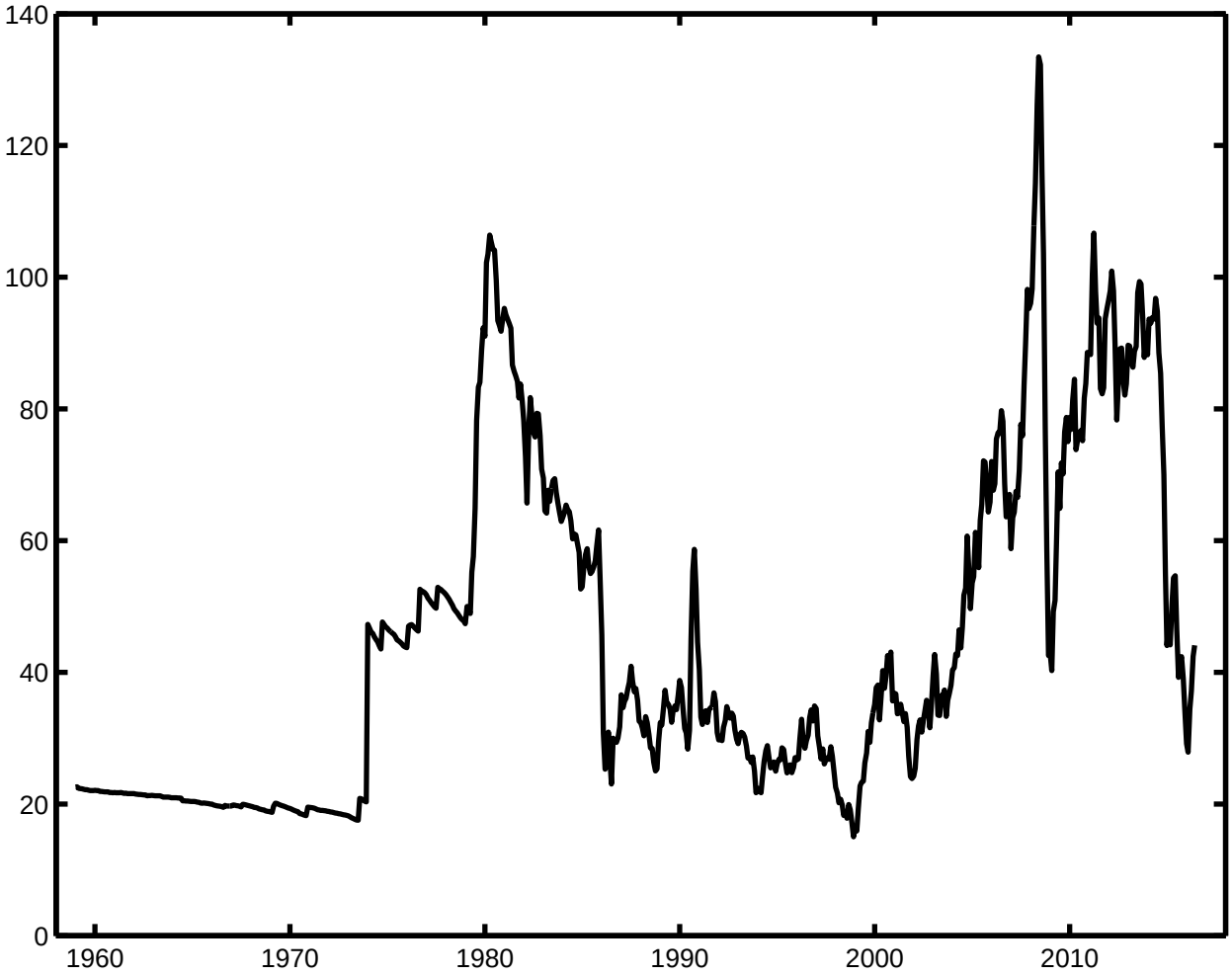
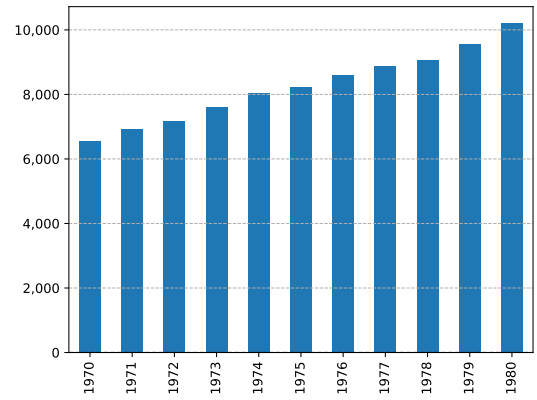
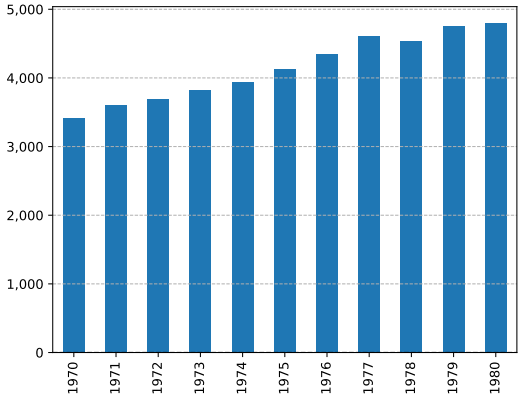


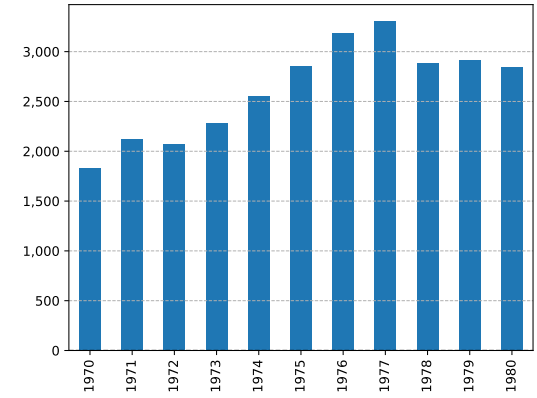
Figure 2: Spot crude oil price of West Texas Intermediate (WTI), in 2010 US dollars per barrel. Source: Federal Reserve Bank of St. Louis, author's calculations.



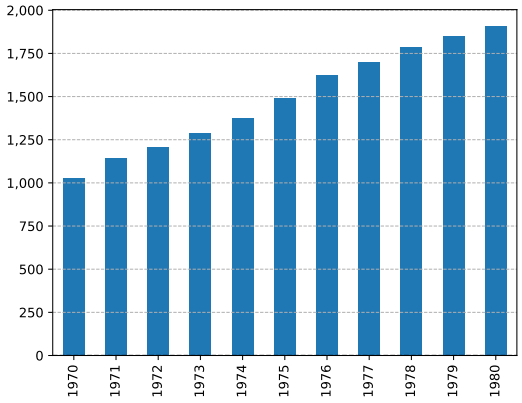
(a) GDP, Y^{P}



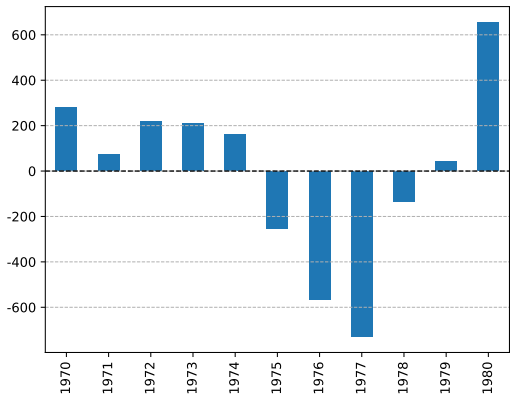
(b) Consumption, C



(c) Investment, I



(d) Government spending, G



(e) Trade balance, TB

Figure 3: Norway's GDP, national spending components and trade balance during the 1970s. All series in real terms, based on Norwegian prices. Source: International Financial Statistics (IMF), author's calculations.

2. We have studied the "intertemporal approach to the current account" in the lectures. In this model, a representative agent maximizes utility over two periods:

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

subject to the following budget constraints:

$$z_0^{\text{HF}} + Y_1 = C_1 + z_1^{\text{HF}}, \tag{2}$$
$$z_1^{\text{HF}} + Y_2 = C_2 + z_2^{\text{HF}}. \tag{3}$$

The two-period intertemporal budget constraint is thus:

$$z_0^{\text{HF}} + Y_1 + Y_2 = C_1 + C_2 + z_2^{\text{HF}}. \tag{4}$$

(a) Set up the Lagrangian and use the first-order conditions to derive the Euler equation. [2]

(b) Now assume logarithmic utility: [2]

$$u(C) = \ln(C). \tag{5}$$

What level does consumption in period 1 and period 2 take, and what is the level of the current account in both periods?

(c) Suppose the country is hit by a positive income shock. How would this shock affect the current account. In your answer, please distinguish whether the income shock is temporary (let's say in period 1) or permanent. [2]

(d) Now consider figures 2 and 3. Norway's economic experience during the oil boom of the 1970s is commonly cited as an example of a positive income shock. This is because in the late 1960s, significant oil reserves were discovered in the North Sea, within Norway's territorial waters. And shortly after, in 1973–1974, the sharp rise in global oil prices further amplified the economic impact of these discoveries. If you look at Norway's trade balance (which serves here as a proxy for the current account) in figure 3e, how do you explain the large trade deficit around 1975–1978? Is it compatible with the intertemporal approach to the current account? [2]

Total of question 2: [8]

3. What follows is the structure of the balance of payments with eight intentional mistakes embedded in the text. Identify each mistake by numbering it directly in the text (for example, [1], [2] etc.). Then, in the space provided below, briefly explain the nature of each mistake. [8]

    1. **Current account**

       This account records transactions related to goods, services, primary income and secondary income.

       (a) **Goods and services**

           i. **Goods:** Includes exports and imports of tangible items, like machinery, oil and patents.

           ii. **Services:** Covers trade in non-physical items, such as transport, travel, financial services and direct investments.

       (b) **Primary income**

           Includes income from compensation of employees and capital transfers.

           Examples:

           i. Wages earned by foreign workers.

           ii. Dividends paid to domestic investors by foreign companies.

       (c) **Secondary income**

           i. Records transfers without a quid pro quo (e.g. remittances, grants and loans).

           ii. Includes only personal transfers, excluding government transfers.

    2. **Capital account**

       This account contains transactions involving capital transfers and the acquisition or disposal of non-produced, non-financial assets.

       (a) **Capital transfers:** Debt forgiveness, investment grants or transfers of ownership of produced goods.

       (b) **Non-produced, non-financial assets**: Intangible assets like patents, copyrights and emissions allowances.

    3. **Financial account**

       This account measures financial flows associated with changes in ownership of international financial assets and liabilities.

(a) **Direct investment:** Cross-border investments in which the investor has significant influence or control (5% or more of voting power).

(b) **Portfolio investment:** Transactions involving equity securities only.

(c) **Other investment:** Includes trade credits, loans, currency and deposits.

(d) **Reserve assets:** Official international reserves held by the central bank (e.g. foreign bonds and gold).

4. **Errors and omissions**

   A balancing item to account for discrepancies arising from incomplete or inaccurate data.

1.

2.

3.

4.

5.

6.

7.

8.

Total of question 3: [8]

4. (a) Define the real exchange rate (mathematically, without using logarithms). [1]

(b) Restate the definition of the real exchange rate, but this time in natural logarithms. [1]

(c) Apply the difference operator (Δ) to the equation you have derived in part b. [1]

(d) How do you interpret the equation you have derived in part c in economic terms. [1]

(e) In 2024, inflation in Argentina (ARG) was 118% (equivalent to a monthly average of 6.7%), whereas in the United States (USA) it was 3% (equivalent to a monthly average of 0.2%). If the Argentine government had wanted to keep the real exchange rate stable, what rate of depreciation of the nominal exchange rate should it have chosen? [1]

(f) The Argentine government introduced a regime whereby the nominal exchange rate of the Argentine peso (ARS) vis-à-vis the US dollar (USD) was devalued by 2% per month (= approx. 27% annually) on 13 December 2023, which stayed in place throughout all of 2024. What is the technical term for such a controlled devaluation regime? [1]

(g) Did the Argentine real exchange rate appreciate or depreciate in 2024? Approximately by how much? [1]

(h) If you compare the real exchange rate of Argentina at the beginning of 2025 with that of early 2024, will the Argentinians be more or less inclined to buy goods in neighbouring countries in early 2025 compared to a year earlier? Based solely on the real exchange rate, do you expect a surge in exports in the near future? [1]

Total of question 4: [8]

5. (a) Explain how the purchasing power parity theory (PPP) can be used to determine whether the nominal exchange rate S_t between a home country (H) and a foreign country (F) is over- or undervalued. [4]

(b) Do you think that it is possible to use the uncovered interest parity theory (UIP) to determine whether the nominal exchange rate S_t (the natural logarithm S_t) is over- or undervalued? If so, how? If not, why not? (Hint: In your answer, you may want to assume that some equilibrium value of future exchange rate s_{t+1} is known.) [3]

(c) If we make the assumption that some equilibrium value of future exchange rate s_{t+1} is known, where could we get that value from? [1]

Total of question 5: [8]