

January Examination Period 2024

ECN205 Money and Banking

Duration: 2 hours

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INSTRUCTED TO DO SO BY AN INVIGILATOR**

Answer 2 Questions from Section A and All from Section B

If you answer more questions than specified, only the first answers (up to the specified number) will be marked. Cross out any answers that you do not wish to be marked.

Calculators are permitted in this examination. Please state on your answer book the name and type of machine used. Complete all rough workings in the answer book and cross through any work that is not to be assessed.

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Examiner: Thomai Filippeli

PART A: Answer TWO Questions**Question 1**

- A. Briefly explain how the moral hazard problem can affect equity finance. What could be the solution to this problem?

[10 marks]

- B. Briefly explain how the moral hazard problem can affect debt finance. What could be the solution to this problem?

[10 marks]

Question 2

Consider an overlapping generations model with the following characteristics: individuals are endowed with y units of the consumption good when young and nothing when old. The fiat money supply changes according to $M_t = zM_{t-1}$ and the population grows at rate n for every period t , where z and n are greater than 1. The money created in each period is used to finance a lump-sum subsidy of a_{t+1} goods to each old person in period $t+1$.

- A. Prove that the monetary equilibrium (c_1^*, c_2^*) does not maximize the utility of future generations.

[15 marks]

- B. Under what condition of monetary expansion would this economy achieve the optimal allocation of resources?

[5 marks]

Question 3

- A. Transparency is a key element of the monetary policy framework. Explain how transparency helps eliminate the problems that are created by central bank independence.

[10 marks]

- B. According to many studies, in industrialized countries there is strong evidence of a negative relationship between central bank independence and inflation. Explain what the three limitations to this finding are.

[10 marks]

PART B: Answer ALL Questions**Question 4**

- A. Consider an overlapping generations model with the following characteristics: each generation is composed of 1,000 individuals. The fiat money supply changes according to $M_t = 2M_{t-1}$. The initial old own a total of 10,000 units of fiat money. ($M_0 = £10,000$). Each period, the newly printed money is given to the young of that period as a lump-sum transfer (subsidy). Each person is endowed with 20 units of the consumption good when born and nothing when old. Preferences are such that individuals wish to save 10 units in fiat money when young at the equilibrium rate of return.
- What is the gross real rate of return on fiat money in this economy?
 - How many goods does an individual receive as a subsidy?
 - What is the price of the consumption good in period 1, p_1 , in GBP?
- [20 marks]**
- B. Consider a standard fiat money/barter system. Suppose the number of goods J is 100. Each search for a trading partner costs a person 2 units of utility.
- What is the probability that a given random encounter between people of separate islands will result in a successful barter?
 - What are the average lifetime search costs for a person who relies strictly on barter?
 - What are the average lifetime search costs for a person who uses money to make exchanges?
 - Now let us consider exchange costs. Suppose it costs 4 units of utility to verify the quality of goods accepted in exchange and 1 unit of utility to verify that money accepted in exchange is not counterfeit. What are the total exchange costs of someone utilising barter?
 - What are the total exchange costs of someone utilising money?
- [10 marks]**

Question 5

- A. Consider the following model of a closed economy where y , p and m are the natural logarithms of output, price level and money supply respectively. E is the expectations operator and ε is a random disturbance term ($\varepsilon \sim N(0, \sigma^2)$). Equation (1) is a variant of the Phillips curve, equation (2) is a money demand function and equation (3) is the authorities' money supply rule.

$$y_t = 50 + 0.2 (p_t - E_{t-1}p_t) \quad (1)$$

$$y_t = 60 + 0.2 (m_t - p_t) \quad (2)$$

$$m_t = 15 + \varepsilon_t \quad (3)$$

- i. What is the equilibrium level of y_t ? Find the price level p_t and y_t .
- ii. If $\varepsilon_t = -3$ what is the price level p_t and the output level y_t ? Comment on your results.

[15 marks]

- B. A bank is near insolvency – its assets are worth £1,000million, only a fraction more than its debt liabilities of £999.5 million. As a result, the true value of its equity is small. The bank can take £100 million more deposits from the public in return for a promise to pay a 6% return. The bank considers two possible uses to which the new deposits can be put. The safe option is to lend at a rate of 8%. There is a 95% chance that such a loan will be repaid in full. There is a 5% chance that for each dollar loaned the bank will simply get its money back (no interest). The alternative loan is very risky. There is a 60% chance that the bank can make the risky loan at an interest rate of 40% and be paid back in full (receiving £1.40 for each £1). There is a 40% chance that it will be repaid nothing.

- i. Which loan has the higher expected return?
- ii. Which loan would the shareholders, who have limited liability prefer the bank to make?

[15 marks]

End of Examination/ Thomai Filippeli