



AFRICAN ECONOMIC RESEARCH CONSORTIUM
Collaborative PhD Programme in Economics for Sub-Saharan Africa
COMPREHENSIVE EXAMINATIONS IN CORE AND ELECTIVE FIELDS
JANUARY 28 – FEBRUARY 17, 2020
MONETARY ECONOMICS

Time: 08:00 – 11:00 GMT

Date: Monday, February 17, 2020

INSTRUCTIONS:

1. Answer a total of FOUR questions: ONE question from Section A, ONE question from Section B, and TWO questions from Section C.
 2. The sections are weighted as indicated on the paper.
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SECTION A: (15%)

Answer only ONE Question from this Section

Question 1

The money multiplier of an economy is given as: $M1 = \left[\frac{C_d + 1}{C_d + r_d} \right] Mh$. Where C_d is currency deposit ratio, r_d is reserve deposit ratio, Mh is high powered money and $M1$ constitutes money supply.

- (a) Given that the ratio of reserves to deposits is 0.2 and the ratio of currency to deposits is 0.25, calculate the money multiplier. **(2 Marks)**
- (b) Explain the impact of currency to deposit ratio on the size of the money multiplier. **(2 Marks)**
- (c) If high powered money (Mh) is \$500 million, calculate total money supply in the country. **(3 Marks)**
- (d) If the ratio of reserves to deposits is changed to 0.1, what would be the new level of money supply? **(5 Marks)**
- (e) Explain the differences in money supply per your calculations. **(3 Marks)**



Question 2

“The Central Bank uses monetary policy instruments to control money supply”.

- (a) Discuss how any two of the monetary policy instruments can work to change the money supply. **(5 Marks)**
- (b) Assume that the Central Bank decides to buy bonds through open market operations (OMO), what would happen to the nominal interest rates and quantity of money? **(5 Marks)**
- (c) Assume the Central Bank decides to lower the bank rate, how will that affect nominal interest rates and quantity of money? **(5 Marks)**

SECTION B: (25%)

Answer only ONE Question from this Section

Question 3

- (a) What is the basic difference between a cash-in-advance constraint model (CIA) and the money-in-utility-function (MIUF) paradigm? **(2 Marks)**
- (b) Suppose that consumption or purchase can only be made in cash so that cash-in-advance (CIA) constraint applies only on consumption good. The preference of the representative agent is given by

$$U = \sum_{t=0}^{\infty} \beta^t \ln c_t$$

The purchase of consumption good at time t is subject to the CIA constraint

$$P_t C_t \leq m_t + w_t$$

where P_t is the price of consumption good, C_t is of the quantity of the consumption good, m_t is nominal money balance that the household carried from the previous period and w_t lump-sum-transfer equal to at the beginning of period t . The budget constraint for the household in any period t is:

$$c_t + \frac{m_{t+1}}{P_t} + \frac{Q_t B_{t+1}}{P_t} \leq \frac{m_t}{P_t} + w_t + \frac{B_t}{P_t}$$

where B_{t+1} is the total units of nominal bond demanded at time t . Q_t is of the price of bonds.



- (i) Find the representative agents' optimization problem for c_t ; m_{t+1} ; B_{t+1} subject to the CIA constraint and the wealth constraint. **(6 Marks)**
- (ii) Show that Q_t is constant that is expressed in λ_{1t} and λ_{2t} **(5 Marks)**
- (c) Let us now suppose that the representative agent has a motivation for putting money in his utility function (MIUF) so that his utility function is given as:

$$U = \max_{c_t, m_{t+1}, B_{t+1}} \sum_{t=0}^{\infty} \beta^t \left[\ln c_t + \gamma \ln \frac{m_{t+1}}{P_t} \right]$$

Using the same representative budget constraint as above

$$(c_t + \frac{m_{t+1}}{P_t} + \frac{Q_t B_{t+1}}{P_t} \leq \frac{m_t}{P_t} + w_t + \frac{B_t}{P_t})$$

- (i) Find the representative agents' optimization problem for c_t ; m_{t+1} ; B_{t+1} . **(6 Marks)**
- (ii) Show that Q_t is a function of price (P_t) and commodity (C_t). **(4 Marks)**
- (iii) Comparing the F.O.C for m_{t+1} in this MIUF and the one in the CIA model, what explanation can you offer for the difference between them? **(2 Marks)**

Question 4

Consider a transactions demand for money model where an individual receives income at the beginning of a period and expects to spend all the income within the period.

- (a) Use appropriate procedure to obtain the optimum average cash holding for the period, and explain how the cost of holding income as bond can affect optimum cash holding. **(15 Marks)**
- (b) Compare the cost of holding a part of the income as cash and the cost of holding another part as investment in bond. **(5 Marks)**
- (c) Derive and explain the elasticity of demand for money in the model, with respect to income and cost of holding income as cash. **(5 Marks)**



SECTION C: (60%)

Answer TWO Questions from this Section

Question 5

- (a) Given a commodity production function of the form:

$$x_{ij} = [A^j k_{xij}^{\alpha} k_{xj}^{\alpha'} \phi(k_{j, \dots})] z_{ij}^{\beta} z_j^{\beta'}$$

where x refers to the commodity (final goods) sector, i to the firm and j to the country, z , real output per worker of the financial sector, the value $\phi(\cdot)$ depends on the contribution to the firm's production from the difference between its capital knowledge and that of other countries of the world, z_{ij}^{β} , the advantages to the i th firm from using real balances, $z_j^{\beta'}$, positive externality from the economy-wide usage of real balances and k , capital/labour ratio.

- (i) Derive the productivity of capital and explain the implication. **(8 Marks)**
 - (ii) Estimate the marginal productivity of the services of the financial sector for firms in production and interpret your results **(8 Marks)**
 - (iii) Discuss the outcomes of (i and ii) on the steady state growth model. **(5 Marks)**
- (b) With three reasons, discuss the implications of Microfinance on the economic development of developing economies. **(9 Marks)**

Question 6

“Financial innovation is critical for the development of the financial sector and promotion of economic growth”.

- (a) Discuss the demand theory and supply theory which explain the main sources of financial innovation products. **(5 Marks)**
- (b) Analyze the implications of the recent financial innovation across the globe on the execution of monetary policy in developing countries. **(15 Marks)**
- (c) Discuss the impact of financial innovation on financial sector development and economic growth in developing countries. **(10 Marks)**



Question 7

- (a) Explain the concept of information asymmetry using the credit rationing and imperfect financial market model of Stiglitz and Weiss' (1981). **(14 Marks)**
- (b) What are the implications of this model for developing countries? **(6 Marks)**
- (c) Carefully discuss the major features of the informal financial market, and analyze the policy implications of the market in developing countries. **(10 Marks)**

Question 8

“Inflation targeting is an important monetary policy framework that Central Banks focus on to maintain macroeconomic stability and promote economic growth”.

- (a) Derive and discuss the theoretical underpinnings of the inflation targeting framework. **(20 Marks)**
- (b) What are the conditionalities for effective inflation targeting? **(5 Marks)**
- (c) How does inflation targeting impact on macroeconomic stability and economic growth in the context of developing? **(5 Marks)**