



Strathmore Institute of Mathematical Sciences (SIMS)
Bachelor of Business Science in Financial Economics/Financial
Engineering
End of Semester Examination
(BSE 2208: Macroeconomics II)

DATE: December 4, 2023

Time: 2 Hours

Instructions

- This examination consists of FIVE questions.
 - Answer Question ONE (COMPULSORY) and any other TWO questions.
1. (a) Use the information in Tables 1 and 2 below to answer the following questions.

	Quantity (in millions)		Price (in \$)	
Product	2019	2020	2019	2020
X	10	15	40	50
Y	15	15	20	10
Z	8	10	10	10

Table 1: Quantities and Prices for Goods X, Y and Z

Money Market	Goods (and Services) Market
$M = 10,00$	$C = 100 + 0.8(Y - T)$
$L(Y, r) = 0.3Y - r$	$I = 140 - 2r, \quad NX = -50$
P_{2020}	$G = 50, T = 50$

Table 2: Goods and money Market Equations (with r in percentage terms)

- (i) Use Table 1 to calculate real GDP (Y) and the GDP deflator (P) in 2020 using 2019 as the base year. (4 Marks).
- (ii) Calculate the IS and LM equations and put them on graph with the real interest rate (r) on the vertical axis and real GDP (Y) on the horizontal axis. Superimpose the 2020 real GDP value from part (i) as the vertical LRAS curve. Then calculate the short-run equilibrium values, r^* and Y^* (6 Marks)

- (iii) Holding the real interest rate fixed (or equivalently ignoring the money market), how much would fiscal policymakers need to increase G to get us back to the LRAS curve? How this on your graph and show your calculations. **(6 Marks)**.
- (b) The country of Oceania is a small open economy. Suddenly, a change in world fashions makes the exports of Oceania unpopular. Briefly explain what happens in Oceania to saving, investment, net exports, the interest rate, and the exchange rate. **(6 Marks)**
- (c) Briefly explain how the net capital outflow and the trade balance are related. **(4 Marks)**
- (d) Suppose that an economy has the Philips curve;

$$\pi = \pi_{-1} - 0.5(u - 5)$$

where π and u represent inflation and unemployment respectively. What is the natural rate of unemployment? **(4 Marks)**

2. (a) Consider the following Neoclassical model of the economy, where r is in percentage terms.

Supply	Demand
$Y = F(K, L) = 10\sqrt{KL}$	$C = 260 + 0.8(Y - T)$
$MPL = ?; MPK = 5\sqrt{L/K}$	$I = 230 - 5r$
$K = 400; L = 100$	$G = 100, T = 200, NX = 0$

- (i) Calculate the income that goes to workers and owners of capital. Show your work. **(6 Marks)**.
- (ii) How much are households saving? How much is the government saving? **(2 Marks)**
- (iii) Find the interest rate that produces equilibrium in either the goods market or the loanable funds market. **(4 Marks)**
- (b) In the country of Wiknam, the velocity of money is constant. Real GDP grows by 3 percent per year, the money stock grows by 8 percent per year, and the nominal interest rate is 9 percent. what is
- (i) the growth rate of nominal GDP? **(4 Marks)**.
- (ii) the inflation rate? **(4 Marks)**.
3. (a) In each of the following scenarios, explain and categorize the cost of inflation.
- (i) Because inflation has risen, a clothing company decides to issue a new catalog monthly rather than quarterly. **(3 Marks)**
- (ii) Grandma buys an annuity for Kes.100,000 from an insurance company, which promises to pay her Kes.10,000 a year for the rest of her life. After buying it, she is surprised that high inflation tripples the price level over the next few years. **(3 Marks)**

- (iii) Maria lives in an economy with hyperinflation. Each day after being paid, she runs to the store as quickly as possible so she can spend her money before it loses value. **(3 Marks)**
- (iv) Gita lives in an economy with an inflation rate of 10 percent. Over the past year, she earned a return of Ks.50,000 on her million-shillings portfolio of stocks and bonds. Because her tax rate is 20 percent, she paid Kes.10,000 to the government. **(3 Marks)**
- (b) Assume that currency (C) is \$10 billion and reserves (R) are \$20 billion, the reserve-deposit ratio is 0.1, and the currency-deposit ratio (cr) is 0.05.
- (i) what is the amount of demand deposits? what is the money supply? Show your work. **(4 Marks)**
- (ii) Assume that the velocity of money is constant and real GDP growth is 2.5%. The Central Bank is targeting a 2% inflation rate. What is the target growth rate in the money supply? How much new money needs to be injected in the coming year to meet the target? Explain. **(4 Marks)**
4. (a) A small open economy is described by the following equations:

$$C = 50 + 0.75(Y - T)$$

$$I = 150 - 10r$$

$$\left(\frac{M}{P}\right)^d = Y - 50r$$

$$G = 250$$

$$T = 200$$

$$M = 3000$$

$$P = 4$$

- (i) Derive the *IS* and *LM* curves **(4 Marks)**
- (iii) What are the equilibrium level of income and the equilibrium interest rate? **(3 Marks)**
- (b) Suppose that higher income implies higher imports and thus lower net exports. That is, the net-exports function

$$NX = NX(e, Y)$$

Examine the effects in a small open economy of a fiscal expansion on income and the trade balance under the following exchange-rate regimes.

- (i) A floating exchange rate **(4 Marks)**
- (ii) A fixed exchange rate **(4 Marks)**
- (c) Describe the concept of impossible trinity as used in open macroeconomics. **(5 Marks)**
5. (a) Explain the two theories of aggregate supply. On what market imperfection does each theory rely? What do the theories have in common? **(8 Marks)**

- (b) (i) Assume that OPEC starts enforcing oil production quotas and the global supply of oil declines. As a result, energy prices start to increase. This causes the costs of production for Kenyan firms to increase. Use the AD-SRAS-LRAS diagram to describe the transition of the macroeconomy from the short run to the long-run without government intervention (**7 Marks**)
- (ii) Now assume the Central Bank (CB) and parliament are concerned about future inflation, output and unemployment. Describe in words, using the AD-SRAS-LRAS diagram as a guide, the possible stabilization strategy for parliament and CB. In particular, discuss the tradeoffs they face. (**5 Marks**)

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