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ECO2142 Macroeconomic Theory I
Midterm I

Problem 1: Theoretical knowledge of the $IS-LM$ model (60 points)
Consider a closed economy. Let $C(Y-T,i)$ be the consumption function and $I(Y,i)$ the investment function. Y represents total output and i, the interest rate. Assume that government spending, G, and total taxes, T, are exogenous.

a) Is consumption an increasing or a decreasing function of disposable income and interest rate? Explain. (5 points)

b) Is investment an increasing or a decreasing function of total output and interest rate? Explain. (5 points)

c) Some firms finance their investment projects using their own funds. Will interest rate have an impact on investment in these cases? (5 points)

d) Explain how equilibrium output is obtained for a given interest rate. (5 points)

e) Explain how the IS curve is obtained. What does a point of this curve represent? (5 points)

Suppose now that liquidity demand is given by $L(Y,i)$.

f) Is $L(Y,i)$ an increasing or a decreasing function of total output and interest rate? Explain. (5 points)

g) Describe the equilibrium on the financial market. (5 points)

h) Explain how the LM curve is obtained. What does a point of this curve represent? (5 points)

i) Explain how the equilibrium of the $IS-LM$ is obtained. (5 points)

j) What is the impact of a decrease in government spending on total output, Y, on the interest rate, i, and on private investment, I. (5 points)

k) Suggest a policy mix that will increase Y while keeping i constant. (5 points)

l) Suggest a policy mix that will decrease the public deficit while keeping Y constant. (5 points)

Problem 2: The equilibrium on the financial market (15 points)
Assume that at the beginning of the year, total wealth in an economy is 100,000 and total income is 200,000. Also assume that $L(Y, i) = Y(0.30 - i)$.

a) Derive the demand for bonds. (5 points)

b) Assume that real money supply is 50,000. Calculate the equilibrium interest rate. (5 points)

c) What will be the total value of bonds at the end of the year? (5 points)

Problem 4: A numerical example of the $IS - LM$ model (25 points)
Suppose the economy is represented by the following equations:

$$\begin{aligned} C(Y_d, i) &= 0.8Y_d \\ I(Y, i) &= 800 - 2000i \\ G &= 1000 \\ T &= 1000 \\ L(Y, i) &= 0.4Y - 4000i \\ \frac{M^s}{P} &= 1200 \end{aligned}$$

a) Write out the IS equation. (5 points)

b) Write out the LM equation. (5 points)

c) Calculate the overall equilibrium level of output. (5 points)

d) Calculate the equilibrium interest rate. (5 points)

e) Assume that government spending increases to 200. What happens to private investment as a result of this fiscal expansion? (5 points)