EC 235

Problem Set 2

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Fall 2023

INSTRUCTIONS:

Take your time and go through each problem.

Recall that group work is *strongly encouraged*.

Problem 1

Assume that an economy's money demand and supply functions are, respectively, given by

$M^d = PY(l_1 - i)$

$M^s = 25$

Nominal income is currently 100, and $l_1 = 0.28$.

(a) Calculate the equilibrium interest rate.

(b) Suppose the central bank wants to double the interest rate from the level just derived. What is the appropriate money supply?

(c) Suppose the central bank wants to decrease the interest rate by 1 percentage point from the level derived under part (a). What is the new level of the money supply?

Problem 2

Assume an initial equilibrium in the money market. In a *(x,y) = (M, i)* space, show the following in a graph:

(a) The initial equilibrium. Label the equilibrium levels of the interest rate and money stock as i^* and M^*, respectively.

(b) Suppose an expansionary monetary policy adopted by the monetary authority. Sketch this in your graph. What happens to the equilibrium levels of part (a)?

(c) Complementing your graph from part (b), describe how the adjustment to the new equilibrium level(s) happens, focusing on the bond market.

Problem 3

The following equations describe an IS-LM economy:

$C = 175 + 0.3(Y - 200)$
$I = 120 + 0.3Y - 1{,}100i$
$G = 220$
$M/P = 2.35Y - 7{,}000i$

(a) Derive the IS relation to show the level of output as a function of the interest rate.

(b) Derive the IS relation to show the interest rate as a function of aggregate output.

(c) Suppose the interest rate is 5%. Calculate the required real money supply.

(d) Still assuming the interest rate from part (c), calculate (*i*) aggregate output, (*ii*) aggregate consumption, (*iii*) aggregate investment, and (*iv*) aggregate savings.

(e) From (d), does aggregate demand equal aggregate supply?

Problem 4

Consider the following macroeconomic relations:

$C = 125 + 0.75(Y - T)$
$I = 200 - 10i$
$G = 150$
$T = 100$
$M^D = 0.8Y - 16i$
$M^S = 800$

(a) Derive an expression for the IS curve.

(b) Sketch the IS curve.

(c) Derive an expression for the LM curve.

(d) Sketch the LM curve.

(e) Now suppose Government expenditures are increased to 300 monetary units. Revisit parts (a) and (b) above.

Problem 5

For the following policies, carefully describe its outcomes in the goods and financial markets, as well as the net effect in an IS-LM setting. *Hint*: using graphs will be very helpful.

(a) The central bank increases its sales of bonds.

(b) Expansionary fiscal policy with a horizontal LM curve.

(c) An increase in Government expenditures with an inelastic LM curve.

(d) The central bank increases its bond purchases from the general public.

Problem 6

The following 10 statements are either **True** or **False**. If false, provide a brief explanation why.

(a) Increases in aggregate investment are an example of *fiscal policy*.

(b) If the central bank wishes to *increase* the money supply, it acts in the bond market by *selling* bonds.

(c) In an IS-LM setting, monetary policy changes the *slope* of the IS curve.

(d) In financial markets, an *increase in aggregate income* has a positive effect on the demand for liquidity.

(e) Every single point on the LM curve indicates equilibrium in the *real sector*.

(f) The IS and LM curves can be shifted *simultaneously*.

(g) In an IS-LM setting, there is only *one* pair of interest rate and output level that brings equilibrium to the goods and money markets simultaneously.

(h) The more *elastic* the LM curve is, the more effective *monetary* policy will be.

(i) If aggregate investment is *not* responsive to changes in interest rates, *monetary* policy generates substantial output improvements.

(j) In financial markets, *excess money demand implies* excess bond demand.