(1) [5 points] **The Liquidity Preference Theory**

Graphically illustrate the impact of an open-market purchase by the Federal Reserve on the equilibrium interest rate using the theory of liquidity preference and the market for real money balances and explain in words what happens to equilibrium interest rate as a result of the open-market purchase.

*The equilibrium interest rate falls*

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(2) [10 points] **The Keynesian-cross Model**

Consider a closed economy to which the Keynesian-cross analysis applies. Consumption is given by the equation $C = 200 + 2/3(Y − T)$. Planned investment is 300, as are government spending and taxes.

(a) [3 points] If $Y$ is 1,500, what is planned spending?

*Planned spending is 1,600*

(b) [4 points] What is equilibrium $Y$? [Hint: Substitute the values of equations for planned consumption, investment, and government spending into the equation $Y = C + I + G$ and then solve for $Y$]

*Equilibrium $Y$ is 1,800*
(c) [3 points] How much does equilibrium income decrease when G is reduced to 200?

Equilibrium Y decreases by 300

(4) [15 points] The IS-LM Model

Assume the following model of the closed economy, with the price level fixed at 1.0:

\[ C = 0.5(\text{Y} - T) \]
\[ T = 1,000 \]
\[ I = 1,500 - 250r \]
\[ G = 1,500 \]
\[ M_d/P = 0.5\text{Y} - 500r \]
\[ M^s = 1,000 \]

(a) [4 points] Write a numerical formula for the IS curve, showing Y as a function of r alone [Hint: Substitute out \( C, I, G, \) and \( T \)]

\[ IS : Y = -500r + 5000 \]

(b) [4 points] Write a numerical formula for the LM curve, showing Y as a function of r alone [Hint: Substitute out \( M/P \)]

\[ LM : Y = 1000r + 2000 \]

(c) [3 points] What are the short-run equilibrium values of Y, r, and national saving?

\[ Y = 4000, \ r = 2, \ S = 1000 \]
(d) [4 points] You are the chief economic adviser in this hypothetical economy. Do you believe that fiscal policy is more potent than monetary policy? Briefly discuss [Hint: Use the slope of IS and LM curve in (a) and (b)]

Since the IS curve is steeper than the LM curve, fiscal policy is relatively more effective than monetary policy.

(4) [10 points] The IS-LM Model

(a) [5 points] Suppose Congress passes legislation that reduces taxes. Use the IS – LM model to illustrate graphically the impact of the tax reduction on output and interest rates and explain in words what happens to equilibrium interest rate (r) and output (Y).

Both the interest rate and output increase.

(b) [5 points] Suppose that people finally realize that they must save a larger proportion of their income in order to retire and that they simultaneously begin to use new technology, which allows them to reduce their holdings of real cash balances as a proportion of their income. Use the IS – LM model to illustrate graphically the impact of these two changes in household behavior on output and interest rates.

The interest rate decreases, but the impact on output is ambiguous, depending on whether the IS or LM curve shifts more.