Nanyang Technological University
School of Social Sciences

HE2002 Macroeconomics II AY25-26 SEMESTER 2

Tutorial 3

1. **Chapter 4, Q11 Monetary policy in a liquidity trap**

   Suppose that money demand is given by

   $$M^d = \$Y(0.25 - i)$$

   as long as interest rates are positive.

   The questions below then refer to situations where the interest rate is zero.

   (a) What is the demand for money when interest rates are zero and \$Y = 80?

   (b) If \$Y = 80, what is the smallest value of the money supply at which the interest rate is zero?

   (c) Once the interest rate is zero, can the central bank continue to increase the money supply?

   (d) Go to the database at the Federal Reserve Bank of St. Louis known as FRED. Find the series BOGMBASE (the central bank money, also called the monetary base) and look at its behavior from 2010 to 2015. What happened to the monetary base? What happened to the federal funds rate in the same period?

2. **Chapter 4, Q8 Money and the banking system**

   Consider a monetary system that included simple banks (Case 2 Central Bank and (Commercial) Banks). Assume the following:

   i. The public holds no currency

   ii. The ratio of reserves to deposits is 0.1.

   iii. The demand for money is given by

   $$M^d = \$Y(0.8 - 4i)$$

   Initially, the supply of central bank money H is \$ 100 billion, and nominal income is \$ 5 trillion.

   (a) What is the demand for central bank money H^d?

   (b) Find the equilibrium interest rate by setting the demand for central bank money equal to the supply of central bank money.

   (c) What is the overall supply of money? Is it equal to the overall demand for money at the interest rate you found in part b?

   (d) What is the effect on the interest rate if central bank money is increased to \$300 billion?

(e) If the overall money supply increases to \$3,000 billion, what will be the effect on i?

3. **Chapter 5, Q3. The response of the economy to fiscal policy**

Consider the following model:

$$C = c_0 + c_1(Y - T)$$

$$I = b_0 + b_1 Y - b_2 i$$

$$Z = C + I + G$$

$$i = \bar{i}$$

(a) Solve for equilibrium output, taking the interest rate $i = \bar{i}$ as given. Assume $c_1 + b_1 < 1$.

(b) Solve for equilibrium level of investment.

(c) Let's go behind the scenes in the money market. Chapter 4 introduced the equations that describe equilibrium in the money market. The nominal income, denoted by $\$Y$, equals price level times real income, that is $P \times Y$. In this question, assume the money market equilibrium condition is: $M/P = d_1 Y - d_2 i$. Solve for the equilibrium level of the real money supply $\frac{M^s}{P}$ when $i = \bar{i}$. How does the real money supply $\frac{M^s}{P}$ vary with government spending if the interest rate i is fixed at $\bar{i}$?