

Nanyang Technological University
School of Social Sciences

HE2002 Macroeconomics II AY23-24 SEMESTER 2

Tutorial 2

1. **Chapter 4, Q2**

Suppose that the household nominal income for a country is \$50,000 billion. The money demand function is given by

$$M^d = \$Y(0.2 - 0.8i)$$

- (a) What is the demand for money when the interest rate is 1%? 5%?
- (b) What is the relationship between money demand and income? Money demand and the interest rate?
- (c) Suppose the yearly income is reduced by 20%. In percentage terms, what happens to the demand for money if the interest rate is 1%? If the interest rate is 5%?
- (d) What should a central bank do to interest rates if it needs to increase money demand?

2. **Chapter 4, Q3**

Consider a bond that promises to pay \$100 in one year.

- (a) What is the interest rate on the bond if its price today is \$75? \$85? \$95?
- (b) What is the relation between the price of the bond and the interest rate?
- (c) If the interest rate is 8%, what is the price of the bond today?

3. **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?

4. Chapter 4, Q8 Money and the banking system (Optional)

(Please read Section 4-3 Determining the Interest Rate: II in the textbook or Slide 23 “The Role of Financial Intermediaries” to Slide 32 “The Federal Funds Rate” of Slides of Lecture 2 before you attempt this question.)

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?
- (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 ? [Hint: Use what you discovered in part c.]