NANYANG TECHNOLOGICAL UNIVERSITY
SCHOOL OF SOCIAL SCIENCES
SEMESTER 1 AY22-23

HE1002 MACROECONOMICS I

PROBLEM SET 7

Question 1

During World War II, an Allied soldier named Robert Radford spent several years in a large German prisoner-of-war camp. At times, more than 50,000 prisoners were held in the camp, with some freedom to move about within the compound. Radford later wrote an account of his experiences. He described how an economy developed in the camp, in which prisoners traded food, clothing, and other items. Services, such as barbering, were also exchanged. Lacking paper money, the prisoners began to use cigarettes (provided monthly by the Red Cross) as money. Prices were quoted, and payments made, using cigarettes.

(a) In Radford's POW camp, how did cigarettes fulfill the three functions of money?

(b) Why do you think the prisoners used cigarettes as money, as opposed to other items of value such as squares of chocolates or pairs of boots?

(c) Do you think a nonsmoking prisoner would have been willing to accept cigarettes in exchange for a good or service in Radford's camp? Why or why not?

Question 2

Redo the example of Gorgonzola in the text (see Tables 10.2 to 10.6), assuming that (1) initially, the Gorgonzolan central bank puts 5,000,000 guilders into circulation, and (2) commercial banks desire to hold reserves of 20 percent of deposits. As in the text, assume that the public holds no currency. Show the consolidated balance sheets of Gorgonzolan commercial banks for each of the following instances.

(a) After the initial deposits (compare to Table 10.2).

(b) After one round of loans (compare to Table 10.3).

(c) After the first redeposit of guilders (compare to Table 10.4).

(d) After two rounds of loans and redeposits (Table 10.5).

(e) What are the final values or bant reserves, loans, deposits, and the money supply (compare to Table 10.6)?

Question 3
Answer each of the following questions:

(a) Bank reserves are 100, the public holds 200 in currency, and the desired reserve-deposit ratio is 0.25. Find deposits and the money supply.

(b) The money supply is 500, and currency held by the public equals bank reserves. The desired reserve-deposit ratio is 0.25. Find currency held by the public and bank reserves.

(c) The money supply is 1,250, of which 250 is currency held by the public. Bank reserves are 100. Find the desired reserve-deposit ratio.

Question 4
When a central bank increases bank reserves by $1, the money supply rises by more than $1. The amount of extra money created when the central bank increases bank reserves by $1 is called the money multiplier.

(a) Explain why the money multiplier is generally greater than 1. In what special case would it equal 1?

(b) The initial money supply is $1000, of which $500 is currency held by the public. The desired reserve-deposit ratio is 0.2. Find the increase in money supply associated with increases in bank reserves of $1, $5, and $10. What is the money multiplier for this economy?

(c) Find a general rule for calculating the money multiplier.

Question 5
Refer to Table 10.7. Suppose that the Fed had decided to set the U.S. money supply in December 1932 and in December 1933 at the same value as in December 1930. Assuming that the values of currency held by the public and the reserve-deposit ratio had remained as given in the table, by how much more should the Fed have increased bank reserves at each of those dates to accomplish that objective?

Question 6
Consider a country in which real GDP is $9 trillion, nominal GDP is $12 trillion, M1 is $2.5 trillion, and M2 is $5.5 trillion.

(a) Find velocity for M1 and for M2.

(b) Show that the quantity equation holds for both M1 and M2.

Question 7

Consider the following hypothetical data for 2019 and 2020:

	2019	**2020**
Money supply	1,000	1,050
Velocity	8	8
Real GDP	12,000	12,000

(a) Find the price level for 2019 and 2020. What if the rate of inflation between the two years?

(b) What is the rate of inflation between 2019 and 2020 if the money supply in 2020 is 1,100 instead of 1,050?

(c) What is the rate of inflation between 2019 and 2020 if the money supply in 2020 is 1,100 and output in 2020 is 12,600?