

Problem Set 4

Econ 20A

Due date: March 23

1) Assume that the central bank puts \$5,000,000 into circulation. Commercial banks hold reserves of 20% of deposits. Public holds no currency. Show balance sheets of commercial banks for each of the following:

- a) After initial deposits in bank A
- b) After one round of loans by bank A
- c) After the first redeposit of dollars in bank B and the second round of loans (by bank B)
- d) After the redeposit of dollars in bank C and the third round of loans (by bank C)
- e) Find the money supply of the banking system at this point
- f) Find the money supply of the banking system if redeposit and loans are repeated infinite number of times

2) In the nation of Wiknam, people hold \$1,000 currency and \$4,000 of demand deposits in the only bank, Winbank. The reserve ratio is 0.25

- a) What are money supply and money multiplier of deposits?
- b) Show Wikbank's balance sheet. What value of loans does it have outstanding?
- c) Wiknam's central bank wants to decrease the money supply by \$1,000. Should it buy or sell government bonds to Winbank? Assuming no change in money multiplier, how much bonds the central bank needs to transact? Show Wikbank's new balance sheet.

3) An economy initially has a \$1,000 currency. Calculate money supply in the following scenarios:

- a) All money is held as demand deposits. Reserve ratio is 100%
- b) All money is held as demand deposits. Reserve ratio is 20%
- c) People hold \$200 currency. Banks hold 20% of deposits as reserves.

4) The Fed conducts an \$8 million open-market operations to decrease the money supply. As a result, people spend \$5 millions of their deposits and \$3 millions of currency. With the reserve ratio is 10%, what is the change in the money supply?

5) Consider the following information of a bank's balance sheet:

Reserves = \$200

Reserve ratio = 0.25

Loans = \$600

Debt = \$340

Securities = \$400

- a) Write down the balance sheet and find the leverage ratio.
- b) If the bank's value of assets rises by 2%, what happens to the value of the owner's equity in the bank?
- c) How large would the decline in the value of stocks held in the bank need to be for the bank to go insolvent?

6) The reserve ratio is 10 percent. Complete the tale by adding the amounts of Reserves and Capital. What is the leverage ratio? Give an example of changes in asset values that would push bank capital to zero. Why would it be a problem if the bank capital is gone?

Bank Balance Sheet			
Assets		Liabilities and Bank capital	
Reserves		Deposits	\$100,000
Loans	100,000	Debt	35,000
Securities	40,000	Capital	

7) Assume that the monetary base (*reserves+currency*) is \$100 billion, the reserve ratio is 0.1, and the currency/deposit ratio is 0.1. What is the money supply?