Chapter 10: Money supply and financial intermediaries.

1. What are the three functions of money?

2. What is commodity money? What are some of the problems with commodity money?

3. What is a pure gold standard? A gold exchange standard?

4. What is fiat money?

5. In early U.S. history, there was a bi-metallic standard. One dollar was equal to 24.75 grams of gold and 371.25 grains of silver. Prior to 1834, 24.75 grams of gold was worth more than 371.25 grains of silver in the open market. After 1834, the reverse was true. As a consequence, only silver coins circulated prior to 1834 (i.e., a silver standard), and only gold coins circulated after 1834 (i.e., a gold standard). Explain why.

6. Under a pure gold standard, if there was a huge new discovery of gold, what would happen to prices in the economy?

7. Describe how banking evolved from safekeeping to “money creators”.

8a. What is fractional reserve banking?
   b. What is the risk of keeping a very low fraction of liabilities on reserve?
   c. Why don’t banks keep all of their liabilities on reserve?

9a. What is a “bank run” and what type of news could cause one?
   b. When was the Fed established and what problems was it designed to address?
   c. Explain why the establishment of FDIC in 1933 helped reduce bank runs.
   d. Why was there a “bank run” in Ohio associated with the bad loans made by Home State Savings even though Home State depositors were insured?

10. Describe the basic structure of the Federal Reserve and its functions (Board of Governors, District Banks, Open Market Committee).

12a. What are the 3 major policy tools of the Fed for controlling the money supply?
   b. Explain how each of the 3 tools would be used to increase the money supply.

13a. Using a loan supply/demand model, explain how an increase in the money supply affects interest rates assuming there is no impact on inflation expectations.
   b. If an increase in the money supply leads people to believe that inflation will rise, would this offset or amplify the effect described in (a)? Explain.
To answer the questions that follow, assume that the banking system starts with the following "base case" balance sheet and that
* the public initially holds $10 billion of cash outside the bank.
* the reserve ratio is 10%
* banks always loan out excess reserves.

**BALANCE SHEET (All figures are in billions of $)**

<table>
<thead>
<tr>
<th></th>
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<th>Demand Dep.’s $1000</th>
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<tbody>
<tr>
<td>Cash</td>
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<td></td>
</tr>
<tr>
<td>Deposits at Fed</td>
<td>$50</td>
<td></td>
</tr>
<tr>
<td>Loans</td>
<td>$500</td>
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<tr>
<td>Govt. Secur.’s</td>
<td>$500</td>
<td>Owner's Equity 100</td>
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<td>$1100</td>
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1. Starting with the base case balance sheet, why can't the bank system create any additional money (or loans)?

2. Starting with the base case balance sheet,
   a. how much are banks required to hold on reserve?
   b. how much do banks have on reserve?
   c. what is the monetary base?
   d. what is M1?

3. Starting with the base case balance sheet, if the public deposits $5 b. of cash in the bank and holds it as demand deposits instead of as cash,
   a. what will required reserves be?
   b. what is the maximum increase in the money supply that can occur?
   c. how does this growth in the money supply occur (i.e. what entries will change in the balance sheet to reflect the growth in the money supply?)
   d. how would your answer differ if people decreased demand deposits by $5b to hold an additional $5b of cash outside the bank?

4. Starting with the base case balance sheet, if the Fed buys $10 b. of government securities from the bank system
   a. what is the maximum increase in the money supply that can occur?
   b. how does this growth in the money supply occur (i.e. what entries will change in the balance sheet to reflect the growth in the money supply?)
   c. how would your answer differ if the Fed sold $10 b. of government securities?

5. Starting with the base case balance sheet, if the Fed increases the reserve ratio from 10 to 20 percent
   a. how much must the money supply decrease?
   b. how does this decrease in the money supply occur (i.e. what entries will change in the balance sheet to reflect the change?)
   c. how would your answer differ if the Fed lowered the reserve ratio to 5%?
Answers for money supply worksheet.

1. The maximum demand deposits the bank system can support is determined by the amount of reserves and the money multiplier. This relationship is:

\[ \text{DDMAX} = \frac{1}{rr} \times \text{Reserves} \]

In this case, the money multiplier \((1/rr)\) is 10 and reserves are $100b. (cash + deposits at the Fed). Hence, the maximum amount of demand deposits that can be supported by the bank system is $1000b. Since demand deposits are currently $1000b., the bank cannot create any additional money or loans.

2a. Required reserves = \(rr\times DD\) = .1\times1000b. = $100b.
b. $100 b = bank cash + deposits at Fed
c. $110 b. = bank reserves + nonbank cash
d. $1010b= nonbank cash + DD

3a. required reserves = .1\times1005 b. = $100.5 b.
b. Demand deposits can now increase to \((1/rr)\times\text{reserves} = 10 \times 105 = $1050\). Thus, M1 would increase to $5 +1050=$1055 which is an increase of $45 billion. The reason is that the $5 billion of cash did not multiply outside the bank and does inside the bank. Hence, nonbank cash falls $5 billion but demand deposits increase by $50 b. for a net change of $45 b. in M1.
c. In the final balance sheet, reserves=$105 b., DD=$1050 b., loans=$545 b. Everything else stays the same.
d. If people withdraw $5b. from the bank and hold it as cash, reserves drop $5b. forcing demand deposits to drop by a total of $50b. At the same time, nonbank cash would increase by $5b. On net, M1 would drop by $45 b.

4a. When the Fed buys government securities from the bank, the bank loses $10b. of government securities but adds $10 b. of reserves. This allows them to increase demand deposits and loans by the money money multiplier (10) times the new reserves. Hence, M1 can increase by $100 b.
b. The new balance sheet will have $110 b. of reserves, $490 b. of government securities, $1100 b. of demand deposits, and $600 b. of loans. Everything else stays the same.
c. If the Fed sells government securities, reserves decrease by $10 b.; government securities increase by $10b.; demand deposits and loans must decrease by $100 b. Hence, M1 decreases by $100 b.

5a. Demand deposits must shrink to $500 b because the money multiplier drops from 10 to 5. Hence, M1 decreases by $500 b.
b. The new balance sheet will have $500b. of demand deposits and $0 of loans.
c. If the reserve ratio was cut to 5%, the money multiplier would increase from 10 to 20. Hence, demand deposits and loans can increase by $1000 b. meaning that M1 increases by $1000 b.