# Solutions for End-of-Chapter Questions and Problems: Chapter Eighteen

5.1. What are the benefits and costs to an FI of holding large amounts of liquid assets? Why are Treasury securities considered good examples of liquid assets?

5.2. How is an FI’s liability and liquidity risk management problem related to the maturity of its assets relative to its liabilities?

5.3. Consider the assets (in millions) of two banks, A and B. Both banks are funded by $120 million in deposits and $20 million in equity. Which bank has a stronger liquidity position? Which bank probably has a higher profit?

**Bank A Asset Bank B Assets**

Cash $10 Cash $20

Treasury securities 40 Consumer loans 30

Commercial loans 90 Commercial loans 90

Total assets $140 Total assets $140

5.4. What concerns motivate regulators to require DIs to hold minimum amounts of liquid assets?

5.5. How do liquid asset reserve requirements enhance the implementation of monetary policy? How are reserve requirements a tax on DIs?

5.6. Rank these financial assets according to their liquidity: cash, corporate bonds, NYSE-traded stocks, and T-bills.

5.7. Define the reserve computation period, the reserve maintenance period, and the lagged reserve accounting system.

5.8. City Bank has estimated that its average daily net transaction accounts deposit balance over the recent 14-day reserve computation period was $225 million. The average daily balance with the Fed over the 14-day maintenance period was $9 million, and the average daily balance of vault cash over the two-week computation period was $7.5 million.

a. Under the rules effective in 2012, what is the amount of average daily reserves required to be held during the reserve maintenance period for these net transaction accounts balances?

b. What is the average daily balance of reserves held by the bank over the maintenance period? By what amount were the average reserves held higher or lower than the required reserves?

c. If the bank had transferred $20 million of its deposits every Friday over the two-week computation period to one of its offshore facilities, what would be the revised average daily reserve requirement?

5.9. Assume that the 14-day reserve computation period for problem (8) above extended from May 18 through May 31.

a. What is the corresponding reserve maintenance period under the rules effective in 2012?

b. Given your answers to parts (a) and (b) of problem (8), what would the average required reserves need to be for the maintenance period for the bank to be in reserve compliance?

5.10. The average daily net transaction accounts deposit balance of a local bank during the most recent reserve computation period is $325 million. The amount of average daily reserves at the Fed during the reserve maintenance period is $24.60 million, and the average daily vault cash corresponding to the maintenance period is $4.3 million.

a. What is the average daily reserve balance required to be held by the bank during the maintenance period?

b. Is the bank in compliance with the reserve requirements?

c. What amount of reserves can be carried over to the next maintenance period either as excess or shortfall?

d. If the local bank has an opportunity cost of 6 percent and deposits at the Fed pay 0.5 percent, what is the effect on the income statement from this reserve period?

5.11. The following net transaction accounts and cash reserves at the Fed have been documented by a bank for computation of its reserve requirements (in millions) under lagged reserve accounting.

**Monday Tuesday Wednesday Thursday Friday**

**April**  **10th 11th 12th 13th 14th**

Net transaction

accounts $200 $300 $250 $280 $260

Reserves at Fed 20 22 21 18 27

**Monday Tuesday Wednesday Thursday Friday**

**17th 18th 19th 20th 21th**

Net transaction

accounts $280 $300 $270 $260 $250

Reserves at Fed 20 35 21 18 28

**Monday Tuesday Wednesday Thursday Friday**

**24th 25th 26th 27th 28th**

Net transaction

accounts $240 $230 $250 $260 $270

Reserves at Fed 19 19 21 19 24

**Monday Tuesday Wednesday Thursday Friday**

**May**  **1st 2nd 3rd 4th 5th**

Net transaction

accounts $200 $300 $250 $280 $260

Reserves at Fed 20 22 21 18 27

**Monday Tuesday Wednesday Thursday Friday**

**8th 9th 10th 11th 12th**

Net transaction

accounts $280 $300 $270 $260 $250

Reserves at Fed 20 35 21 18 27

**Monday Tuesday Wednesday Thursday Friday**

**15th 16th 17th 18th 19th**

Net transaction

accounts $240 $230 $250 $260 $270

Reserves at Fed 20 35 21 18 28

**Monday Tuesday Wednesday Thursday Friday**

**22th 23th 24th 25th 26th**

Net transaction

accounts $200 $300 $250 $280 $260

Reserves at Fed 19 19 21 19 24

The average vault cash for the computation period has been estimated to be $1 million per day.

a. What level of average daily reserves is required to be held by the bank during the maintenance period, May 11 - 24?

b. Is the bank in compliance with the requirements?

c. What amount of required reserves can be carried over to the following computation period?

d. If the average cost of funds to the bank is 8 percent per year and deposits at the Fed pay 0.5 percent, what is the effect on the income statement for this bank for this reserve period?

5.15. What is the relationship between funding cost and funding or withdrawal risk?

5.16. An FI has estimated the following annual costs for its demand deposits: management cost per account = $140, average account size = $1,500, average number of checks processed per account per month = 75, cost of clearing a check = $0.10, fees charged to customer per check = $0.05, and average fee charged per customer per month = $8.

a. What is the implicit interest cost of demand deposits for the FI?

b. If the FI has to keep an average of 8 percent of demand deposits as required reserves with the Fed paying no interest, what is the implicit interest cost of demand deposits for the FI?

c. What should be the per-check fee charged to customers to reduce the implicit interest costs to 3 percent? Ignore the reserve requirements.

5.17. A NOW account requires a minimum balance of $750 for interest to be earned at an annual rate of 4 percent. An account holder has maintained an average balance of $500 for the first six months and $1,000 for the remaining six months. The account holder writes an average of 60 checks per month and pays $0.02 per check, although it costs the bank $0.05 to clear a check.

a. What average return does the account holder earn on the account?

b. What is the average return if the bank lowers the minimum balance to $400?

c. What is the average return if the bank pays interest only on the amount in excess of $400? Assume that the minimum required balance is $400.

d. How much should the bank increase its check fee to the account holder to ensure that the average interest it pays on this account is 5 percent? Assume that the minimum required balance is $750.

5.18. Rank the following liabilities, with respect, first, to funding risk and second to funding cost:

Funding Risk Funding Cost

a. Money market deposit account.

b. Demand deposits.1

c. Certificates of deposit. d. Federal funds.

e. Bankers’ acceptances. f. Eurodollar deposits.

g. NOW accounts.

h. Wholesale CDs.

i. Passbook savings.

j. Repos.

k. Commercial paper.

5.26. What are the primary methods that insurance companies can use to reduce their exposure to liquidity risk?