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Assignment-1
FIN901 - Commercial Bank Management
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Problem 1-2
1-2. Under U.S. law what must a corporation do to qualify and be regulated as a commercial bank?

Solution:

A bank is any business offering deposits subject to withdrawal on demand and making loans of a commercial or business nature.

Congress then defined a bank as any institution that could qualified for deposit insurance administered by the Federal Deposit Insurance Corporation (FDIC).

Problem 1-8
Why do banks and other financial intermediaries exist in modern society, according to the theory of finance?

Solution:

The primary function of financial intermediaries is to act as a bridge between savers and borrowers, offering convenient financial services to surplus-spending units in order to attract funds and then allocating those funds to deficit spenders.

Also, financial intermediaries help to deal with the *imperfections* in the financial system and have the expertise to evaluate potential investments with *superior ability* to evaluate information. At the same time, the lending institutions acting as *delegated monitors* who assess and evaluate borrowers on behalf of their depositors and earn fees for supplying monitoring services.

By doing so, financial intermediaries satisfy the need for liquidity, reduce costs for their customers and, through diversification, reduce risk.

Problem 5-1
Jasper National Bank has just submitted its Report of Condition to the FDIC. Please fill in the missing items from its statement shown in Table 1 (all figures in millions of dollars):

Solution:

- Gross loans and leases=1,700+20=1,900.00
- Total liabilities and capital=Total assets=2,500.00
- Bank premises and fixed assets=2,500-87-233-45-1,700-20-15-200-175=25.00
- Total equity capital = 2+24+144+70=240.00
- Total liabilities = Total liabilities and capital-Total equity capital=2500-240=2,260.00
- Total deposits=2260-80-10-50-480-40=1,600.00

Problem 5-2
Along with the Report of Condition submitted above, Jasper has also prepared a Report of Income for the FDIC. Please fill in the missing items from its statement shown in Table 2 (all figures in millions of dollars):

Solution:

Table 1: Report of Condition-Jasper National Bank (5-1)

Report of Condition	
Total assets	$2,500.00
Cash and due from Depository Institutions	87.00
Securities	233.00
Federal funds sold and reverse repurchase agreements	45.00
Gross loans and leases	1900.00
Loan loss allowance	200.00
Net loans and leases	1,700.00
Trading account assets	20.00
Bank premises and fixed assets	
Other real estate owned	15.00
Goodwill and other intangibles	200.00
All other assets	175.00
Total liabilities and capital	2500
Total liabilities	2260.00
Total deposits	1600
Federal funds purchased and repurchasing agreements	80.00
Trading liabilities	10.00
Other borrowed funds	50.00
Subordinated debt	480.00
All other liabilities	40.00
Total equity capital	240.00
Perpetual preferred stock	2.00
Common stock	144.00
Surplus	144.00
Undivided profits	70.00

- Total interest expense= 120-40=80
- Trading account gains & fees =58-8-6-30=14
- Salaries and employee benefits= 77-10-20=47
- Provision for loan and lease losses=40+58-77-17=4
- Income before extraordinary items=17+1-5=13
- Net income=13+2=15

Problem 5-5
The Mountain High Bank has Gross Loans of $750 million with an ALL account of $45 million. Two years ago the bank made a loan for $10 million to finance the Mountain View Hotel. Two million in principal was repaid before the borrowers defaulted on the loan. The Loan Committee at Mountain High Bank believes the hotel will sell at auction for $7 million and they want to charge off the remainder immediately.

a. The dollar figure for Net Loans before the charge-off is ?

b. After the charge-off, what are the dollar figures for Gross Loans, ALL, and Net Loans assuming

Table 2: Report of Income-Jasper National Bank (5-2)

Report of income	
Total interest income	$120
Total interest expense	80
Net interest income	40
Provision for loan and lease losses	4
Total noninterest income	58
Fiduciary activities	8
Service charge on deposit accounts	6
Trading Account Gains and Fees	14
Additional Noninterest Income	30
Total Noninterest Expense	77
Salaries and Benefits	47
Premises and Equipment Expense	10
Additional Noninterest Expense	20
Pretax Income	17
Securities Gains (Losses)	1
Applicable Income Taxes	5
Income Before Extraordinary Income	13
Extraordinary Gains	2
Net Income	15

no other transactions?

c. If the Mountain View Hotel sells at auction for $8 million, how will this affect the pertinent balance sheet accounts?

Solution:

a. Net Loans = Gross Loans –ALL = 750 - 45= $705 million

b.
- Gross Loans= 750-(10-2)=$742 million
- ALL=45-(10-(2+7))=$ 44 million
- Net loans = 742-44=$ 698 million

c. Gross loans would not change and ALL would be $45 since all the loan are being paid, and net loans would decrease by $1 million.

Problem 5-11
You were informed that a bank's latest income and expense statement contained the following figures (in $ millions):

Suppose you also were told that the bank's total interest income is twice as large as its total interest expense and its noninterest income is three fourths of its noninterest expense. Imagine that its provision for Loan Losses equals 1 percent of its total interest income, while its taxes generally amount to 30 percent of its net income before income taxes. Calculate the following items for this bank's income and expense statement

Solution:

Net interest income	$ 700
Net noninterest income	-300
Pretax net operating income	372
Securities gains	10
Increase in bank's undivided profits	200

Items for income and expense statement	
Total interest income	1,400
Total interest expenses	700
Total noninterest income	1,200
Total noninterest expenses	900
Provision for loan losses	28
Income taxes	114.6
Dividends paid to common stockholders	67.4

- Total interest income and Total interest expenses :

  Since:

  $$\text{Total interest income} = 2 \times \text{Total interest expenses}$$
  $$\text{Net interest income} = \text{Total interest expenses} - \text{Total interest income} = \$700$$

  Thus,

  $$\text{Total interest expenses} = \$700$$
  $$\text{Toal interest income} = 2 \times 800 = \$1,400$$

- Total noninterest income and Total noninterest expenses: Since:

  $$\text{Total noninterest income} = 0.75 \times \text{ Total noninterest expenses}$$
  $$\text{Net noninterest income} = \text{Total noninterest income} - \text{Total noninterest expenses} = -\$300$$

  So,

  $$\text{Total noninterest expenses} = 4 \times 300 = \$1,200$$
  $$\text{Total noninterest income} = 0.75 \times \text{Total noninterest expenses} = \$900$$

- Provision for loan losses :

  $$\text{Provision for loan losses} = 0.02 \times \text{Total interest income} = 0.02 \times 1400 = \$28$$

- Income taxes:

  $$\begin{aligned}\text{Net income before income taxes} &= \text{Pretax net operating income} + \text{Securities gains} \\ &= 372 + 10 = \$382 \\ Income taxes &= 0.3 \times Net income before income taxes \\ &= 0.3 \times 382 = \$114.6\end{aligned}$$

- Dividends paid to common stockholders:

  $$\begin{aligned}\text{Dividends} &= \text{Net income after tax} - \text{Increase in undivided profits} \\ &= (1 - 0.3) \times \text{Net income before income taxes} - 200 = 0.7 \times 382 - 200 = \$67.4\end{aligned}$$

Problem 6-1

An investor holds the stock of Foremost Financials and expects to receive a dividend of $5.75 per share at the end of the year. Stock analysts recently predicted that the bank's dividends will grow at approximately 3 percent a year indefinitely into the future. If this is true, and if the appropriate risk-adjusted cost of capital (discount rate) for the bank is 12.25 percent, what should be the current price per share of Foremost Financials' stock?

Solution:

$$P = \frac{D}{r-g} = \frac{5.75}{0.1215 - 0.03} = \$62.8415$$

The current price of Foremost Financials' stock should be $62.842.

Problem 6-4

Fill in the missing items on the income and expense statement. Using these statements, calculate the following performance measures.

What strengths and weaknesses are you able to detect in Happy Merchants' performance?

Solution:

$$ROE = \frac{\text{Net income}}{\text{Total equity capital}} = \frac{9}{80} = 11.25\%$$

$$ROA = \frac{\text{Net income}}{\text{Total assets}} = \frac{9}{980} = 0.92\%$$

$$\text{Net interest margin} = \frac{\text{Net interest income}}{\text{Total Assets}} = \frac{12}{980} = 1.22\%$$

$$\text{Net noninterest margin} = \frac{\text{Net noninterest income}}{\text{Total Assets}} = \frac{16-17}{980} = -0.10\%$$

$$\text{Net operating margin} = \frac{\text{Total operating Revenues} - \text{Total operating expenses}}{\text{Total Assets}} = \frac{66-56}{980} = 1.02\%$$

$$\text{Earning spread} = \frac{\text{Total interest income}}{\text{Total earning assets}} - \frac{\text{Total interest expenses}}{\text{Total Interest-bearing liabilities}} = \frac{50}{830} - \frac{38}{900-190} = 0.67\%$$

$$\text{Net profit margin} = \frac{\text{Net income}}{\text{Total operating revenues}} = \frac{9}{50+16} = 12.64\%$$

$$\text{Asset utilization} = \frac{\text{Total operating revenues}}{\text{Total assets}} = \frac{50+16}{980} = 6.73\%$$

$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Total equity capital}} = \frac{980}{80} = 12.25$$

$$\text{Tax management efficiency} = \frac{\text{Net income}}{\text{Pretax net operating income}} = \frac{9}{12} = 75\%$$

$$\text{Expense control efficiency} \frac{\text{Pretax net operating income}}{\text{Total operating revenue}} = \frac{12}{50+16} = 18.18\%$$

$$\text{Asset management efficiency} = \frac{\text{Total operating revenues}}{\text{Total assets}} = \frac{66}{980} = 6.73\%$$

$$\text{Fund management efficiency} = \frac{\text{Total assets}}{\text{Total equity}} = \frac{980}{80} = 12.25$$

$$\text{Operating efficiency ratio} = \frac{\text{Total operating expenses}}{\text{Total operating revenues}} = \frac{56}{66} = 84.86\%$$

- Strengths and weaknesses:

  Since we have no data of neither the current level of the overall banking industry nor the comparable banks, it's very difficult to get valuable findings simply investigating the absolute value of the above ratios without making a thorough comparison. And as far as I'm concerned, all the ratio of Happy Merchant's National Bank is in a reasonable range.

Happy Merchants National Bank	
Income and Expense Statement (Report of Income)	
Interest and fees on loans	$44
Interest and dividends on securities	6
Total interest income	50
Interest paid on deposits	32
Interest paid on nondeposit borrowings	6
Total interest expense	38
Net interest income	12
Provision for loan losses	1
Non interest income and fees	16
Noninterest expenses:	
Salaries and employee benefits	10
Overhead expenses	5
Other noninterest expenses	2
Total noninterest expenses	17
Pretax operating income	10
Securities Gains (or losses)	2
Pretax net operating income	12
Taxes	2
Net operating income	10
Net extraordinary items	(-1)
Net Income	$9

Problem 6-9
Watson County National Bank presents us with these figures for the year just concluded. Please determine the net profit margin, equity multiplier, asset utilization ratio, and ROE.

Net income	$ 25.00
Total operating revenues	135.00
Total assets	1,700.00
Total equity capital accounts	160.00

Solution:

$$\text{Net profit margin} = \frac{\text{Net income}}{\text{Total operating revenues}} = \frac{25}{135} = 18.52\%$$

$$\text{Equity multiplier} = \frac{\text{Total assets}}{\text{Total equity capital}} = \frac{1700}{160} = 10.63$$

$$\text{Asset utilization} = \frac{\text{Total operating revenues}}{\text{Total assets}} = \frac{135}{1700} = 7.94\%$$

$$ROE = \frac{\text{Net income}}{\text{Total equity capital}} = \frac{25}{160} = 15.63\%$$

Problem 6-11

Paintbrush Hills State Bank has just submitted its Report of Condition and Report of Income to its principal supervisory agency. The bank reported net income before taxes and securities transactions of $29 million and taxes of $8 million. If its total operating revenues were $650 million, its total assets $1.75 billion, and its equity capital $170 million, determine the following for Paintbrush Hills:

a. Tax management efficiency ratio.

b. Expense control efficiency ratio.

c. Asset management efficiency ratio.

d. Funds management efficiency ratio.

e. ROE

Alternative scenarios:

a. Suppose Paintbrush Hills State Bank experienced a 20 percent rise in net before-tax income, with its tax obligation, operating revenues, assets, and equity unchanged. What would happen to ROE and its components?

a. If total assets climb by 20 percent, what will happen to Paintbrush's efficiency ratio and ROE?

a. What effect would a 20 percent higher level of equity capital have upon Paintbrush's ROE and its components?

Solution:

$$\text{Tax management efficiency} = \frac{\text{Net income}}{\text{Net Income Before Taxes and Securities Transactions}} = \frac{29-8}{29} = 72.41\%$$

$$\text{Expense control efficiency} \frac{\text{Net Income Before Taxes and Securities}}{\text{Total operating revenue}} = \frac{27}{650} = 4.46\%$$

$$\text{Asset management efficiency ratio} = \frac{\text{Total operating revenues}}{\text{Total assets}} = \frac{650}{1,750} = 37.14\%$$

$$\text{Fund management efficiency} = \frac{\text{Total assets}}{\text{Total equity}} = \frac{1,750}{170} = 10.29$$

$$ROE = \frac{\text{Net income}}{\text{Total equity capital}} = \frac{21}{170} = 12.35\%$$

Alternative scenarios:

a. Suppose Paintbrush Hills State Bank experienced a 20 percent rise in net before-tax income, with its tax obligation, operating revenues, assets, and equity unchanged:

$$\begin{aligned} ROE &= ROA \times \text{Equity multiplier} \\ &= \frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Total equity}} \\ &= \frac{(29 \times 1.2) - 8}{1,750} \times \frac{1,750}{170} \\ &= 1.531\% \times 10.29 = 15.765\% \end{aligned}$$

This represents a 27.67% increase in ROE, from 12.35% to 15.765%. Since the equity multiplier did not change, this increase in ROE is totally resulted from the increase in ROA.

b. If total assets climb by 20 percent:

$$\text{Asset management efficiency ratio} = \frac{\text{Total operating revenues}}{\text{Total assets}} = \frac{650}{1,750 \times 1.2} = 30.95\%$$

$$\text{Fund management efficiency} = \frac{\text{Total assets}}{\text{Total equity}} = \frac{1,750 \times 1.2}{170} = 12.35$$

Asset management efficiency ratio will decrease by 16.67% and Fund management efficiency ratio will increase by 20%. However, ROE will remain unchanged since the decrease in the asset management ratio is completely offset by the increase in the Fund management efficiency.

c. What effect would a 20 percent higher level of equity capital have upon Paintbrush's ROE and its components?

$$\text{Fund management efficiency ratio} = \frac{\text{Total assets}}{\text{Total equities}} = \frac{1,750}{170 \times 1.2} = 8.578$$

$$\begin{aligned} ROE =& \text{Tax management efficiency} \times \text{Expense control efficiency ratio} \times \\ & \text{Asset management efficiency ratio} \times \text{Funds management efficiency ratio} \\ =& 72.41\% \times 4.46\% \times 37.14\% \times 8.578 \\ =& 10.29\% \end{aligned}$$

A 20 percent increase in the level of equity capital can decrease the ROE by 16.67% from 12.35% to 10.29%