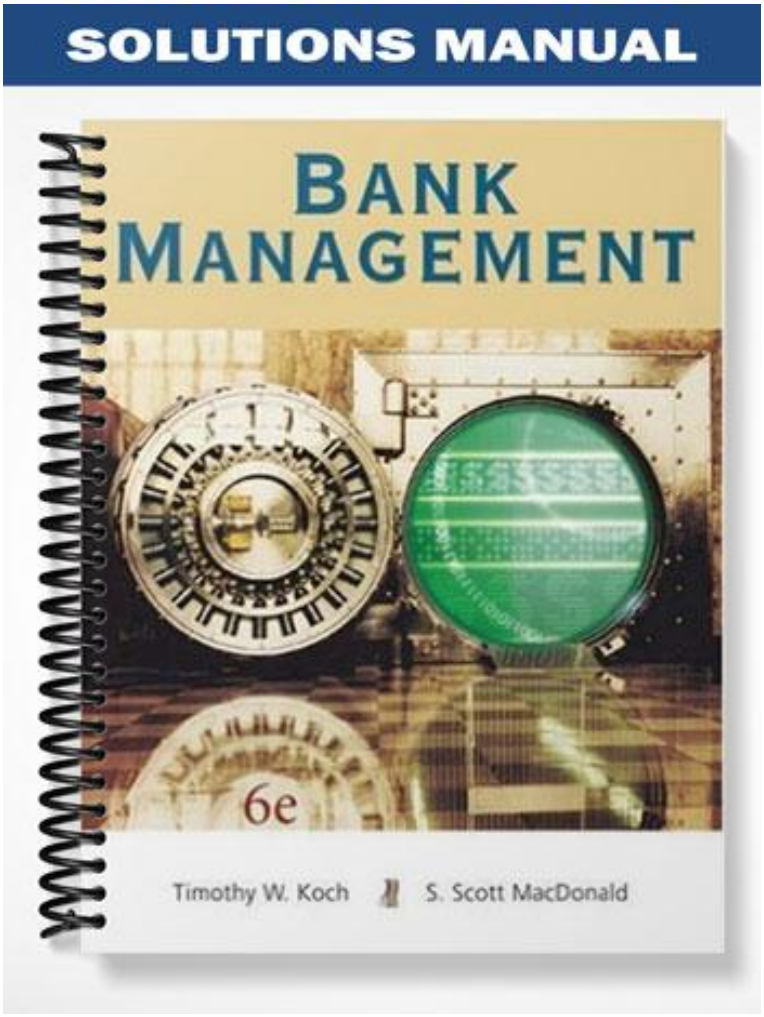
SOLUTIONS MANUAL



Chapter 2

Analyzing Bank Performance

Chapter Objectives

1. Introduce bank financial statements, including the basic balance sheet and income statement, and discuss the interrelationship between them.
2. Provide a framework for analyzing bank performance over time and relative to peer banks. Introduce key financial ratios that can be used to evaluate profitability and the different types of risks faced by banks. Focus on the trade-off between bank profitability and risk.
3. Identify performance measures that differentiate between small, independent banks (specialty banks) and larger banks that are part of multibank holding companies or financial holding companies.
4. Distinguish between types of bank risk; credit, liquidity, interest rate, capital, operational, and reputational.
5. Describe the nature of and meaning of regulatory CAMELS ratings for banks.
6. Provide applications of data analysis to sample banks' financial information.
7. Describe performance characteristics of different-sized banks.
8. Describe how banks can manipulate financial information to 'window-dress' performance.

Key Concepts

1. Bank managers must balance banking risks and returns because there is a fundamental trade-off between profitability, liquidity, asset quality, market risk and solvency. Decisions that increase banking risk must offer above average profits. The more liquid a bank is and the more equity capital used to fund operations, the less profitable is a bank, ceteris paribus.

2. Banks face five basic types of risk in day-to-day operations: credit risk, liquidity risk, market risk, capital/solvency risk, and operational risk. Market risk encompasses interest rate risk, foreign exchange risk and price risk. Each type of risk refers to the potential variation in a bank's net income or market value of stockholders' equity resulting from problems that affect that part of the bank's activities.

3. Banks also face risks in the areas of country risk associated with loans or other activity with foreign government units and off-balance sheet activities, which create contingent liabilities. More recently, banks have focused on reputation risk. For example, from 2002-2005 Citigroup, JP Morgan Chase, and Bank of America found that even though they continued to report strong profits, they experienced strong criticism for 1) their roles in facilitating strategies to disguise Enron's true financial status, 2) problems in sub-prime lending programs via the Associates Corp. and their own internal finance company activities, 3) problems with underwriting subsidiaries with analyst conflicts between stock reports and the firm's investment banking relationships; facilitating market timing of stock trades to their detriment of their own mutual fund holders, 4) lack of supervision of trading groups, and 5) facilitating improper borrowing at Parmalat.

4. A bank's return on equity (ROE) can be decomposed in terms of the duPont system of financial ratio analysis. This examination of historical balance sheet and income statement data enables an analyst to evaluate the comparative strengths and weaknesses of performance over time and versus peer banks. The Uniform Bank Performance Report (UBPR) data reflect the basic ratios from this return on equity model.

5. Different-sized commercial banks exhibit different operating characteristics and thus performance measures. Small banks typically report a higher return on assets (ROA) than large banks because they earn higher gross yields on assets and pay less interest on liabilities.

6. High performance banks generally benefit from lower interest and non-interest expense and limit credit risk so that loan losses are relatively low. They also operate with above average stockholders' equity.

7. Many banks can successfully "window-dress" performance by manipulating the reporting of financial data. They may accelerate revenue recognition and defer expenses or selectively alter when they take securities gains or losses and time when to charge off loans or report loans as non-performing. As such, they may inappropriately smooth earnings with provisions for loan losses or by other means. Analysts must be careful when evaluating extraordinary transactions that have one-time gain or loss features.

Teaching Suggestions

It is extremely important that students fully understand the material in this chapter before attempting more difficult analysis. The text introduces actual balance sheet and income statement data for PNC Bank, the principal subsidiary of PNC Bank Corp., and data for a hypothetical community bank that is representative of the typical independent bank. You should take a substantial amount of time to describe the basic balance sheet items, emphasizing the dominant holdings of loans, securities, and cash/cash equivalents among assets, and the role of core deposits versus noncore or purchased (hot money) liabilities. Demonstrate how the income statement is structured to emphasize the financial nature of banks by focusing on net interest income and the comparison on noninterest income and noninterest expense. Contrast this with the income statement of a nonfinancial corporation. It is also useful to discuss the role of provision for loan losses, its noncash expense feature, and the linkage with the contra-asset account for loan loss reserves. Many banks view provisions as an easily managed figure that can produce whatever earnings figure is desired.

The application of the return on equity (ROE) model to PNC's data and the risk measures can be used to demonstrate the trade-off between profitability and risk. Carefully walk students through the calculations of **ROE, ROA, EM, AU, ER** and **TAX**, but focus on interpreting the ratios. After students understand the calculations, review the data in Exhibit 2.7 and discuss the relationship of all the profit measures to the overall profit performance of the bank. Do the same for the key risk measures in Exhibits 2.6 and 2.8. Note that more detailed information for PNC from the bank's UBPR appears in the Appendix to Chapter 2. These data and those in the Contemporary Issues: The Fall of Enron and Its Impact on PNC Bank provide useful comparisons of PNC's performance over time from 2000-2004 and versus peer banks.

As an assignment, it is useful to have the students evaluate the profitability and risk ratios for Community National Bank (CNB) and write-up an analysis to be discussed in class. This works best after completing a detailed analysis of PNC's data. It is easy to get bogged down in data. Students should be encouraged to focus on interpreting the financial ratios rather than on the calculations. The template provided with the text can be used to handle subsequent computations and cases. Emphasize the importance of reviewing at least 3 years of historical financial data to determine key trends, and comparing the most recent performance ratios with those of peer banks to determine where significant deviations occur.

The financial ratios are provided in a framework that follows reporting in the Uniform Bank Performance Report (UPBR), which bankers obtain from federal regulators. The BANK template provided with the text can be used by students to evaluate the performance of any financial institution once students have entered the raw data.

Special Projects

A. Have the students perform the analysis in Case 1: Southwestern State Bank. The use of the template is encouraged because it allows students to focus on interpreting the data rather than calculating the ratios. Have students write up a report that examines the bank's performance over the past 3 years and versus peer banks.

B. Select a community bank that has recently been in the news for problem loans (see the American Banker or check the FDIC web site at www.fdic.gov for samples). Have students obtain the most recent UBPR data for the bank from the FDIC's web site. Assign them to write a report critiquing the bank's profitability and its ability to control operating costs (versus operating income) and loan losses (net charge-offs). Ask them to assess the adequacy of the bank's loan loss

reserve. The exercise will demonstrate trends in bank performance over time and the predictability (or lack-of predictability) of the data in forecasting future performance difficulties.

C. Select two or more well-known Global Banks, Nationwide Banks or Super Regional Banks and obtain their most recent annual reports and 10-K statements, if possible. Have students perform the risk versus return analysis as summarized in Exhibits 2.5 – 2.8 using the BANK template. Require that students carefully review footnotes to the financial statements for additional information and ask them to read the chairman's letter to stockholders. Students should submit a written report as if they are a consultant responsible for identifying strengths and weaknesses in firm performance, and recommending strategic changes in management policies to improve performance.

D. Have students collect financial information for savings and loan associations, credit unions, investment banks, and finance companies. Use the Bank template to conduct the profit and risk analysis outlined in Exhibits 2.5 to 2.8. After interpreting the data in line with that described in part C above, have students compare the performance with that of commercial banks. Ask students to specifically identify where differences exist in financial reporting and in the profit versus risk trade-off.

Answers to End of Chapter Questions

1. For a large bank, assets consist approximately of marketable securities (20%), loans (70%), and other assets (10%). Liabilities consist of core deposits (40%-60%), noncore, purchased liabilities (20%-40%), and other liabilities (5 %-10%) as a fraction of assets. Small banks typically obtain more funds in the form of core deposits and less in the form of noncore, purchased liabilities. Small banks often invest more in securities as well. Of course, the actual percentages for any bank depend on that bank's business strategy, market competition, and ownership.

2. A bank's interest income consists of interest earned on loans and securities while noninterest income includes revenues from deposit service charges, trust department fees, fees from nonbank subsidiaries, etc. Interest expense consists of interest paid on interest-bearing core deposits and noncore liabilities while noninterest expense is comprised of overhead costs, personnel costs, and other costs. A bank's net interest income equals its interest income minus interest expense. Note that interest income may be calculated on a tax-equivalent basis in which tax-exempt interest is converted to its pre-tax equivalent. A bank's burden is defined as its noninterest expense minus noninterest income. This is often quoted as a fraction of total assets. A bank's efficiency ratio is calculated as noninterest expense divided by the sum of net interest income and noninterest income. The denominator effectively measures net operating revenue after subtracting interest expense. The efficiency ratio measure the noninterest cost per $1of operating revenue generated. Analysts often interpret the efficiency ratio as a measure of a bank's ability to control overhead relative to its ability to generate noninterest income (and overall revenue). A lower number is presumably better because it reflects better cost control compared with revenue generation.

3. Balance sheet accounts:
   a. Increase liability: money market deposit account (+$5,000)
      Increase asset: federal funds sold (+$5,000)
   b. Decrease asset: real estate loan
      Increase asset: mortgage loan
   c. Increase equity: common stock (common and preferred capital)
      Increase asset: commercial loans

4. Income statement

Interest on U.S. Treasury & agency securities	$44,500
Interest on municipal bonds	60,000
Interest and fees on loans	189,700
Interest income =	$294,200
Interest paid on interest-checking accounts	$33,500

Interest paid on time deposits	100,000
Interest paid on jumbo CDs	101,000
Interest expense =	$234,500
Net interest income =	$59,700
Provisions for loan losses =	$ 18,000
Net interest income after provisions =	$41,700
Fees received on mortgage originations	$23,000
Service charge receipts	41,000
Trust department income	15,000
Non-interest income =	$79,000
Employee salaries and benefits	$145,000
Occupancy expense	22,000
Non-interest expense =	$167,000
Income before income taxes	-$46,300
Income taxes	15,742
Net income =	-$30,558
Cash dividends declared	2,500
Retained earnings =	-$33,058

This assumes that expenses associated with the purchase of the new computer are included in occupancy expense. If not, the computer expense (depreciation) will increase the loss for the period. Also, the bank can receive a tax refund from prior tax payments if the bank made a taxable profit within recent years.

5. The primary risks faced by banks are credit risk, liquidity risk, interest rate risk, foreign exchange risk (the latter two represent market risk), operational risk, reputational risk, and capital solvency. In general, promised, or expected, returns should be higher for banks that assume increased risk. There should also be greater volatility in returns over time.

a. Credit risk: Net loan charge-offs/Loans
   High risk - high ratio; Low risk - low ratio
   High risk manifests itself in occasional high charge-offs, which requires above average provisions for loan lossses to replenish the loan loss reserve. Thus, net income is volatile over time.

b. Liquidity risk: Core deposits/Assets
   High risk - low ratio; Low risk - high ratio
   High risk manifests itself in less stable funding as a bank relies more on noncore, purchased liabilities that fluctuate over time. These noncore liabilities are also higher cost, which raises interest expense.

c. Interest rate risk: (|Repriceable assets-repriceable liabilities|)/Assets
   High risk - high ratio; Low risk - low ratio
   High risk banks do not closely match the amount of repriceable assets and repriceable liabilities. Large differences suggest that net interest income may vary sharply over time as the level of interest rates changes.

d. Foreign exchange risk: Assets denominated in a foreign currency minus liabilities denominated in the same foreign currency.
   High risk – a large difference; Low risk – a small difference
   High risk manifests itself when exchange rates change adversely and the value of the bank's net position of assets versus liabilities denominated in a currency changes sharply.

e. Operational risk: total assets/number of employees
   High risk – low ratio; Low risk – high ratio
   High risk manifests itself when the bank operates at low productivity measured by more employees per amount of assets

f. Capital/solvency risk: Stockholders' equity/Assets
High risk - low ratio; Low risk - high ratio
High risk manifests itself because fewer assets must go into default before a bank is insolvent and can be closed down by regulators.

g. Reputational risk is difficult to measure ex ante. It is more observable by announced problems and issues.

6. Equity multiplier
Bank L: Equity/Assets = 0.06 indicates Assets/Equity = 16.67X
Bank S: Equity/Assets = 0.10 indicates Assets/Equity = 10X

If each bank earns 1.5% on assets (ROA = 0.015), then the ROEs will equal 25% (Bank L) and 15% (Bank S). If, instead, each bank reports a loss with ROA = -0.012, then the ROEs will equal -20% (Bank L) and -15% (Bank S). When banks are profitable, financial leverage has the positive effect of increasing ROE; when banks report losses, financial leverage increases the magnitude of loss in terms of a negative ROE.

7. ROE = net income/stockholders' equity
ROA = net income/total assets
EM = total assets/stockholders' equity
ER = total operating expense/total assets
AU = total revenue/total assets
Balance sheet figures should be measured as averages over the period of time the income number is generated.

ROE = ROA x EM ROA = AU – ER – TAX

where TAX = applicable income tax/total assets.

8. Profitability ratios differ across banks of different size as measured by assets. The primary reasons are that different size banks have different asset and liability compositions and engage in different amounts of off-balance sheet activities. Typically, small banks report higher net interest margins because their average asset yields are relatively high while their average cost of funds is relatively low. This reflects loans to higher risk borrowers, on average, and proportionately more funding from lower cost core deposits. ROEs, in turn, are often lower because small banks operate with more capital relative to assets, that is with lower equity multipliers, so that even with comparable ROAs the ROEs are lower. Large banks ROAs are increasing faster over time because large banks operate with lower efficiency ratios as they have been more successful in generating fee income.

9. CAMELS
a. C =capital adequacy: equity/assets
b. A = asset quality: nonperforming loans/loans; loan charge-offs/loans
c. M = management: no single ratio is good, although all ratios indicate overall strategy
d. E = earnings: aggregate profit ratios; ROE, ROA**,** net interest margin, burden, efficiency
e. L = liquidity: core deposits/assets; noncore, purchased liabilities/assets; marketable securities/assets
f. S = sensitivity to market risk; |repriceable assets-repriceable liabilities|/assets; difference in assets and liabilities denominated in the same currency; size of trading positions in commodities, equities and other tradeable assets.

10. Lowest to highest liquidity risk: 3-month T-bills, 5-year Treasury bond, 5-year municipal bond (if high quality and from a known issuer), 4-year car loan with monthly payments (receive some principal monthly, may be saleable), 1-year construction loan, 1-year loan to individual, pledged 3-month T-bill. As stated, the 3-month T-bill that is pledged as collateral is illiquid unless the bank can change its collateral status.

11. Comparative credit risk
a. loan to a comer grocery store representing a little known borrower with uncertain financials

b. loan collateralized with inventory (work in process) because the collateral is less liquid and more difficult to value; this assumes that the receivables are still viable and not too aged.
c. normally the Ba-rated municipal bond, unless the agency bond is an "exotic" mortgage backed security, because the agency bond carries an implied guarantee in that Freddie Mac is a quasi-public borrower.
d. 1-year car loan because the student loan is typically government guaranteed

12. For the balance sheet: high core deposits/assets; high equity/assets; low noncore, purchased liabilities/assets; high investment securities/assets; high agriculture loans/assets (the value refers to that for small banks); For the income statement: net interest margin (high); burden/assets (high), efficiency ratio (high); (the descriptor in parentheses refers to the relationship for small banks versus larger banks).

13. Extending a loan
a. the new loan is typically not classified as nonperforming because no payments are past due
b. often a bank recognizes that the loan is in the problem stage and the borrower renegotiates the terms in its favor; rationale is that the borrower may default if the loan is not restructured. Note that this restructuring gives the appearance that asset quality is higher.
c. the primary risk is that the bank is throwing more money down a sink hole and will never recover any of its loan.

14. Dividend payment: For: the loss is temporary and stockholders expect the dividend payment. Failure to make the payment will sharply lower the stock price because stockholders will be alienated. Against: the bank has not generated sufficient cash to make the payment from normal operations. By paying the cash dividend, the bank is self-liquidating. The cash dividend will lower the bank's capital. What normally decides the issue is whether the loss is truly temporary or more permanent. Management typically errs by assuming that losses are temporary, and thus continues to make dividend payments when it should be reducing or eliminating them.

15. Liquidity risk:
a. Securities classified as held-to-maturity cannot be sold unless there has been an unusual change in the underlying credit quality of the security issuer. A high fraction indicates low liquidity because few securities (just 5% of the total) can be sold.
b. A low core deposit base indicates a bank that relies proportionately more on noncore, volatile liabilities that are less stable and more likely to leave the bank if rates change. This makes a bank's funding sources less reliable and the bank subject to greater liquidity risk.
c. A bank that holds long-term securities (8 years is long term) has assumed significant price risk even if the securities can be readily sold because they are classified as available-for-sale. Such securities will fall in value if interest rates rise. This indicates high liquidity risk.
d. Assuming that $10 million in securities is sufficient, the fact that none are pledged makes them more liquid and is indicative of lower liquidity risk than if any securities were pledged.

Problems

1. Community National Bank (CNB)
1. Profitability analysis for 2004 using UBPR figures:

RATIO	Community National Bank	Peer Banks
ROE	8.67%	11.72%
ROA	0.63	1.09
EM	13.97X	10.67X
AU	5.91	6.23
ER	4.94	4.73
TAX	0.34	0.41

a. Aggregate profitability for CNB is substantially lower measured both by both ROE and ROA. Because CNB has less equity relative to assets, it has greater financial leverage. Thus, the greater financial leverage increases CNB's ROE relative to peer banks. The fact that its ROE is lower, despite the greater leverage, indicates that the higher risk does not produce higher overall profitability. CNB has assumed a riskier profile with its greater financial leverage in that fewer assets can default before the bank is insolvent. CNB's ROA is lower because it earns a lower average yield on assets (AU), pays more in operating expense (ER), offset somewhat by the fact that it pays less in taxes (TAX).

b. Risk Comparison

Credit risk: same net charge-offs, much lower nonperforming (more than 90 days past due) and nonaccrual loans, higher provisions for loan losses (.30% versus 0.18%); loan loss reserve is a greater fraction of total loans and leases and a much greater fraction of noncurrent loans. Overall, the ratios indicate below-average risk. Of course, these figures represent only one year of data.

Liquidity risk: lower equity to assets suggests higher liquidity risk from a funding perspective, higher available for sale securities and lower pledged securities suggests lower liquidity risk from the asset sale perspective; very high core deposits, low noncore funding (liabilities), low loans and leases and high ST securities suggest lower liquidity risk. Overall, liquidity risk appears lower because the bank has a strong core deposit base, fewer loans and more securities can be readily sold. Still, the bank might have difficulty borrowing if loans exhibit low quality and deposit outflows arise. Conclusion: below-average liquidity risk.

Capital Risk: low capital to asset ratios; low equity to assets indicate above average capital risk; bank pays less out in dividends and its growth rate in equity capital is lower. Overall, the bank exhibits greater capital risk. This situation is offset by the bank's apparent higher quality assets.

Operational risk: low assets to employees ratio, high personnel expense to employees and high efficiency ratio indicate high operational risk. Of course, these data do not capture the likelihood of fraud and other potential operational problems.

c. Recommendations:

1) Improve the bank's capital position; slow asset growth and pursue greater profits.
2) Evaluate credit risk carefully; ensure that loans are adequately diversified and that any default of a single loan or type of loans cannot place the bank's capital at risk to where regulators will restrict the bank's activities. Slow loan growth until capital base is at target. Implement a formal credit risk review process.
3) Improve operating efficiency. Review noninterest expense sources and cut costs where possible.
4) The first two suggestions will have the impact of lowering the bank's earnings, ceteris paribus. Therefore, management should focus on growing sources of noninterest income that currently are not being pursued.

2. Citibank UBPR

a. In 2004, Citibank's ROE equaled 15.26% while its ROA equaled 1.49% versus peers' figures of 14.58% and 1.31%, respectively. Citibank's equity multiplier (EM = ROE/ROA) equaled approximately 10.24X versus 11.13X for peers. Citibank's AU is higher at 8.83% (5.25% + 3.58%) versus 7.69% (4.46% + 3.23%) at peers. Citibank clearly generated higher gross revenues from both interest and noninterest sources. Citibank's expense ratio (ER), in turn, equaled 6.27% while ER for peers was much lower for each type of expense and in total at 4.23%. Based on the profit figures alone, Citibank appears to be a high performance bank and achieves that by generating greater relative revenues.

b. Citibank's credit risk (as evidenced only by the ratios provided) appears high as net losses to loans is higher than Peers (1.58% versus 0.25%), as is noncurrent loans and leases as a fraction of loans (1.78% versus 0.59%). The loss allowance (reserve) is a higher fraction of loans, but a much smaller fraction of net losses (charge-offs) and noncurrent loans indicating that more reserves might be appropriate.

c. Citibank's liquidity risk appears high as the bank has a lower equity to asset (tier 1 leverage capital) ratio and relies much more on noncore liabilities (noncore fund dependence). With its greater credit risk, you might expect it to operate with greater equity capital. Similarly, the bank is growing at a fast pace which generally increases overall risk because management cannot easily control risk from growth.

d. Recommendations:
Carefully assess credit risk; realign portfolio where appropriate.
Increase the loan loss reserve.
Slow loan growth and/or shift loans to less risky classes.
Line up additional sources of liquidity.
Review pricing of loans and deposits; identify sources of fees/noninterest income to see if they are sustainable.