chapter 12

Commercial Banks' Financial Statements *and* Analysis

OUTLINE

Learning Goals

LG 1. *Understand the four major categories of assets on a commercial bank's balance sheet.*

LG 2. *Distinguish between core deposits and purchased funds.*

LG 3. *Identify off-balance-sheet activities that commercial banks undertake.*

LG 4. *Describe the major categories on a commercial bank's income statement.*

LG 5. *Examine ratios that can be used to analyze a commercial bank.*

WHY EVALUATE THE PERFORMANCE OF COMMERCIAL BANKS? CHAPTER OVERVIEW

Unlike other private corporations, commercial banks (CBs) are unique in the special services they perform (e.g., assistance in the implementation of monetary policy) and the level of regulatory attention they receive (see Chapters 1 and 13). CBs are, as a result, unique in the types of assets and liabilities they hold. Like any for-profit corporation, however, the ultimate measure of a CB's performance is the value of its common equity to its shareholders. This chapter discusses the financial statements of these institutions. Managers, stockholders, depositors, regulators, and other parties use performance, earnings, and other measures obtained from financial statements to evaluate commercial banks. For example, the In The News box looks at how regulators use financial statement data to evaluate the overall safety and soundness of a bank. As we proceed through the chapter, notice the extent to which regulators' evaluation of the overall safety and soundness of a bank (or their assignment of a so-called CAMELS rating) depends on financial statement data. Given the extensive level of regulation and the accompanying requirements for public availability of financial information, the financial statements of commercial banks are ideal candidates to use in examining the performance of depository institutions.

This chapter uses commercial banks to illustrate a return on equity (ROE) framework as a method of evaluating depository institutions' profitability. The ROE framework decomposes this frequently used measure of profitability into its various component parts

The CAMELS Evaluation Components

The Uniform Financial Institutions Rating System (UFIRS) was adopted by the Federal Financial Institutions Examination Council (FFIEC) on November 13, 1979. Under the 1997 revision of the UFIRS, each financial institution is assigned a composite rating based on an evaluation and rating of six essential components of an institution's financial condition and operations that are summarized in a composite "CAMELS" rating. The acronym CAMELS stands for Capital Adequacy, Asset Duality, Management, Earnings, Liquidity, and Sensitivity to Market Risk.

An institution's *Capital Adequacy* is evaluated in relation to the volume of risk assets; the volume of marginal and inferior quality assets; the bank's growth experience, plan, and prospects; and the strength of management. Consideration is also given to an institution's capital ratios relative to its peer group, its earnings retention, its dividend policies, and its access to capital markets or other appropriate sources of financial assistance.

Asset Quality is evaluated by the level, distribution, and severity of adversely classified assets; the level and distribution of nonaccrual and reduced-rate assets; the adequacy of the allowance for loan losses; and management's demonstrated ability to administer and collect problem credits. In addition, examiners evaluate the volume of concentrations of credit, trends in asset quality, volume of out-of-territory loans, level and severity of other real estate held, and the bank's underwriting standards.

Management is evaluated against virtually all factors considered necessary to operate the bank within accepted banking practices and in a safe and sound manner. Thus, management is evaluated in relation to technical competence; leadership and administrative ability; compliance with banking regulations and statutes; adequacy of, and compliance with, internal policies and controls; and whether the board has a plan covering management succession. The assessment of management also takes into account the quality of internal controls, operating procedures, and all lending, investment, and other operating policies. Finally, examiners review and assess the composition, experience level, abilities, and involvement of the officers, directors, and shareholders.

Earnings are evaluated with respect to their ability to cover losses and provide adequate capital protection; trends; peer group comparisons; the quality and composition of net income; and the degree of reliance on interest-sensitive funds. Consideration is also given to the bank's dividend payout ratio, the rate of growth of retained earnings, and the adequacy of bank capital. The adequacy of provisions to the allowance for loan losses, and the extern to which extraordinary items, securities transactions, and tax effects contribute to net income, are also assessed.

Liquidity is evaluated in relation to the volatility of deposits; the frequency and level of borrowings, use of brokered deposits, technical competence relative to the structure of liabilities, availability of assets readily convertible into cash; and access to money markets or other ready sources of funds. The overall effectiveness of asset-liability management is considered, as well as the adequacy of, and compliance with, established liquidity policies. The nature, volume, and anticipated use of credit commitments are also factors that are weighed.

The *Sensitivity to Market Risk* component reflects the degree to which changes in interest rates, foreign exchange rates, commodity prices, or equity prices can adversely affect a financial institution's earnings or economic capital. When evaluating this component, consideration should be given to: management's ability to identify, measure, monitor, and control market risk; the institution's size; the nature and complexity of its activities; and the adequacy of its capital and earnings in relation to its level of market risk exposure.

CAMELS ratings range from 1 to 5.

Composite "1"—Institutions in this group are basically sound in every respect.

Composite "2"—Institutions in this group are fundamentally sound, but may reflect modest weaknesses correctable in the normal course of business.

Composite "3"—Institutions in this category exhibit financial, operational, or compliance weaknesses ranging from moderately severe to unsatisfactory.

Composite "4"—Institutions in this group nave an immoderate volume of serious financial weaknesses or a combination of other conditions that are unsatisfactory.

Composite "5"—This category is reserved for institutions with an extremely high immediate or near term probability of failure.

Source: Federal Deposit Insurance Corporation, DOS Manual of Examination Policies, October 2010. **www.fdic.gov**

to identify existing or potential financial management and risk exposure problems.[1] The fact that bank size and/or niche (i.e., the financial market segment the bank specializes in servicing) may affect the evaluation of financial statements is also highlighted.

FINANCIAL STATEMENTS OF COMMERCIAL BANKS

report of condition
Balance sheet of a commercial bank reporting information at a single point in time.

report of income
Income statement of a commercial bank reporting revenues, expenses, net profit or loss, and cash dividends over a period of time.

Financial information on commercial banks is reported in two basic documents. The **report of condition** (or balance sheet) presents financial information on a bank's assets, liabilities, and equity capital. The balance sheet reports a bank's condition at a single point in time. The **report of income** (or the income statement) presents the major categories of revenues and expenses (or costs) and the net profit or loss for a bank over a period of time. Financial statements of commercial banks must be submitted to regulators and stockholders at the end of each calendar quarter—March, June, September, and December. The Federal Financial Institutions Examination Council (FFIEC), based in Washington. D.C., prescribes uniform principles, standards, and report forms for depository institutions.[2]

www.ffiec.gov

All financial institutions, and particularly commercial banks, are engaging in an increased level of off-balance-sheet (OBS) activities. These activities produce income (and sometimes losses) for the FI that are reported on the income statement. This chapter summarizes off-balance-sheet activities (and the risks involved with such activities), which are discussed in more detail in Chapters 19 and 23.

To evaluate the performance of commercial banks, we use two financial services holding companies[3] of varying sizes and market niches: Webster Financial Corporation and Bank of America Corporation.

www.websteronline.com

Webster Financial Corporation (WBS) is a publicly traded commercial bank holding company headquartered in Waterbury, Connecticut. In 2010, it had $17.69 billion in assets (among the 75 largest banks in the United States). Webster Financial Corp. offers products in both consumer and business banking, including mortgage loans, insurance, financial planning, and trust and investment services in Connecticut, New York, Massachusetts, and Rhode Island through over 180 banking offices, over 500 ATMs, telephone banking, and the Internet. The bank owns an asset-based lending firm (Webster Business Credit Corporation), an insurance premium finance company (Budget Installment Corp.), and an equipment finance company (Center Capital Corporation), and provides health savings account trustee and administrative services through HSA Bank, a division of Webster Bank. WBS, by emphasizing retail banking, has been an efficient and profitable bank. **Retail banks** focus on individual consumer banking relationships, such as residential mortgages and consumer loans on the asset side of the portfolio, and individual demand. NOW, savings, and time deposits on the liability side. In contrast, **wholesale banks** focus their business activities on business banking relationships; they hold more business loans and fewer mortgages and consumer loans and use fewer consumer deposits and more purchased funds than retail banks do. Most large banks have both a retail side and a wholesale side of business—these two strategies are not mutually exclusive.

retail bank
A bank that focuses its business activities on consumer banking relationships.

wholesale bank
A bank that focuses its business activities on commercial banking relationships.

www.bankofamerica.com

Bank of America Corporation (BOA), headquartered in Charlotte, North Carolina, was at one time the nation's largest bank holding company, with holding company assets of $2,366 billion and bank assets of $1,787 billion as of 2010. Bank of America operates nationally and internationally with more than 5,900 offices in the United States and offices in 40 countries supporting approximately 57 million clients. The bank offers products in

[1]This decomposition is often termed *DuPont* analysis.

[2]The financial statements reported by banks use book value accounting Concepts; i.e., assets, liabilities, and equity accounts arc generally reported at their original cost or book value. An alternative accounting method frequently discussed for use by banks is market value accounting. We discuss the issues, consequences of, and current status of the use of market value accounting in Chapter 22.

[3]The U.S. Congress passed the Financial Services Modernization Act of 1999, which opened the door for the creation of full-service financial institutions in the United Stales. A financial services holding company can engage in banking activities, insurance activities, and securities activities. Thus, while we examine financial institutions by functional area, the financial services holding company (which combines many activities in a single financial institution) has become the dominant form of financial institution in terms of total assets (see Chapter 13).

many business lines, including retail and wholesale banking, investment and trust management, and credit card company business. Bank of America has created the nation's largest ATM network, with 18,000 ATMs serving more than 29 million active users, is one of the nation's largest debit card issuers, is the nation's leading small business lender, and is the number one institution in number of relationships, investment banking, treasury management, syndications, secured and unsecured credit, and leasing to middle-market U.S. companies.

Balance Sheet Structure

www.fdic.gov

Table 12–1 presents 2010 balance sheet information for the two commercial bank holding companies (hereafter called *banks*). As stated in Chapter 11, many banks are owned by parent bank holding companies. One-bank holding companies control only one subsidiary commercial bank: multiple-bank holding companies control two or more subsidiary commercial banks (see Chapter 13). The financial statements reported in this chapter are for the consolidated multiple-bank holding company, which includes the parent holding company plus bank subsidiaries. These data are taken from the Federal Deposit Insurance Corporation call reports, available at the FDIC Web site. Pay particular attention to the fact that, unlike manufacturing corporations, the majority of a commercial bank's assets are financial assets rather than physical or fixed assets (such as buildings or machines). Additionally, a relatively large portion of a commercial bank's liabilities are shot-term deposits and borrowings. In general, banks have higher leverage than manufacturing corporations do.

Assets. A bank's assets are grouped into lour major subcategories: (1) cash due from depository institutions, (2) investment securities, (3) loans and leases, and (4) other assets. Investment securities and loans and leases are the bank's earning assets. Cash due from depository institutions (item 5 in Table 12–1) consists of vault cash, deposits at the Federal Reserve (the central bank), deposits at other financial institutions, and cash items in the process of collection. None of these items generates much income for the bank, but each is held because they perform specific functions.

Cash Due from Depository Institutions. Vault cash (item 1) is composed of the currency and coin needed to meet customer withdrawals. Deposits at the Federal Reserve (item 2) are used primarily to meet legal reserve requirements (see Chapter 13), to assist in check clearing, wire transfers, and the purchase or sale of Treasury securities. Deposits at other financial institutions (item 3) are primarily used to purchase services from those institutions. These banks generally purchase services such as check collection. check processing, fed funds trading, and investment advice from **correspondent banks** (see below). Cash items in the process of collection (item 4) are checks written against accounts at other institutions that have been deposited at the bank. Credit is given to the depositor of these checks only after they clear.

correspondent bank

A bank that provides services to another commercial bank.

Investment Securities. Investment securities (item 11 in Table 12–1) consist of federal funds sold, repurchase agreements (RPs or repos), U.S. Treasury and agency securities, securities issued by states and political subdivisions (municipals), mortgage-backed securities, and other debt and equity securities. These securities generate some income for the bank and are used for liquidity risk management purposes. Investment securities are highly liquid,[4] have low default risk, and can usually be traded in secondary markets. Banks generally maintain significant amounts of these securities to ensure that they can easily meet liquidity needs that arise unexpectedly. However, because the revenue generated from investment securities is low compared to that from loans and leases, many (particularly larger) banks attempt to minimize the amount of investment securities they hold.

[4]Not all of a bank's investment securities can be sold immediately. Some securities, such as U.S. Treasury securities and municipals, can be pledged against certain types of borrowing by the bank and, therefore, must remain on the bank's books until the debt obligation is removed or another security is pledged as collateral.

TABLE 12–1 Balance Sheet for Two Commercial Banks *(in millions of dollars)*

	Webster Financial*	Bank of America*
Assets		
1. Vault cash	$ 68.46	$ 8,380.71
2. Deposits at Federal Reserve	80.03	117,003.87
3. Deposits at other financial institutions	40.45	17,369.90
4. Cash items in process of collection	28.27	9,927.32
5. *Cash due from depository institutions*	$ 217.21	$ 152,681.80
6. Federal funds sold and RPs	1.44	73,322.09
7. U.S. Treasury and U.S. agency securities	4,228.62	242,813.12
8. Securities issued by slates and political subdivisions	674.47	6,963.46
9. Mortgage-backed securities	334.74	35,869.20
10. Other debt and equity securities	138.35	83,909.70
11. *Investment securities*	$ 5,377.62	$ 442,877.57
12. Commercial and industrial loans	2,558.05	154,253.39
13. Loans secured by real estate	8,109.07	514,881.22
14. Consumer loans	34.65	241,529.47
15. Other loans	41.46	39,340.94
16. Leases	111.32	14,221.58
17. Gross loans and leases	$10,854.55	$ 976,226.60
18. Less: Unearned income	—	—
19. Reserve for loan and lease losses	344.09	44,607.54
20. *Net loans and leases*	$10,510.46	$ 922,619.06
21. Premises and fixed assets	164.86	11,785.41
22. Other real estate owned	27.13	3,448.59
23. Intangible assets	561.74	98,775.81
24. Other	832.87	155,417.74
25. *Other assets*	1,586.60	$ 269,427.55
26. Total assets	$17,691.89	$1,787,605.98
Liabilities and Equity Capital		
27. Demand deposits	$ 407.53	$ 108,229.03
28. NOW accounts	197.10	23,124.43
29. MMDAs	5,082.57	354,480.84
30. Other savings deposits	4,304.27	272,815.25
31. Deposits in foreign offices	78.64	181,456.91
32. Retail CDs	2,409.09	82,382.93
33. Core deposits	$12,479.20	$1,022,489.39
34. Wholesale CDs	1,274.39	75,079.75
35. *Total deposits*	$13,753.59	$1,097,569.14
36. Federal funds purchased and RPs	948.30	142,465.19
37. Other borrowed funds	679.72	255,228.80
38. Subordinated notes and debentures	177.48	27,056.01
39. Other liabilities	163.94	44,664.63
40. *Total liabilities*	$15,723.03	$1,566,983.77
41. Preferred stock	—	—
42. Common stock	0.00	4,296.84
43. Surplus and paid-in capital	1,690.51	193,759.15
44. Retained earnings	278.35	22,566.22
45. *Total equity capital*	$ 1,968.86	$ 220,622.21
46. Total liabilities and equity capital	$17,691.89	$1,787,605.98

*Values are taken from the 2010 FDIC report of condition data tapes and are available at the Federal Deposit Insurance Corporation Web site. **www.fdic.gov**

Short-maturity (less than one year to maturity) investments include federal funds sold and repurchase agreements (item 6), and U.S. Treasury bills and agency securities (item 7). Returns on these investments vary directly with changes in market interest rates. Although banks with excess cash reserves invest some of this in interest-earning liquid assets such as T-bills and short-term securities, they have the option to lend excess reserves for short intervals to other banks seeking increased short-term funding. The interbank market for excess reserves is called the federal funds (fed funds) market. In the United States, federal funds are short-term uncollateralized loans made by one bank to another; more than 90 percent of such transactions have maturities of one day. Repurchase agreements (RPs or repos) can be viewed as collateralized federal funds transactions. In a federal funds transaction, the bank with excess reserves sells fed funds for one day to the purchasing bank. The next day, the purchasing bank returns the fed funds plus one day's interest, reflecting the fed funds rate. Since credit risk exposure exists for the selling bank, because the purchasing bank may be unable to repay the fed funds the next day, the seller may seek collateral backing for the one-day fed funds loan. In an RP transaction, the funds-selling bank receives government securities as collateral from the funds-purchasing bank—that is, the funds-purchasing bank temporarily exchanges securities for cash. The next day, this transaction is reversed—the funds purchasing bank sends back the fed funds it borrowed plus interest (the RP rate); it receives in return (or repurchases) its securities used as collateral in the transaction.

Long-maturity investments such as U.S. Treasury bonds and U.S. agency securities (item 7), municipals (item 8), mortgage-backed securities (item 9), and most other securities (item 10) usually offer somewhat higher expected returns than short-maturity investments since they are subject to greater interest rate risk exposure—see Chapter 22. U.S. Treasury securities and Government National Mortgage Association (agency) bonds are fully backed by the U.S. government and thus carry no default risk. Other U.S. government agency securities, such as those of the Federal National Mortgage Association and the Federal Home Loan Mortgage Corporation, are not directly backed by the full faith and credit of the U.S. government and therefore carry some default risk (see Chapter 7). Municipal securities held by commercial banks are generally high-rated, investment-grade (i.e., low-risk) securities, issued by municipalities as either general obligation or revenue bonds.[5] Interest paid on municipals is exempt from federal income tax obligations. Mortgage-backed securities include items such as collateralized mortgage obligations and mortgage-backed bonds (see Chapter 7). Other investment securities include investment-grade corporate bonds, foreign debt securities, and securities such as U.S. Treasury securities and municipals held for short-term trading purposes. These trading account securities earn interest for the bank and generate capital gains or losses from changes in the market values of these securities.[6]

www.ginniemae.gov

www.fanniemae.com

www.freddiemac.com

Loans and Leases. Loans and leases (items 12–16 in Table 12–1) are the major items on a bank's balance sheet and generate the largest flow of revenue income. However, these items are also the least liquid asset items and the major sources of credit and liquidity risk for most banks. Loans are categorized as commercial and industrial (C&I) loans (item 12), loans secured by real estate (item 13), individual or consumer loans (item 14), and other loans (item 15). Leases (item 16) are used as alternatives to loans when the bank, as owner of a physical asset, allows a customer to use an asset in return for periodic lease payments.

Commercial and Industrial Loans. C&I loans are used to finance a firm's capital needs, equipment purchases, and plant expansion. They can be made in quite small amounts

[5]Payments of principal and interest on general obligation bonds are backed by the full faith, credit, and taxing authority of the issuer. Payments of principal and interest on revenue bonds are backed only by the revenues generated from the facility or project that the proceeds of the bonds are financing.

[6]Investment securities included in the bank's trading portfolio and designated as *trading securities* or *available-for-sale securities* are listed on the balance sheet at their *market value.* All other items on the balance sheet are listed at their *book values.*

such as $100,000 to small businesses or in packages as large as $10 million or more to major corporations. Commercial loans can be made at either fixed rates or floating rates of interest. The interest rate on a fixed-rate loan is set at the beginning of the contract period. This rate remains in force over the loan contract period no matter what happens to market rates. The interest rate on a floating-rate loan can be adjusted periodically according to a formula so that the interest rate risk is transferred in large part from the bank to the borrower. As might be expected, longer-term loans are more likely to be made under floating-rate contracts than are relatively short-term loans. In addition, commercial loans can be made for periods as short as a few weeks to as long as eight years or more. Traditionally, short-term commercial loans (those with an original maturity of one year or less) are used to finance firms' working capital needs and other short-term funding needs, while long-term commercial loans are used to finance credit needs that extend beyond one year, such as the purchase of real assets (machinery), new venture start-up costs, and permanent increases in working capital. Commercial loans can be secured or unsecured. A *secured loan* (or asset-backed loan) is backed by specific assets of the borrower, while an *unsecured loan* (or junior debt) gives the lender only a general claim on the assets of the borrower should default occur.

Real Estate Loans. Real estate loans are primarily mortgage loans and some revolving home equity loans (see Chapter 7). For banks (as well as savings institutions), residential mortgages are the largest component of the real estate loan portfolio; until recently, however, commercial real estate mortgages had been the fastest-growing component of real estate loans. Residential mortgages are very long-term loans with an average maturity of approximately 20 years. As with C&I loans, the characteristics of residential mortgage loans differ widely. As discussed in Chapter 7, these include the size of loan, the loan-to-value ratio, and the maturity of the mortgage. Other important characteristics are the mortgage interest (or commitment) rate and fees and charges on the loan, such as commissions, discounts, and points paid by the borrower or the seller to obtain the loan. In addition, the mortgage rate differs according to whether the mortgage has a fixed rate or a floating rate, also called an *adjustable rate.*

Consumer Loans. A third major category of loans is the individual or consumer loan—for example, personal and auto loans. Commercial banks, finance companies, retailers, savings banks, and gas companies also provide consumer loan financing through credit cards such as Visa, MasterCard, and proprietary credit cards issued by companies such as Sears and AT&T.

Other Loans. Other loans include a wide variety of borrowers and types such as loans to nonbank financial institutions, state and local governments, foreign banks, and sovereign governments. Each loan category entails a wide variety of characteristics that must be evaluated to determine the risk involved, whether the bank should grant the loan, and, if so, at what price. We discuss the evaluation methods in Chapter 20.

Unearned Income and Allowance for Loan and Lease Losses. Unearned income (item 18) and the allowance (reserve) for loan and lease losses (item 19) are contra-asset accounts that are deducted from gross loans and leases on the balance sheet to create net loans and leases (item 20). Unearned income is the amount of income that the bank has received on a loan from a customer but has not yet recorded as income on the income statement. Over the life of the loan, the bank earns (or accrues) interest income and accordingly transfers it out of unearned income into interest income. The allowance for loan and lease losses is an estimate by the bank's management of the amount of the gross loans (and leases) that will not be repaid to the bank. Although the maximum amount of the reserve is influenced by tax laws, the bank's management actually sets the level based on loan growth and recent loan loss experience. The allowance for loan losses is an accumulated reserve that is adjusted each period as management recognizes the possibility of additional bad loans and

net write-offs

Actual loan losses less loan recoveries.

earning assets

Investment securities plus net loans and leases.

makes appropriate provisions for such losses. Actual losses are then deducted from, and recoveries are added to (referred to as **net write-offs**), their accumulated loan and lease loss reserve balance.

Investment securities plus net loans and leases are the **earning assets** of a depository institution. It is these items on the balance sheet that generate interest income and some of the noninterest income described below.

Other Assets. Other assets on the bank's balance sheet (item 25) consist of items such as premises and fixed assets (item 21), other real estate owned (collateral seized on defaulted loans—item 22), intangible assets (i.e., goodwill and mortgage servicing rights—item 23), and other (i.e., deferred taxes, prepaid expenses, and mortgage servicing fees receivable—item 24). These accounts are generally a small part of the bank's overall assets.

Liabilities. A bank's liabilities consist of various types of deposit accounts and other borrowings used to fund the investments and loans on the asset side of the balance sheet. Liabilities vary in terms of their maturity, interest payments, check-writing privileges, and deposit insurance coverage.

Deposits. Demand deposits (item 27) are transaction accounts held by individuals, corporations, partnerships, and governments that pay no explicit interest. Corporations are prohibited from using deposits other than demand deposits (e.g., NOW accounts) for transaction account purposes. This group therefore constitutes the major holders of demand deposits. Since 1980, all banks in the United States have been able to offer checkable deposits that pay interest and are withdrawable on demand; they are called *negotiable order of withdrawal accounts*, or **NOW accounts**[7] (item 28). The major distinction between these instruments and traditional demand deposits is that these instruments require the depositor to maintain a minimum account balance to earn interest. If the minimum balance falls below some level, such as $500, the account formally converts to a status equivalent to a demand deposit and earns no interest. Also, there are restrictions on corporations holding NOW accounts.

NOW accounts

Negotiable order of withdrawal accounts are similar to demand deposits but pay interest when a minimum balance is maintained.

MMDAs

Money market deposit accounts with retail savings accounts and some limited checking account features.

other savings deposits

All savings accounts other than MMDAs.

Money market deposit accounts or **MMDAs** (item 29) are an additional liability instrument that banks can use. To make banks competitive with the money market mutual funds offered by groups such as Vanguard and Fidelity, the MMDAs they offer must be liquid. In the United States, MMDAs are checkable but subject to restrictions on the number of checks written on each account per month, the number of preauthorized automatic transfers per month, and the minimum denomination of the amount of each check. In addition, MMDAs impose minimum balance requirements on depositors. The Federal Reserve does not require banks to hold cash reserves against MMDAs. Accordingly, banks generally pay higher rates on MMDAs than on NOW accounts. **Other savings deposits** (item 30) are all savings accounts other than MMDAs (i.e., regular passbook accounts) with no set maturity and no check-writing privileges. Like MMDAs, savings accounts currently carry zero reserve requirements.

Some banks separate foreign from domestic deposits on the balance sheet (item 31). Foreign deposits are not explicitly covered by FDIC-provided deposit insurance guarantees (see Chapter 13). These deposits are generally large and held by corporations with a high level of international transactions and activities.

retail CDs

Time deposits with a face value below $100,000.

wholesale CDs

Time deposits with a face value of $100,000 or more.

The major categories of time deposits are retail certificates of deposit (CDs) and wholesale CDs. **Retail CDs** (item 32) are fixed-maturity instruments with face values under $100,000. Although the size, maturity, and rates on these CDs are negotiable, most banks issue standardized retail CDs. **Wholesale CDs** (item 34) (discussed also in Chapter 5) were created by banks in the early 1960s as a contractual mechanism to allow depositors to liquidate their position in these CDs by selling them in the secondary market rather than

[7]Super-NOW accounts have very similar features to NOW accounts but require a larger minimum balance.

having to hold them to maturity or requesting that the bank cash in the deposit early (which involves a penalty cost for the depositor). Thus, a depositor can sell a relatively liquid instrument without causing adverse liquidity risk exposure for the bank. Consequently, the unique feature of wholesale CDs is not so much their large minimum denomination size of $100,000 or more but the fact that they are **negotiable instruments.** That is, they can be resold by title assignment in a secondary market to other investors. This means, for example, that if IBM had bought a $1 million three-month CD from J.P. Morgan Chase, but for unexpected liquidity reasons needed funds after only one month passed, it could sell this CD to another outside investor in the secondary market. This does not impose any obligation on J.P. Morgan Chase in terms of an early funds withdrawal request. Wholesale CDs obtained through a brokerage or investment house rather than directly from a customer are referred to as **brokered deposits.**[8] CDs held in foreign offices and denominated in dollars are referred to as *Eurodollar deposits* (see Chapter 5).

negotiable instrument

An instrument whose ownership can be transferred in the secondary market.

brokered deposits

Wholesale CDs obtained through a brokerage house.

Borrowed Funds. The liabilities described above are all deposit liabilities, reflecting deposit contracts issued by banks in return for cash. However, banks not only fund their assets by issuing deposits but borrow in various markets for purchased funds. Since the funds generated from these purchases are not deposits, they are subject to neither reserve requirements (as with demand deposits and NOW accounts) nor deposit insurance premium payments to the FDIC (as with all the domestic deposits described earlier).[9] The largest market available for purchased funds is the federal funds market (item 36). As we discussed earlier, a bank with excess reserves can sell them in the fed funds market, recording them as an asset on the balance sheet. The bank that purchases fed funds shows them as a liability on its balance sheet. As with the fed funds market, the RP market (item 36) is a highly liquid and flexible source of funds for banks needing to increase their liabilities and to offset deposit withdrawals. Moreover, like fed funds, these transactions can be rolled over each day if the counterparty is willing. The major difference in flexibility of liability management for fed funds and RPs is that a fed funds transaction can be entered into at virtually any time in the banking day. In general, it is difficult to transact an RP borrowing late in the day since the bank sending the fed funds must be satisfied with the type and quality of the securities' collateral proposed by the borrowing bank. Although this collateral is normally T-bills, T-notes, T-bonds, and mortgage-backed securities, the maturities and other features, such as callability or coupons, may be unattractive to the fund seller.

Fed funds and RPs have been the major sources of borrowed funds, but banks have utilized other borrowing (item 37) sources to supplement their flexibility in liability management. Four of these sources are banker's acceptances (BAs), commercial paper, medium-term notes, and discount window loans. Banks often convert off-balance-sheet letters of credit into on-balance-sheet BAs by discounting the letter of credit when the holder presents it for acceptance (see Chapter 5). In addition, these BAs may be resold to money market investors. As a result, BA sales to the secondary market are an additional funding source. Although a bank subsidiary itself cannot issue commercial paper, its parent holding company can—that is, Citigroup can issue commercial paper but Citibank cannot. This provides banks owned by holding companies—most of the largest banks in the United States—with an additional funding source, since the holding company can "downstream" funds generated from its commercial paper sales to its bank subsidiary. Finally, banks facing temporary liquidity crunches can borrow from the central bank's discount window at the discount rate. Since this rate is not market determined and usually lies below fed funds and government

[8]These are often purchased in $100,000 increments. For example, a broker may receive $1 million from an investor and break this up into 10 lots of $100,000 CDs that are placed (brokered out) at 10 different banks. Thus, effectively, the full $1 million is covered by FDIC deposit insurance.

[9]Foreign deposits are not subject to deposit insurance premiums. However, in the exceptional event of a very large failure in which all deposits are protected, under the 1991 FDICIA, the FDIC is required to levy a charge on surviving large banks proportional to their total asset size. To the extent that assets are partially funded by foreign liabilities, this is an implied premium on foreign deposits.

security rates, it offers a very attractive borrowing opportunity to a bank with deficient reserves as the reserve maintenance period comes to an end (see Chapter 13).

A number of banks in search of stable sources of funds with low withdrawal risk have begun to issue subordinated notes and debentures (item 38), often in the five- to seven-year range. These notes are especially attractive because they are subject to neither reserve requirements nor deposit insurance premiums, and some can serve as (Tier 2) capital for the bank to satisfy Federal Reserve regulations regarding minimum capital requirements (see Chapter 13).

Some banks separate core deposits from purchased funds on their balance sheets. The stable deposits of the bank are referred to as **core deposits** (item 33). These deposits are not expected to be withdrawn over short periods of time and are therefore a more permanent source of funding for the bank. Core deposits are also the cheapest funds banks can use to finance their assets. Because they are both a stable and low-cost source of funding, core deposits are the most frequently used source of funding by commercial banks. Core deposits generally are defined as demand deposits, NOW accounts, MMDAs, other savings accounts, and retail CDs. **Purchased funds** are more expensive and/or volatile sources of funds because they are highly rate sensitive—these funds are more likely to be immediately withdrawn or replaced as rates on competitive instruments change. Further, interest rates on these funds, at any point in time, are generally higher than rates on core deposits. Purchased funds are generally defined as brokered deposits, wholesale CDs, deposits at foreign offices, fed funds purchased, RPs, and subordinated notes and debentures.

core deposits
Deposits of the bank that are stable over short periods of time and thus provide a long-term funding source to a bank.

purchased funds
Rate-sensitive funding sources of the bank.

Other Liabilities. Banks also list other liabilities (item 39) that do not require interest to be paid. These items consist of accrued interest, deferred taxes, dividends payable, minority interests in consolidated subsidies, and other miscellaneous claims.

Equity Capital. The bank's equity capital (item 45) consists mainly of preferred (item 41) and common (item 42) stock (listed at par value), surplus or additional paid-in capital (item 43), and retained earnings (item 44). Regulations require banks to hold a minimum level of equity capital to act as a buffer against losses from their on- and off-balance-sheet assets (see Chapter 13).

Off-Balance-Sheet Assets and Liabilities

Off-balance-sheet (OBS) items are *contingent* assets and liabilities that *may* affect the future status of a financial institution's balance sheet. OBS activities are less obvious and often invisible to financial statement readers because they usually appear "below the bottom line," frequently as footnotes to accounts. As part of the quarterly financial reports submitted to regulators, schedule L lists the notional dollar size of OBS activities of banks. We briefly summarized the OBS activities of commercial banks in Chapter 11. In this chapter, we introduce the items as they appear off the FI's balance sheet.

Although OBS activities are now an important source of fee income for many FIs, they have the potential to produce positive as well as negative *future* cash flows. Some OBS activities can involve risks that add to the institution's overall risk exposure; others can hedge or reduce their interest rate, credit, and foreign exchange risks. A depository institution's performance and solvency are also affected by the management of these items. Off-balance-sheet activities can be grouped into four major categories: loan commitments, letters of credit, loans sold, and derivative securities. The OBS activities for Webster Financial and Bank of America are reported in Table 12–2.

loan commitment
Contractual commitment to loan to a firm a certain maximum amount at given interest rate terms.

Loan Commitments. These days, most commercial and industrial loans are made by firms that take down (or borrow against) prenegotiated lines of credit or loan commitments rather than borrow cash immediately in the form of spot loans. A **loan commitment** agreement (item 1 in Table 12–2) is a contractual commitment by a bank or another FI (such as an insurance company) to loan to a customer a certain maximum amount (say, $10 million)

TABLE 12–2 Off-Balance-Sheet Activities for Two Commercial Banks
(in millions of dollars)

	Webster Financial*	Bank of America*
Commitments and Contingencies		
1. Loan commitments	$ 3,610.16	$ 1,266,314.53
2. Commercial letters of credit	10.27	2,942.80
3. Standby letters of credit	147.88	94,015.32
4. Loans sold	—	112,562.41
Notional Amounts for Derivatives†		
5. Forwards and futures	$ 7,817.06	$10,115,367.94
6. Options	51.87	4,113,717.90
7. Interest rate swaps	1,198.05	29,991,935.88
8. Credit derivatives	—	4,694,042.23
9. Total	$12,835.29	$50,390,949.01

*Values are taken from the June 2010 FDIC Report of Condition data tapes available at the Federal Deposit Insurance Corporation Web site. **www.fdic.gov**

†Notional amounts reflect the face value of the contracts entered into.

up-front fee
The fee charged for making funds available through a loan commitment.

commitment fee
The fee charged on the unused component of a loan commitment.

at given interest rate terms (say, 12 percent). The loan commitment agreement also defines the length of time over which the borrower has the option to take down this loan. In return for making this loan commitment, the bank may charge an **up-front fee** (or facility fee) of, say, 1/8 percent of the commitment size, or $12,500 in this example. In addition, the bank must stand ready to supply the full $10 million at any time over the commitment period—for example, one year. Meanwhile, the borrower has a valuable option to take down any amount between $0 and $10 million over the commitment period. The bank may also charge the borrower a **commitment fee** on any unused commitment balances at the end of the period. In this example, if the borrower takes down only $8 million over the year and the fee on *unused* commitments is 1/4 percent, the bank generates additional revenue of 1/4 percent times $2 million, or $5,000.

Note that only when the borrower actually draws on the commitment do the loans made under the commitment appear on the balance sheet. Thus, only when the $8 million loan is taken down exactly halfway through the one-year commitment period (i.e., six months later) does the balance sheet show the creation of a new $8 million loan. We illustrate the transaction in Figure 12–1. When the $10 million commitment is made at time 0, nothing shows on the balance sheet. Nevertheless, the bank must stand ready to supply the

Figure 12–1 Loan Commitment Transaction

full $10 million in loans on any day within the one-year commitment period—at time 0 a new contingent claim on the resources of the bank is created. At time 6 months, when the $8 million is drawn down, the balance sheet will reflect this as an $8 million loan.

commercial letters of credit

Contingent guarantees sold by an FI to underwrite the trade or commercial performance of the buyers of the guarantees.

standby letters of credit

Guarantees issued to cover contingencies that are potentially more severe and less predictable than contingencies covered under trade-related or commercial letters of credit.

Commercial Letters of Credit and Standby Letters of Credit. In selling **commercial letters of credit** (LCs—item 2 in Table 12–2) and **standby letters of credit** (SLCs—item 3) for fees, banks add to their contingent future liabilities. Commercial letters of credit are widely used in both domestic and international trade. For example, they ease the shipment of grain between a farmer in Iowa and a purchaser in New Orleans or the shipment of goods between a U.S. importer and a foreign exporter. The bank's role is to provide a formal guarantee that payment for goods shipped or sold will be forthcoming regardless of whether the buyer of the goods defaults on payment.

Standby letters of credit perform an insurance function similar to commercial and trade letters of credit. The structure and type of risk covered differ, however. FIs may issue SLCs to cover contingencies that are potentially more *severe*, less *predictable* or frequent, and not necessarily trade related. These contingencies include performance bond guarantees by which an FI may guarantee that a real estate development will be completed in some interval of time. Alternatively, the FI may offer default guarantees to back an issue of commercial paper or municipal revenue bonds to allow issuers to achieve a higher credit rating and a lower funding cost than otherwise.

Both LCs and SLCs are essentially *guarantees* to underwrite performance that a depository institution sells to the buyers of the guarantees (such as a corporation). In economic terms, the depository institution that sells LCs and SLCs is selling insurance against the frequency or severity of some particular future event occurring. Further, similar to the different lines of insurance sold by property casualty insurers, LC and SLC contracts differ as to the severity and frequency of their risk exposures.

loans sold

Loans originated by the bank and then sold to other investors that can be returned to the originating institution.

recourse

The ability to put an asset or loan back to the seller should the credit quality of that asset deteriorate.

Loans Sold. **Loans sold** (item 4 in Table 12–2) are loans that a bank has originated and then sold to other investors that may be returned (sold with **recourse**) to the originating institution in the future if the credit quality of the loans deteriorates. We discuss the types of loans that banks sell, their incentives to sell, and the way in which they can sell them in more detail in Chapter 24. Banks and other FIs increasingly originate loans on their balance sheets, but rather than holding the loans to maturity, they quickly sell them to outside investors. These outside investors include other banks, insurance companies, mutual funds, or even corporations. In acting as loan originators and loan sellers, banks are operating more as loan brokers than as traditional asset transformers (see Chapters 1 and 11).

When an outside party buys a loan with absolutely no recourse to the seller of the loan should the loan eventually go bad, loan sales have no OBS contingent liability implications for banks. Specifically, *no recourse* means that if the loan the bank sells should go bad, the buyer of the loan must bear the full risk of loss. In particular, the buyer cannot go back to the seller or originating bank to seek payment on the bad loan. Suppose that the loan is sold with recourse. Then, loan sales present a long-term off-balance-sheet or contingent credit risk to the seller. Essentially, the buyer of the loan holds an option to put the loan back to the seller, which the buyer can exercise should the credit quality of the purchased loan materially deteriorate. In reality, the recourse or nonrecourse nature of loan sales is often ambiguous. For example, some have argued that banks generally are willing to repurchase bad no-recourse loans to preserve their reputations with their customers. Obviously, reputation concerns may extend the size of a selling bank's contingent liabilities from OBS activities.

derivative securities

Futures, forward, swap, and option positions taken by the FI for hedging or other purposes.

Derivative Contracts. **Derivative securities** (items 5 to 8 in Table 12–2) are the futures, forward, swap, and option positions taken by a bank for hedging and other purposes (see Chapters 10 and 23). We discussed the tremendous growth of derivative securities activity in Chapter 11. Banks can be either users of derivative contracts for hedging (see Chapter 10 and 23) and other purposes or dealers that act as middlemen in trades with customers for

a fee. It has been estimated that some 1,064 U.S. banks use derivatives and that five large dealer banks—J.P. Morgan Chase, Bank of America, Goldman Sachs, Citigroup, and Morgan Stanley—account for some 95 percent of the derivatives that user banks hold.[10]

Contingent credit risk is likely to be present when banks expand their positions in futures, forward, swap, and option contracts. This risk relates to the fact that the counterparty to one of these contracts may default on payment obligations, leaving the bank unhedged and having to replace the contract at today's interest rates, prices, or exchange rates, which may be relatively unfavorable. In addition, such defaults are most likely to occur when the counterparty is losing heavily on the contract and the bank is in the money on the contract. This type of default risk is much more serious for forward contracts than for futures contracts. This is because forward contracts are nonstandard contracts entered into bilaterally by negotiating parties, such as two banks, and all cash flows are required to be paid at one time (on contract maturity). Thus, they are essentially over-the-counter (OTC) arrangements with no external guarantees should one or the other party default on the contract (see Chapter 10). By contrast, futures contracts are standardized contracts guaranteed by organized exchanges such as the New York Futures Exchange (NYFE). Futures contracts, like forward contracts, make commitments to deliver foreign exchange (or some other asset) at some future date. If a counterparty were to default on a futures contract, however, the exchange would assume the defaulting party's position and payment obligations.

Option contracts can also be traded over the counter (OTC) or bought/sold on organized exchanges. If the options are standardized options traded on exchanges, such as bond options, they are virtually default risk free.[11] If they are specialized options purchased OTC, such as interest rate caps (see Chapter 10), some elements of default risk exist.[12] Similarly, swaps are OTC instruments normally susceptible to default risk (see Chapter 10).[13] In general, default risk on OTC contracts increases with the time to maturity of the contract and the fluctuation of underlying prices, interest rates, or exchange rates.[14]

Other Fee-Generating Activities

Commercial banks engage in other fee-generating activities that cannot be easily identified from analyzing their on- and off-balance-sheet accounts. These include trust services, processing services, and correspondent banking.

Trust Services. The trust department of a commercial bank holds and manages assets for individuals or corporations. Only the largest banks have sufficient staff to offer trust services. Individual trusts represent about one-half of all trust assets managed by commercial banks. These trusts include estate assets and assets delegated to bank trust departments by less financially sophisticated investors. Pension fund assets are the second largest group of assets managed by the trust departments of commercial banks. The banks manage the pension funds, act as trustees for any bonds held by the pension funds, and act as transfer and disbursement agents for the pension funds.

Processing Services. Commercial banks have traditionally provided financial data processing services for their business customers. These services include managing a customer's accounts receivable and accounts payable. Similarly, bank cash management services

[10]See OCC Bank Derivative Report, Second Quarter 2010 and Chapter 10.

[11]Note that the options still can be subject to interest rate risk; see the discussion in Chapter 23.

[12]Under an interest rate cap, the seller, in return for a fee, promises to compensate the buyer should interest rates rise above a certain level. If rates rise much more than expected, the cap seller may have an incentive to default to truncate the losses. Thus, selling a cap is similar to a bank's selling interest rate risk insurance (see Chapter 10 for more details).

[13]In a swap, two parties contract to exchange interest rate payments or foreign exchange payments. If interest rates (or foreign exchange rates) move a good deal, one party can face considerable future loss exposure, creating incentives to default.

[14]Reputational considerations and the need for future access to markets for hedging deter the incentive to default (see Chapter 23 as well). However, most empirical evidence suggests that derivative contracts have reduced FI risk.

include the provision of lockbox services where customers of a firm send payments to a post office box managed by a bank, which opens, processes, collects, and deposits checks within a very short time (sometimes as short as one hour) in the business customer's account. Banks also provide personalized services for both large and small companies, including moving funds from savings accounts that earn interest to transactions accounts that do not earn interest as firms need to make payments. The larger commercial banks have broadened their range of business services to include management consulting, data processing, and information systems or other technological services. Information systems and software marketed by commercial banks assist clients in collecting, analyzing, and reporting data effectively and efficiently.

Correspondent Banking. Correspondent banking is the provision of banking services to other banks that do not have the staff resources to perform the service themselves. These services include check clearing and collection, foreign exchange trading, hedging services, and participation in large loan and security issuances. Correspondent banking services are generally sold as a package of services. Payment for the services is generally in the form of noninterest bearing deposits held at the bank offering the correspondent services.

Income Statement

See Table 12–3 for the report of income or income statement for Webster Financial and Bank of America for 2010. The report of income identifies the interest income and expenses, net interest income, provision for loan losses, noninterest income and expenses, income before taxes and extraordinary items, and net income for the banks earned from the on- and off-balance-sheet activities described above. As we discuss the income statement, notice the direct relationship between it and the balance sheet (both on- and off-). The composition of an FI's assets and liabilities, combined with the interest rates earned or paid on them, directly determines the interest income and expense on the income statement. In addition, because the assets and liabilities of FIs are mainly financial, most of the income and expense items reported on the income statement are interest rate related (rather than reflecting sales prices and cost of goods sold, as seen with manufacturing corporations).

Interest Income. The income statement for a commercial bank first shows the sources of interest income (item 13). Interest and fee income on loans and leases (item 6 in Table 12–3) is the largest interest income-producing category. Subcategories are often listed on the income statement (items 1–4) for each category of loan listed earlier. Most banks also list income on leases (item 5) as a separate item. Interest on investment securities held (item 12) is also included as interest income. These too may be listed by subcategories items 7–11) described earlier. Interest income is recorded on an accrued basis (see earlier discussion). Thus, loans on which interest payments are past due can still be recorded as generating income for a bank.[15] Interest income is taxable, except for that on municipal securities and tax-exempt income from direct lease financing. Tax-exempt interest can be converted to a taxable equivalent basis as follows:

$$\text{Taxable equivalent interest income} = \frac{\text{Interest income}}{1 - \text{Bank's tax rate}}$$

Interest Expenses. Interest expense (item 23) is the second major category on a bank's income statement. Items listed here come directly from the liability section of the balance sheet: interest on deposits (item 19), NOW accounts (item 14), MMDAs and other savings (item 15), foreign deposits (item 16), retail CDs (item 17), and wholesale CDs (item 18), and interest on fed funds (item 20), RPs (item 20), and other borrowed funds (item 21). Interest on subordinated notes and debentures (item 22) is generally reported as a separate item.

[15]A bank can recognize income for at least 90 days after the due date of the interest payment.

TABLE 12–3 Income Statement for Two Commercial Banks for 2010
(in millions of dollars)

	Webster Financial*	Bank of America*
Interest Income		
1. Income on C&I loans	$121.54	$ 5,332.13
2. Income on real estate loans	365.13	23,270.89
3. Income on consumer loans	3.13	19,044.47
4. Income on other loans	1.13	5,820.26
5. Income on leases	5.80	1,077.33
6. Interest and fees on loans and leases	$496.73	$54,545.08
7. Interest on deposits at other institutions	0.53	514.15
8. Interest on fed funds and RPs	0.00	630.18
9. Interest on U.S. Treasury and agency securities	0.72	1,529.20
10. Interest on mortgage-backed securities	175.90	8,654.28
11. Interest on municipals and other debt and equity securities	36.38	2,678.51
12. Interest income on investment securities	$213.53	$14,006.32
13. *Total interest income*	$710.26	$68,551.40
Interest Expense		
14. Interest on NOW accounts	$ 0.59	$ 147,34
15. Interest on MMDA accounts and other savings	53.57	1,457.47
16. Interest on foreign deposits	0.48	578.59
17. Interest on retail CDs	45.84	1,782.71
18. Interest on wholesale CDs	25.99	546.67
19. Interest on deposit accounts	$126.47	$ 4,512.78
20. Interest on fed funds and RPs	16.25	604.96
21. Interest on other borrowed funds	18.33	4,867.84
22. Interest on subordinated notes and debentures	5.57	335.04
23. Total interest expense	$166.62	$10,320.62
24. *Net interest income*	$543.64	$58,230.78
25. *Provision for loan losses*	$150.00	$34,707.48
Noninterest Income		
26. Income from fiduciary activities	$ 7.65	$ 1,527.26
27. Service charges on deposit accounts	75.05	7,477.74
28. Trading revenue	(2.50)	3,625.63
29. Fees from security brokerage	0.00	1,086.52
30. Fees from investment banking	0.00	285.96
31. Fees from insurance	7.13	376.55
32. Net servicing fees	11.21	6,595.75
33. Net gain (loss) from sale of investment securities	7.76	1,250.32
34. Other noninterest income	82.82	10,606.07
35. *Total noninterest income*	$189.12	$32,831.80
Noninterest Expense		
36. Salaries and employee benefits	$232.23	$18,846.44
37. Expenses of premises and fixed assets	101.17	5,071.92
38. Other noninterest expense	209.94	18,010.70
39. *Total noninterest expense*	$543.34	$41,929.06
40. Income before taxes and extraordinary items	$ 39.42	$14,426.04
41. Applicable income taxes	(0.48)	4,435.34
42. Extraordinary items	—	—
43. **Net income**	$ 39.90	$ 9,990.70

*Values are taken from the 2010 FDIC Report of Condition data tapes available at the Federal Deposit Insurance Corporation Web site. **www.fdic.gov**

Net Interest Income. Total interest income minus total interest expense is listed next on the income statement as net interest income (item 24). Net interest income is an important tool in assessing the bank's ability to generate profits and control interest rate risk (see below).

Provision for Loan Losses. The provision for loan losses (item 25) is a noncash, tax-deductible expense. The provision for loan losses is the current period's allocation to the allowance for loan losses listed on the balance sheet. This item represents the bank management's prediction of loans at risk of default for the period. While the loans remain on the bank's balance sheet, the expected losses from any bad loans affect net income and equity on the income statement and balance sheet, respectively. For example, Bank of America increased its loan loss reserve (recording a provision for loan losses) by $13.4 billion in the second quarter of 2009. This loan loss provision expense was recorded in recognition of expected losses on mortgages and loans tied to the financial crisis. As a result, Bank of America's earnings per share fell 54 percent. As mentioned earlier, the size of the provision is determined by management, and in the United States it is subject to a maximum allowable tax deductible amount set by the Internal Revenue Service.

Example 12–1 The Relationship between Allowance for Loan Losses, Provision for Loan Losses, and Loan Balances

At the beginning of the month, a bank has $1 million in its loan portfolio and $50,000 in the allowance for loan losses (see Panel A of Figure 12–2). During the month, management estimates that an additional $5,000 of loans will not be paid as promised. Accordingly, the bank records an expense to loan loss provision (which reduces net income and thus retained earnings and equity of the bank) and increases the allowance for loan losses to $55,000 on the balance sheet (see Panel B in Figure 12–2). Notice that the loan is still listed as an asset on the bank's balance sheet at this time. After another month, management feels there is no chance of recovering the loan and writes the $5,000 loan off its books. At this time, loans are reduced by $5,000 as is the allowance for loan losses (see Panel C in Figure 12–2). Notice when the loan is considered unrecoverable and actually removed from the balance sheet, there is no impact on the bank's income or equity value.

Noninterest Income. Noninterest income (item 35) includes all other income received by the bank as a result of its on- and off-balance-sheet activities and is becoming increasingly important as the ability to attract core deposits and high-quality loan applicants becomes more difficult. Included in this category is income from fiduciary activities (for example, earnings from operating a trust department—item 26), service charges on deposit accounts (item 27), trading revenues (gains [losses] and fees from trading marketable instruments and OBS derivative instruments—item 28), fees from other-than-banking activities such as security brokerage (item 29), investment banking (item 30), insurance (item 31), servicing fees from mortgages, credit cards, and other assets (item 32), and gains and losses from the sale of investment securities (item 33), and other noninterest income (fee income from OBS loan commitments and letters of credit, ATM fees, money order, cashier's check, and travelers' check fees, data processing revenue, and revenue from one-time transactions such as sales of real estate owned, loans, premises, and fixed assets—item 34).

total operating income
The sum of the interest income and noninterest income.

The sum of interest income and noninterest income is referred to as the bank's **total operating income** or *total revenue.* Total operating income for a bank is equivalent to total sales in a manufacturing firm and represents the bank's income received from all sources.

Noninterest Expense. Noninterest expense (item 39) items consist mainly of personnel expenses and are generally large relative to noninterest income. Items in this category include salaries and employee benefits (item 36), expenses of premises and fixed assets (i.e., utilities, depreciation, and deposit insurance—item 37), and other (expenses of one-time

Figure 12–2 The Relationship between Allowance for Loan Losses, Provision for Loan Losses, and Loan Balances

Panel A: Beginning of Month 1

Assets		Liabilities and Equity	
Securities	$ 250,000	Deposits	$ 700,000
Gross Loans	1,000,000	Common Stock	200,000
Less: Allowance		Ret. Earnings	300,000
for Loan Losses	$50,000	Total Equity	500,000
Net Loans	$950,000	Total	$1,200,000
Total Assets	$1,200,000		

Panel B: End of Month 1

Assets		Liabilities and Equity	
Securities	$ 250,000	Deposits	$ 700,000
Gross Loans	1,000,000	Common Stock	200,000
Less: Allowance		Ret. Earnings	295,000
for Loan Losses	$55,000	Total Equity	495,000
Net Loans	$945,000	Total	$1,195,000
Total Assets	$1,195,000		

Panel A: End of Month 2

Assets		Liabilities and Equity	
Securities	$ 250,000	Deposits	$ 700,000
Gross Loans	995,000	Common Stock	200,000
Less: Allowance		Ret. Earnings	295,000
for Loan Losses	$50,000	Total Equity	495,000
Net Loans	$945,000	Total	$1,195,000
Total Assets	$1,195,000		

transactions such as losses on the sale of real estate, loans, and premises—item 38). For almost all banks, noninterest expense is greater than noninterest income. Thus, noninterest expense is sometimes referred to as the "burden" of the bank.

Income before Taxes and Extraordinary Items. Net interest income minus provisions for loan losses plus noninterest income minus noninterest expense produces the operating profit or income before taxes and extraordinary items for the bank (item 40).

Income Taxes. All federal, state, local, and foreign income taxes due from the bank are listed next on the income statement (item 41). Some of this amount may have been paid to the Internal Revenue Service (IRS) and the remainder is recorded as a liability (deferred taxes) to be paid to the IRS later.

Extraordinary Items. Extraordinary items and other adjustments (item 42) are events or transactions that are both unusual and infrequent. This includes such things as effects of changes in accounting rules, corrections of accounting errors made in previous years, and equity capital adjustments (losses from a major disaster such as an earthquake in an area where earthquakes are not expected to occur in the foreseeable future).

Net Income. Income before taxes and extraordinary items minus income taxes plus (or minus) extraordinary items results in the net income for the bank (item 43). Net income is the *bottom line* on the income statement.

Direct Relationship between the Income Statement and the Balance Sheet

DO YOU UNDERSTAND:

1. *The difference between a wholesale bank and a retail bank?*
2. *What the trade-offs are in holding a large proportion of short-term securities, such as T-bills, versus long-term securities, such as loans?*
3. *What the trade-offs are in issuing short-term deposit accounts, such as demand deposits and retail CDs, versus long-term deposits and other funding sources, such as wholesale CDs and long-term debt?*
4. *What the major difference is between a commercial letter of credit and a standby letter of credit?*
5. *What counterparty risk in a forward contract means?*
6. *Which is riskier for a bank, loan sales with recourse or loan sales without recourse?*
7. *What the nature of the relationship is between balance sheet and income statement items?*
8. *How paying a lower rate for new deposits than for other liabilities impacts a bank's income statement?*

As mentioned earlier, banks' financial statements are directly related (more so than for nonfinancial companies). That is, the items on the income statement are determined by the balance sheet assets and liabilities along with the interest rates on each item. This direct relationship between the two financial statements can be seen by depicting the income statement as follows:

$$NI = \sum_{n=1}^{N} r_n A_n - \sum_{m=1}^{M} r_m L_m - P + NII - NIE - T$$

where

NI = Bank's net income
A_n = Dollar value of the bank's nth asset
L_m = Dollar value of the bank's mth liability
r_n = Rate earned on the bank's nth asset
r_m = Rate paid on the bank's mth liability
P = Provision for loan losses
NII = Noninterest income earned by the bank, including income from off-balance-sheet activities
NIE = Noninterest expenses incurred by the bank
T = Bank's taxes and extraordinary items
N = Number of assets the bank holds
M = Number of liabilities the bank holds

Net income is the direct result of (1) the amount and mix of assets and liabilities held by the bank taken from the balance sheet and (2) the interest rate on each of them. For example, increasing the dollar value of an asset, all else constant, results in a direct increase in the bank's net income equal to the size of the increase times the rate of interest on the asset. Likewise, decreasing the rate paid on a liability, all else constant, directly increases net income by the size of the rate decrease times the dollar value of the liability on the balance sheet. Finally, changing the mix of assets or liabilities on the balance sheet has a direct effect on net income equal to the size of the rate difference times the dollar value of the asset or liability being changed. For example, suppose that a bank has the following net income:

NI = .046(1m.) + .06(3m.) −. 035(3m.) − .0475(1m.) = $73,500

The bank replaces $500,000 of assets currently yielding 4.60 percent with assets yielding 6 percent. As a result, net income increases by $7,000 [(6% − 4.6%) × $500,000], or

NI = .046(0.5m.) + .06(3.5m.) − .035(3m.) − .0475(1m.) = $80,500

FINANCIAL STATEMENT ANALYSIS USING A RETURN ON EQUITY FRAMEWORK

time series analysis
Analysis of financial statements over a period of time.

In the early and mid-2000s, the commercial banking industry experienced a period of record profits. The financial crisis brought about an abrupt reversal of this trend. During periods of falling profits and even during periods of record profits, many banks have weak and inefficient areas that need to be addressed. One way to identify weaknesses and problem areas is by analyzing financial statements. In particular, an analysis of selected accounting ratios—ratio analysis—allows a bank manager to evaluate the bank's current performance, the change in its performance over time (**time series analysis** of ratios over

cross-sectional analysis
Analysis of financial statements comparing one firm with others.

a period of time), and its performance relative to that of competitor banks (**cross-sectional analysis** of ratios across a group of firms).

Analyzing ratio trends over time, along with absolute ratio levels, gives managers, analysts, and investors information about whether a firm's financial condition is improving or deteriorating. For example, ratio analysis may reveal that a bank's capital-to-assets ratio is decreasing. This suggests that capital is decreasing as a source of financing the assets of the bank and that deposits and purchased funds are being increasingly used to finance the bank's assets. If this increase is the result of a deliberate policy to decrease capital and use cheaper sources of asset financing, the decreased capital ratio is good for the bank. Managers and investors should be concerned, on the other hand, if a decreased capital-to-asset ratio is the result of declining profits.

Looking at one bank's financial ratios, even through time, gives managers, analysts, and investors only a limited picture of bank performance. Ratio analysis almost always includes a comparison of one bank's ratios relative to the ratios of other firms in the industry, or cross-sectional analysis. Key to cross-sectional analysis is identifying similar banks in that they compete in the same markets, have similar sized assets, and operate in a similar manner to the bank being analyzed. Since no two banks are identical, obtaining such a comparison group is no easy task. Thus, the choice of companies to use in cross-sectional analysis is at best subjective. A tool available to assist in cross-sectional analysis is the Uniform Bank Performance Report (UBPR) maintained by the Federal Financial Institutions Examination Council. The UBPR summarizes the performance of banks for various peer groups (banks similar in size and economic environment), for various size groups, and by state.

www.ffiec.gov/UBPR.htm

Figure 12–3 summarizes the return on equity (ROE) framework.[16] The ROE framework starts with the most frequently used measure of profitability, ROE, and then breaks it down to identify strengths and weaknesses in a bank's performance. The resulting breakdown provides a convenient and systematic method to identify strengths and weaknesses of a bank's profitability. Identification of strengths and weaknesses, and the reasons for them, provides an excellent tool for bank managers as they look for ways to improve profitability. Table 12–4 summarizes the role of ROE and the first two levels of the ROE framework (from Figure 12–3) in analyzing an FI's performance.

The remainder of this chapter applies the ROE framework to our two banks: Webster Financial and Bank of America. All of the ratios discussed as part of the ROE breakdown are reported in Tables 12–5 through 12–7. We refer to these ratios by number (1 through 123). In addition, Figure 12–3 lists these ratios (by ratio number) as they fit into the ROE framework.

Return on Equity and Its Components

LG 5

ROE (ratio 1 in Table 12–5) is defined as:

$$\text{ROE} = \frac{\text{Net income}}{\text{Total equity capital}}$$

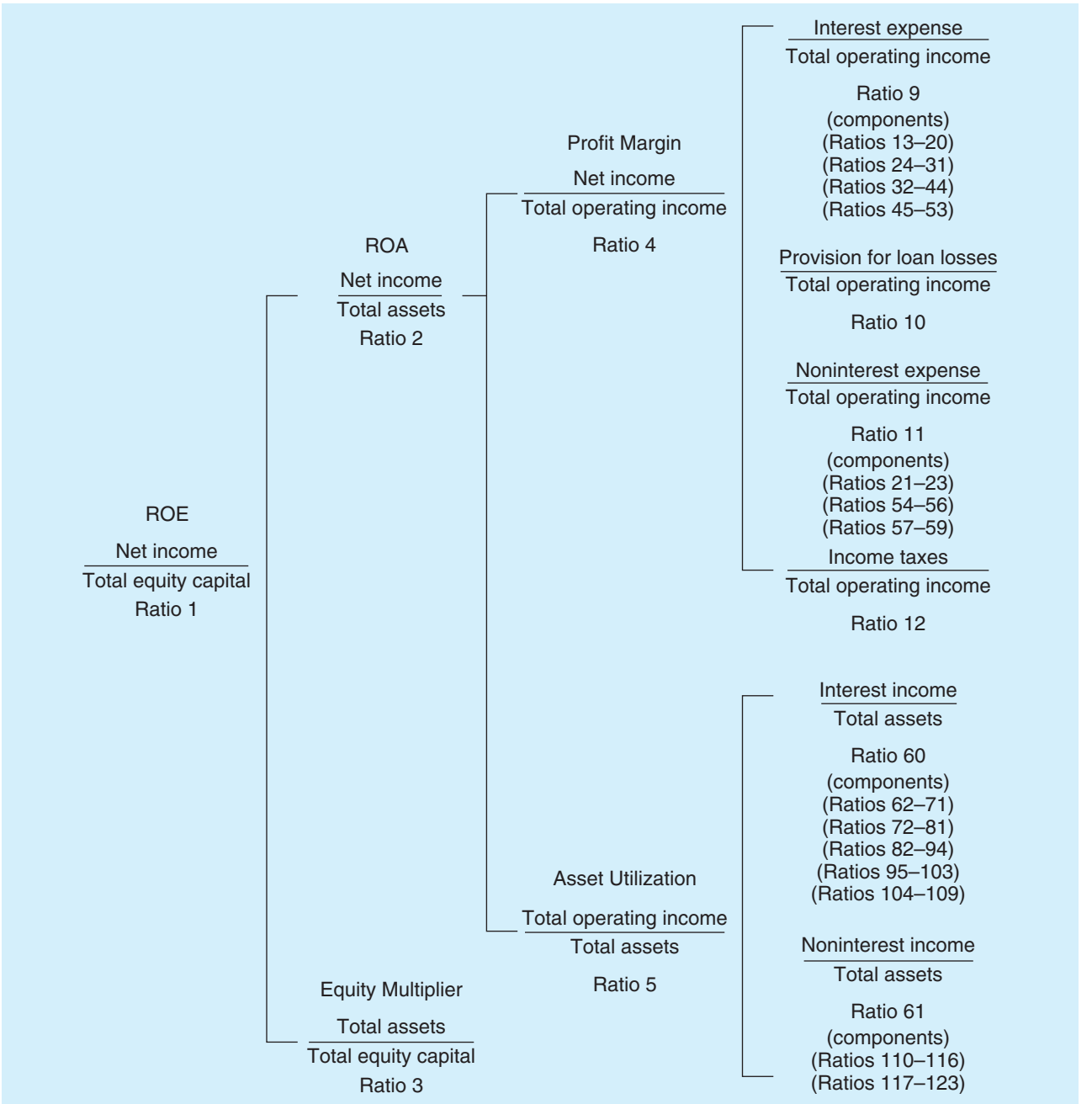
It measures the amount of net income after taxes earned for each dollar of equity capital contributed by the bank's stockholders. Taking these data from the financial statements for Webster Financial and Bank of America, the following ROEs for 2010 were:[17]

	Webster Financial	Bank of America
ROE	$\frac{39.90}{1{,}968.86} = 2.03\%$	$\frac{9{,}990.70}{220{,}622.21} = 4.53\%$

[16]The ROE framework is similar to the DuPont analysis that managers of nonfinancial institutions frequently use.

[17]We are using quarter-end balance sheet data to calculate ratios. The use of these data may bias ratios in that they are data for one day in the year, whereas income statement data cover the full year. To avoid this bias, average values for balance sheet data are often used to calculate ratios.

Figure 12–3 Classification of Ratios Listed in Tables 12–5 through 12–7



Note: Ratios 6–8 are discussed in the section "Other Ratios" later in the chapter.

TABLE 12–4 Role of ROE, ROA, EM, PM, and AU in Analyzing Financial Institution Performance

Return on Equity (ROE)—measures overall profitability of the FI per dollar of equity.
Return on Assets (ROA)—measures profit generated relative to the FI's assets.
Equity Multiplier (EM)—measures the extent to which assets of the FI are funded with equity relative to debt.
Profit Margin (PM)—measures the ability to pay expenses and generate net income from interest and noninterest income.
Asset Utilization (AU)—measures the amount of interest and noninterest income generated per dollar of total assets.

TABLE 12–5 Overall Performance Ratios for Two Commercial Banks for 2010

Ratio	Webster Financial	Bank of America
1. ROE	2.03%	4.53%
2. ROA	0.23%	0.56%
3. Equity multiplier	8.99X	8.10X
4. Profit margin	4.44%	9.85%
5. Asset utilization	5.08%	5.67%
6. Net interest margin	3.42%	4.26%
7. Spread	3.37%	4.29%
8. Overhead efficiency	34.81%	78.30%

Generally, bank stockholders prefer ROE to be high. It is possible, however, that an increase in ROE indicates increased risk. For example, ROE increases if total equity capital decreases relative to net income. A large drop in equity capital may result in a violation of minimum regulatory capital standards and an increased risk of insolvency for the bank (see Chapters 13 and 22). An increase in ROE may simply result from an increase in a bank's leverage—an increase in its debt-to-equity ratio.

To identify potential problems, ROE (ratio 1) can be decomposed into two component parts, as follows:

$$\text{ROE} = \frac{\text{Net income}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Total equity capital}}$$
$$= \text{ROA} \times \text{EM}$$

where

ROA (ratio 2) = Return on assets (a measure of profitability linked to the asset size of the bank)
EM (ratio 3) = Equity multiplier (a measure of leverage)

ROA determines the net income produced per dollar of assets; EM measures the dollar value of assets funded with each dollar of equity capital (the higher this ratio, the more leverage or debt the bank is using to fund its assets). The values of these ratios for our two banks in 2010 were:

	Webster Financial	Bank of America
ROA	$\frac{39.90}{17{,}691.89} = 0.23\%$	$\frac{9{,}990.70}{1{,}787{,}605.98} = 0.56\%$
EM	$\frac{17{,}691.89}{1{,}968.86} = 8.99$ times	$\frac{1{,}787{,}605.98}{220{,}622.21} = 8.10$ times

High values for these ratios produce high ROEs, but, as noted, managers should be concerned about the source of high ROEs. For example, an increase in ROE due to an increase in the EM means that the bank's leverage, and therefore its solvency risk, has increased.

Return on Assets and Its Components

A further breakdown of a bank's profitability is that of dividing ROA (ratio 2 in Table 12–5) into its profit margin (PM) and asset utilization (AU) ratio components:

$$\text{ROA} = \frac{\text{Net income}}{\text{Total operating income}} \times \frac{\text{Total operating income}}{\text{Total assets}}$$
$$= \text{PM} \times \text{AU}$$

where

PM (ratio 4) = Net income generated per dollar of total operating (interest and noninterest) income
AU (ratio 5) = Amount of interest and noninterest income generated per dollar of total assets

For our two banks, these are as follows:

	Webster Financial	Bank of America
PM	$\frac{39.90}{710.26 + 189.12} = 4.44\%$	$\frac{9{,}990.70}{68{,}551.40 + 32{,}831.80} = 9.85\%$
AU	$\frac{710.26 + 189.12}{17{,}691.89} = 5.08\%$	$\frac{68{,}551.40 + 32{,}831.80}{1{,}787{,}605.98} = 5.67\%$

Again, high values for these ratios produce high ROAs and ROEs. PM measures the bank's ability to control expenses. The better the expense control, the more profitable the bank. AU measures the bank's ability to generate income from its assets. The more income generated per dollar of assets, the more profitable the bank. Again, bank managers should be aware that high values of these ratios may indicate underlying problems. For example, PM increases if the bank experiences a drop in salaries and benefits. However, if this expense decreases because the most highly skilled employees are leaving the bank, the increase in PM and in ROA is associated with a potential "labor quality" problem. Thus, it is often prudent to break these ratios down further.

Profit Margin. As stated, PM measures a bank's ability to control expenses and thus its ability to produce net income from its operating income (or revenue). A breakdown of PM, therefore, can isolate the various expense items listed on the income statement as follows (ratios used to decompose the profit margin are listed in Table 12–6):

$$\text{Interest expense ratio (ratio 9)} = \frac{\text{Interest expense}}{\text{Total operating income}}$$

$$\text{Provision for loan loss ratio (ratio 10)} = \frac{\text{Provision for loan losses}}{\text{Total operating income}}$$

$$\text{Noninterest expense ratio (ratio 11)} = \frac{\text{Noninterest expense}}{\text{Total operating income}}$$

$$\text{Tax ratio (ratio 12)} = \frac{\text{Income taxes}}{\text{Total operating income}}$$

These ratios measure the proportion of total operating income that goes to pay the particular expense item. The values of these ratios for Webster Financial and Bank of America are as follows:

	Webster Financial	Bank of America
Interest expense ratio	$\frac{166.62}{710.26 + 189.12} = 18.53\%$	$\frac{10{,}320.62}{68{,}551.40 + 32{,}831.80} = 10.18\%$
Provision for loan loss ratio	$\frac{150.00}{710.26 + 189.12} = 16.68\%$	$\frac{34{,}707.48}{68{,}551.40 + 32{,}831.80} = 34.23\%$
Noninterest expense ratio	$\frac{543.34}{710.26 + 189.12} = 60.41\%$	$\frac{41{,}929.06}{68{,}551.40 + 32{,}831.80} = 41.36\%$
Tax ratio	$\frac{-0.48}{710.26 + 189.12} = -0.05\%$	$\frac{4{,}435.34}{68{,}551.40 + 32{,}831.80} = 4.37\%$

TABLE 12–6 Decomposition of Profit Margin for Two Commercial Banks for 2010

Ratio	Webster Financial Corporation	Bank of America
Profit Margin Components		
9. Interest expense ratio	18.53%	10.18%
10. Provision for loan loss ratio	16.68	34.23
11. Noninterest expense ratio	60.41	41.36
12. Tax ratio	−0.05	4.37
Interest Expenses as a Percentage of Total Operating Income		
13. NOW accounts	0.07%	0.14%
14. MMDAs and other savings	5.96	1.44
15. Foreign deposits	0.05	0.57
16. Retail CDs	5.10	1.76
17. Wholesale CDs	2.89	0.54
18. Fed funds and RPs	1.81	0.60
19. Other borrowed funds	2.04	4.80
20. Subordinated notes and debentures	0.62	0.33
Noninterest Expense as a Percentage of Total Operating Income		
21. Salaries and employee benefits	25.82%	18.59%
22. Expenses of premises and fixed assets	11.25	5.00
23. Other noninterest expenses	23.34	17.77
Liability Yields		
24. NOW accounts	0.30%	0.64%
25. MMDAs and other savings	0.57	0.23
26. Foreign deposits	0.61	0.32
27. Retail CDs	1.90	2.16
28. Wholesale CDs	2.04	0.73
29. Fed funds and RPs	1.71	0.42
30. Other borrowed funds	2.70	1.91
31. Subordinated notes and debentures	3.14	1.24
Liability Accounts as a Percentage of Total Assets		
32. Demand deposits	2.30%	6.06%
33. NOW accounts	1.11	1.29
34. MMDAs	28.73	19.83
35. Other savings	24.33	15.26
36. Foreign deposits	0.44	10.15
37. Retail CDs	13.62	4.61
38. Core deposits	70.54	57.20
39. Wholesale CDs	7.21	4.20
40. Fed funds and RPs	5.36	7.97
41. Other borrowed funds	3.84	14.28
42. Subordinated notes and debentures	1.00	1.51
43. Purchased funds	17.41	27.96
44. Other liabilities	0.93	2.50
Liability Items as a Percentage of Interest-Bearing Liabilities		
45. NOW accounts	1.30%	1.64%
46. MMDAs	33.54	25.07
47. Other savings	28.41	19.29
48. Foreign deposits	0.52	12.83
49. Retail CDs	15.90	5.83
50. Wholesale CDs	8.41	5.31
51. Fed funds and RPs	6.26	10.07
52. Other borrowed funds	4.49	18.05
53. Subordinated notes and debentures	1.17	1.91
Noninterest Expense as a Percentage of Noninterest Income		
54. Salaries and employee benefits	122.79%	57.40%
55. Expenses of premises and equipment	53.50	15.45
56. Other noninterest income	111.01	54.86
Noninterest Expense as a Percentage of Total Assets		
57. Salaries and employee benefits	1.31%	1.05%
58. Expenses of premises and equipment	0.57	0.28
59. Other noninterest income	1.19	1.01

The sum of the numerators of these four ratios subtracted from the denominator (total operating income) is the bank's net income.[18] Thus, the lower any of these ratios, the higher the bank's profitability (PM). As mentioned, however, although a low value for any of these ratios produces an increase in the bank's profit, it may be indicative of a problem situation in the bank. Thus, an even more detailed breakdown of these ratios may be warranted. For example, the interest expense ratio can be broken down according to the various interest expense-generating liabilities (ratios 13–20 in Table 12–6; e.g., interest on NOW accounts/total operating income). Additionally, the noninterest expense ratio may be broken down according to its components (ratios 21–23—e.g., salaries and employee benefits/total operating income). These ratios allow for a more detailed examination of the generation of the bank's expenses.

A different method to evaluate the bank's expense management is to calculate such ratios as deposit yields (ratios 24–31; e.g., interest expense on NOW accounts/dollar value of NOW accounts) or size of investment (e.g., dollar value of NOW accounts/total assets—ratios 32–44—or dollar value of NOW accounts/total interest-bearing liabilities—ratios 45–53). The noninterest expense items can be evaluated using component percentages (ratios 54–56; e.g., salaries and employee benefits/noninterest income) or size of expense (ratios 57–59; e.g., salaries and employee benefits/total assets).

Asset Utilization. The AU ratio measures the extent to which the bank's assets generate revenue. The breakdown of the AU ratio separates the total revenue generated into interest income and noninterest income as follows (ratios used to decompose asset utilization are listed in Table 12–7):

$$\text{Asset utilization ratio} = \frac{\text{Total operating income}}{\text{Total assets}} = \text{Interest income ratio} + \text{Noninterest income ratio}$$

where

$$\text{Interest income ratio (ratio 60)} = \frac{\text{Interest income}}{\text{Total assets}}$$

$$\text{Noninterest income ratio (ratio 61)} = \frac{\text{Noninterest income}}{\text{Total assets}}$$

which measure the bank's ability to generate interest income and noninterest income, respectively. For the banks represented in Tables 12–1 and 12–3, the values of these ratios are as follows:

	Webster Financial	Bank of America
Interest income ratio	$\frac{710.62}{17{,}691.89} = 4.02\%$	$\frac{68{,}551.40}{1{,}787{,}605.98} = 3.83\%$
Noninterest income ratio	$\frac{189.12}{17{,}691.89} = 1.07\%$	$\frac{32{,}831.80}{1{,}787{,}605.98} = 1.84\%$

The interest income and noninterest income ratios are not necessarily independent. For example, the bank's ability to generate loans affects both interest income and, through fees and service charges, noninterest income. High values for these ratios signify the efficient use of bank resources to generate income and are thus generally positive for the bank. But some problematic situations that result in high ratio values could exist; for example, a bank that replaces low-risk, low-return loans with high-risk, high-return loans will experience

[18]For example, for Bank of America, the denominator of each of the four ratios ($68,551.40 + $32,831.80 = $101,383.20) less the sum of the numerators of the four ratios ($10,320.62 + $34,707.48 + $41,929.06 + $4,435.34 = $91,392.50) is $9,990.70, which is the net income reported for Bank of America in Table 12–3.

TABLE 12–7 Decomposition of Asset Utilization for Two Commercial Banks for 2010

Ratio	Webster Financial	Bank of America
Asset Utilization Breakdown		
60. Interest income ratio	4.02%	3.83%
61. Noninterest income ratio	1.07	1.84
Interest Income as a Percentage Total Assets		
62. C&I loans	0.69%	0.30%
63. Real estate loans	2.06	1.30
64. Consumer loans	0.02	1.07
65. Other loans	0.01	0.33
66. Leases	0.03	0.06
67. Deposits at other institutions	0.00	0.03
68. Fed funds and RPs	0.00	0.04
69. U.S. Treasury and agencies	0.00	0.08
70. Mortgage-backed securities	0.99	0.48
71. Municipals and other debt and equity securities	0.21	0.15
Asset Yields		
72. C&I loans	4.75%	3.46%
73. Real estate loans	4.50	4.52
74. Consumer loans	9.03	7.88
75. Other loans	2.73	14.79
76. Leases	5.21	6.26
77. Deposits at other institutions	1.31	2.96
78. Fed funds and RPs	0.00	0.86
79. U.S. Treasury and agencies	0.02	0.63
80. Mortgage-backed securities	52.55	24.13
81. Municipals and other debt and equity securities	4.46	2.95
Asset Items as a Percentage of Total Assets		
82. Cash and balances due from institutions	1.23%	8.54%
83. C&I loans	14.46	8.63
84. Real estate loans	45.83	28.80
85. Consumer loans	0.20	13.51
86. Other loans	0.23	2.20
87. Leases	0.63	0.96
88. Net loans and leases	59.41	51.61
89. Fed funds and RPs	0.01	4.10
90. U.S. Treasury and agencies	23.90	13.59
91. Mortgage-backed securities	1.89	2.01
92. Municipals and other debt and equity securities	4.59	5.08
93. Total investment securities	30.39	24.78
94. Other assets	8.97	15.07
Asset Items as a Percentage of Earning Assets		
95. C&I loans	15.76%	11.30%
96. Real estate loans	49.96	37.71
97. Consumer loans	0.21	17.69
98. Other loans	0.26	2.88
99. Leases	0.69	1.26
100. Fed funds and RPs	0.01	5.37
101. U.S. Treasury and agencies	26.05	17.78
102. Mortgage-backed securities	2.06	2.63
103. Municipals and other debt and equity securities	5.01	6.65

TABLE 12–7 *(continued)*

Off-Balance-Sheet Items as a Percentage of Total Assets		
104. Loan commitments	20.40%	70.84%
105. Commercial letters of credit	0.06	0.16
106. Standby letters of credit	0.84	5.26
107. Loans sold	—	6.30
108. Derivative securities	51.25	2736.35
109. Total off-balance-sheet items	72.55	2818.91
Noninterest Income as a Percentage of Total Assets		
110. Fiduciary accounts	0.04%	0.09%
111. Service charges	0.42	0.42
112. Trading revenue	−0.00	0.20
113. Fees from nonbanking services	0.04	0.10
114. Net servicing fees	0.06	0.37
115. Net gain (loss) from sale of investment securities	0.04	0.07
116. Other noninterest income	0.47	0.59
Noninterest Income as a Percentage of Total Noninterest Income		
117. Fiduciary accounts	4.05%	4.65%
118. Service charges	39.68	22.78
119. Trading revenue	−1.32	11.04
120. Fees from nonbanking services	3.77	5.33
121. Net servicing fees	5.93	20.09
122. Net gain (loss) from sale of investment securities	4.10	3.81
123. Other noninterest income	43.79	32.30

an increase in its interest income ratio. However, high-risk loans have a higher default probability, which could result in the ultimate loss of both interest and principal payments. Further breakdown of these ratios is therefore a valuable tool in the financial performance evaluation process.

The interest income ratio can be broken down using the various components of interest income (ratios 62–71; e.g., income on C&I loans/total assets); or by using asset yields (ratios 72–81; e.g., income on C&I loans/dollar value of C&I loans); or by using size of investment (e.g., dollar value of C&I loans/total assets—ratios 82–94—or dollar value of C&I loans/total earning assets—ratios 95–103). Off-balance-sheet activities can also be measured in terms of the size of the notional values they create in relation to bank assets (ratios 104–109—e.g., loan commitments/total assets). The noninterest income ratio can also be subdivided into the various subcategories (e.g., income from fiduciary activities/total assets—ratios 110–116—or income from fiduciary activities/noninterest income—ratios 117–123).

Other Ratios

A number of other profit measures are commonly used to evaluate bank performance. Three of these are (1) the net interest margin, (2) the spread (ratio), and (3) overhead efficiency.

net interest margin

Interest income minus interest expense divided by earning assets.

Net Interest Margin. **Net interest margin** (ratio 6 in Table 12–5) measures the net return on the bank's earning assets (investment securities and loans and leases) and is defined as follows:

$$\text{Net interest margin} = \frac{\text{Net interest income}}{\text{Earning assets}} = \frac{\text{Interest income} - \text{Interest expense}}{\text{Investment securities} + \text{Net loans and leases}}$$

Generally, the higher this ratio, the better. Suppose, however, that the preceding scenario (replacement of low-risk, low-return loans with high-risk, high-return loans) is the reason for the increase. This situation can increase risk for the bank. It highlights the fact that looking at returns without looking at risk can be misleading and potentially dangerous in terms of bank solvency and long-run profitability.

spread
The difference between lending and borrowing rates.

The Spread. The **spread** (ratio 7 in Table 12–5) measures the difference between the average yield on earning assets and the average cost of interest-bearing liabilities and is thus another measure of return on the bank's assets. The spread is defined as:

$$\text{Spread} = \frac{\text{Interest income}}{\text{Earning assets}} - \frac{\text{Interest expense}}{\text{Interest-bearing liabilities}}$$

The higher the spread, the more profitable the bank, but again, the source of a high spread and the potential risk implications should be considered.

DO YOU UNDERSTAND:

9. *Two scenarios in which a high value of ROE may signal a risk problem for a bank?*
10. *What ratios ROA can be broken down into?*
11. *What the spread measure means?*

Overhead Efficiency. **Overhead efficiency** (ratio 8 in Table 12–5) measures the bank's ability to generate noninterest income to cover noninterest expenses. It is represented as:

$$\text{Overhead efficiency} = \frac{\text{Noninterest income}}{\text{Noninterest expense}}$$

overhead efficiency
A bank's ability to generate noninterest income to cover noninterest expense.

In general, the higher this ratio, the better. However, because of the high levels of noninterest expense relative to noninterest income, overhead efficiency is rarely higher than 1 (or in percentage terms, 100 percent). Further, low operating expenses (and thus low noninterest expenses) can also indicate increased risk if the institution is not investing in the most efficient technology or its back office systems are poorly supported. The values of these ratios for the two banks are as follows:

	Webster Financial	Bank of America
Net interest margin	$\frac{543.64}{5{,}377.62 + 10{,}510.46} = 3.42\%$	$\frac{58{,}230.78}{442{,}877.57 + 922{,}619.34} = 4.26\%$
Spread	$\frac{710.26}{15{,}888.08} - \frac{166.62}{15{,}151.56} = 3.37\%$	$\frac{68{,}551.40}{1{,}365{,}496.63} - \frac{10{,}320.62}{1{,}414{,}090.10} = 4.29\%$
Overhead efficiency	$\frac{189.12}{543.34} = 34.81\%$	$\frac{32{,}831.80}{41{,}929.06} = 78.30\%$

IMPACT OF MARKET NICHE AND BANK SIZE ON FINANCIAL STATEMENT ANALYSIS

Impact of a Bank's Market Niche

As mentioned earlier, in 2010, Webster Financial was a profitable and efficient bank that invested mainly in real estate loans and low-cost funding methods. Bank of America, on the other hand, operated with a larger and more balanced portfolio of assets and liabilities across both wholesale and retail banking. Keeping the more specialized market niche of Webster Financial in mind, let us make a comparative financial analysis using the ROE framework and the banks' 2010 financial statements.

ROE and Its Components. As stated, the ROE (ratio 1) of 2.03 percent for Webster Financial Corp. (WBS) was lower than the 4.53 percent ROE reported for Bank of America

(BOA). The breakdown of ROE indicates that WBS's lower profitability was due to its ROA of 0.23 percent compared with that of 0.56 percent for BOA (ratio 2). However, WBS's equity multiplier or leverage (ratio 3) was higher than that of BOA. WBS's EM of 8.99X translated to an equity-to-asset ratio (= 1/EM) of 11.13 percent, and BOA's EM of 8.10X translated to an equity-to-asset ratio of 12.34 percent. Thus, although both banks appeared to be well capitalized, WBS had less equity.

The more focused orientation of WBS relative to BOA can best be seen by looking at the composition of the asset, and particularly the loan, portfolios (ratios 82 through 94 in Table 12–7) and the liabilities (ratios 32 through 44 in Table 12–6) of the two banks. WBS held 45.83 percent of its total assets in the form of real estate loans. Thus, consistent with its niche, a large majority of WBS's assets were tied up in real estate–related assets. BOA, on the other hand, had its asset investments more evenly distributed: 8.63 percent in C&I loans, 28.80 percent in real estate loans, 13.51 percent in consumer loans, and 2.20 percent in other loans.

On the liability side of the balance sheet, WBS issued mainly retail-oriented deposits: MMDAs were 28.73 percent of total assets, other savings were 24.33 percent, and retail CDs were 13.62 percent. BOA again used a broader array of deposits: demand deposits were 6.06 percent, MMDAs were 19.83 percent, other savings were 15.26 percent, foreign deposits were 10.15 percent, and retail CDs were 4.61 percent of total assets. Clearly, WBS has specialized its service in the retail area, while BOA offers a broader spectrum of financial services.

Impact of Size on Financial Statement Analysis

Bank size has traditionally affected the financial ratios of commercial banks, resulting in significant differences across size groups. Large banks' relatively easy access to purchased funds and capital markets compared to small banks' access is a reason for many of these differences. For example, large banks with easier access to capital markets generally operate with lower amounts of equity capital than do small banks. Also, large banks generally use more purchased funds (such as fed funds and RPs) and fewer core deposits than do small banks. Large banks tend to put more into salaries, premises, and other expenses than small banks, and they tend to diversify their operations and services more than small banks. Large banks also generate more noninterest income (i.e., trading account, derivative security, and foreign trading income) than small banks and when risky loans pay off, they earn more interest income. As a result, although large banks tend to hold less equity than small banks, large banks do not necessarily return more on their assets. A study by the Federal Reserve Bank of St. Louis reported that ROA consistently increased for banks grouped by size up to $15 billion in total assets, but decreased for banks with more than $15 billion.

Examining ratios for the relatively large Bank of America (BOA) compared to the smaller WBS, we see only some of these size-related effects on accounting ratios. Looking at ROA (ratio 2 in Table 12–5), BOA is the more profitable overall of the two banks. Notice that BOA is producing the higher income per dollar of total operating income (ratio 4; PM for BOA = 9.85 percent and for WBS = 4.44 percent), and is producing more operating income per dollar of assets (AU for BOA = 5.67 percent and for WBS = 5.08 percent). The generation of total operating income in the form of interest income (ratio 60 in Table 12–7) is slightly smaller for BOA (interest income ratio for BOA = 3.83 percent and for WBS = 4.02 percent). We do see that BOA generates much more noninterest income (1.84 percent of total assets) than WBS (1.07 percent of total assets; see ratio 61 in Table 12–7). This is likely due to BOA's relatively large amount of OBS activities (which is typical of large banks compared with small banks). Indeed, the notional or face value of BOA's off-balance-sheet activities is 2,818.91 percent of its assets on balance sheet compared to WBS's 72.55 percent (see ratios 104 through 109 in Table 12–7).

DO YOU UNDERSTAND:

12. *How a bank's choice of market niche affects its financial ratios?*

13. *How a bank's asset size affects its financial ratios?*

Notice, too, that BOA's other assets (ratio 94 in Table 12–7) are 15.07 percent of total assets, compared with 8.97 percent for WBS. BOA also uses more purchased funds to total assets than WBS (27.96 percent versus 17.41 percent, respectively), and fewer core deposits (57.20 percent versus 70.54 percent, respectively) (see ratios 43 and 38 in Table 12–6). Finally and a typically, notice that BOA is financing its assets with more equity than WBS. The equity multiplier (ratio 3 in Table 12–5) for BOA, 8.10X, translates to an equity ratio of 12.34 percent, while that for WBS, 8.99X, translates to an equity ratio of 11.13 percent. Characteristically, because of the size-related differences across the two banks, BOA's ROE (ratio 1 in Table 12–5) is greater than that of WBS.

SUMMARY

This chapter analyzed the financial statements of commercial banks. The assets, liabilities, and equity capital were described as they appear in the balance sheet. The financial statements of other FIs such as savings banks and credit unions take a similar form. The income and expenses were described as they appear in the income statement. From the items on the financial statements, the profitability of the two banks was analyzed using a return on equity (ROE) framework. What might appear as a favorable sign of profitability and performance can sometimes, in fact, indicate risk problems that management should address. Many problems and areas of managerial concern can be identified by performing a detailed breakdown of the financial ratios of banks. Thus, both profitability and risk management are interlinked and should be of concern to managers. The various risks to which FIs are exposed are examined in more detail in the next several chapters.

QUESTIONS

1. How does a bank's report of condition differ from its report of income? *(LG1, LG4)*

2. Match these three types of cash balances with the functions that they serve: (*LG1*)

a. Vault cash (1) Used to meet legal reserve requirements
b. Deposits at the Federal Reserve (2) Used to purchase services (3) Used to meet customer withdrawals
c. Deposits at other FIs

3. Classify the following accounts into one of the following categories: (*LG1, LG3, LG4*)

a. Assets
b. Liabilities
c. Equity
d. Revenue
e. Expense
f. Off-balance-sheet activities

(1) Service fees charged on deposit accounts
(2) Retail CDs
(3) Surplus and paid-in capital
(4) Loan commitments
(5) Consumer loans
(6) Federal funds sold
(7) Swaps
(8) Interest on municipals
(9) Interest on NOW accounts
(10) NOW accounts
(11) Commercial letters of credit
(12) Leases
(13) Retained earnings
(14) Provision for loan losses
(15) Interest on U.S. Treasury securities

4. If we examine a typical bank's asset portion of the balance sheet, how are the assets arranged in terms of expected return and liquidity? (*LG1*)

5. Repurchase agreements are listed as both assets and liabilities in Table 12–1. How can an account be both an asset and a liability? (*LG1, LG2*)

6. How does a NOW account differ from a demand deposit? (*LG2*)

7. How does a retail CD differ from a wholesale CD? (*LG2*)

8. How do core deposits differ from purchased funds? (*LG2*)

9. What are the major categories of off-balance-sheet activities? (*LG3*)

10. How does a bank's annual net income compare with its annual cash flow? (*LG4*)

11. How might the use of an end-of-the-year balance sheet bias the calculation of certain ratios? (*LG5*)

12. How does the asset utilization ratio for a bank compare to that of a retail company? How do the equity multipliers compare? (*LG5*)

13. What is the likely relationship between the interest income ratio and the noninterest income ratio? (*LG5*)

14. A security analyst calculates the following ratios for two banks. How should the analyst evaluate the financial health of the two banks? (*LG5*)

	Bank A	Bank B
Return on equity	22%	24%
Return on assets	2%	1.5%
Equity multiplier	11X	16X
Profit margin	15%	14%
Asset utilization	13%	11%
Spread	3%	3%
Interest expense ratio	35%	40%
Provision for loan loss ratio	1%	4%

15. What sort of problems or opportunities might ratio analysis fail to identify? (*LG5*)

PROBLEMS

1. A bank is considering two securities: a 30-year Treasury bond yielding 7 percent and a 30-year municipal bond yielding 5 percent. If the bank's tax rate is 30 percent, which bond offers the higher tax equivalent yield? (*LG4*)

2. A bank is considering an investment in a municipal security that offers a yield of 6 percent. What is this security's tax equivalent yield if the bank's tax rate is 35 percent? (*LG4*)

3. The financial statements for First National Bank (FNB) are shown below: (*LG5*)

Balance Sheet First National Bank

Assets		Liabilities and Equity	
Cash	$ 450	Demand deposits	$ 5,510
Demand deposits from other FIs	1,350	Small time deposits	10,800
Investments	4,050	Jumbo CDs	3,200
Federal funds sold	2,025	Federal funds purchased	2,250
Loans	15,525	Equity	2,200
Reserve for loan losses	(1,125)		
Premises	1,685		
Total assets	$23,960	Total liabilities/equity	$23,960

Income Statement First National Bank

Interest income	$2,600
Interest expense	1,650
Provision for loan losses	180
Noninterest income	140
Noninterest expense	420
Taxes	90

a. Calculate the dollar value of FNB's earning assets.
b. Calculate FNB's ROA.
c. Calculate FNB's asset utilization ratio.
d. Calculate FNB's spread.

4. The financial statements for BSW National Bank (BSWNB) are shown below: (*LG5*)

Balance Sheet BSW National Bank

Assets		Liabilities and Equity	
Cash and due from banks	$ 936	Demand deposits	$ 5,040
Investments	3,100	Small time deposits	4,020
Federal funds sold	1,664	Jumbo CDs	4,680
Loans (less reserve for loan losses of 2,400)	9,120	Federal funds purchased	312
Premises	780	Equity	1,548
Total assets	$15,600	Total liabilities/equity	$15,600

Income Statement BSW National Bank

Interest income	$1,150
Interest expense	475
Provision for loan losses	150
Noninterest income	260
Noninterest expense	525
Taxes	60

a. What is the dollar value of earning assets held by BSWNB?
b. What is the dollar value of interest-bearing liabilities held by BSWNB?
c. What is BSWNB's total operating income?
d. Calculate BSWNB's asset utilization ratio.
e. Calculate BSWNB's net interest margin.

5. The financial statements for MHM Bank (MHM) are shown below: (*LG5*)

Balance Sheet MHM Bank

Assets		Liabilities and Equity	
Cash and due from banks	$ 1,920	Demand deposits	$10,620
Demand deposits at other FIs	1,100	Small time deposits	10,350
Investments	6,080	Jumbo CDs	7,670
Federal funds sold	2,990	Federal funds purchased	470
Loans (less reserve for loan losses of 2,400)	20,040	Other liabilities	2,000
Premises	2,270	Equity	3,290
Total assets	$34,400	Total liabilities/equity	$34,400

Income Statement MHM Bank

Interest income	$4,048
Interest expense	2,024
Provision for loan losses	100
Noninterest income	700
Noninterest expense	975
Taxes	235

a. Calculate the dollar value of MHM's earning assets.
b. Calculate the dollar value of MHM's interest-bearing liabilities.
c. Calculate MHM's spread.
d. Calculate MHM's interest expense ratio.

6. The financial statements for THE Bank are shown below: (*LG5*)

Balance Sheet THE Bank

Assets		Liabilities and Equity	
Cash	$ 200	Demand deposits	$ 2,450
Demand deposits from other FIs	600	Small time deposits	4,800
Investments	1,800	Jumbo CDs	1,425
Federal funds sold	900	Federal funds purchased	1,000
Loans	6,900	Equity	975
Reserve for loan losses	(500)		
Premises	750		
Total assets	$10,650	Total liabilities/equity	$10,650

Income Statement THE Bank

Interest income	$2,450
Interest expense	1,630
Provision for loan losses	80
Noninterest income	240
Noninterest expense	410
Taxes	40

a. Calculate THE Bank's earning assets.
b. Calculate THE Bank's ROA.
c. Calculate THE Bank's total operating income.
d. Calculate THE Bank's spread.

7. Smallville Bank has the following balance sheet, rates earned on its assets, and rates paid on its liabilities.

Balance Sheet (in thousands)

Assets		Rate Earned (%)
Cash and due from banks	$ 6,000	4
Investment securities	22,000	8
Repurchase agreements	12,000	6
Loans less allowance for losses	80,000	10
Fixed assets	10,000	0
Other assets	4,000	9
Total assets	$134,000	

Liabilities and Equity		Rate Paid (%)
Demand deposits	$ 9,000	0
NOW accounts	69,000	5
Retail CDs	18,000	7
Subordinated debentures	14,000	8
Total liabilities	110,000	
Common stock	10,000	
Paid-in capital surplus	13,000	
Retained earnings	11,000	
Total liabilities and equity	$134,000	

If the bank earns $120,000 in noninterest income, incurs $80,000 in noninterest expenses, and pays $2,500,000 in taxes, what is its net income? (*LG5*)

8. Megalopolis Bank has the following balance sheet and income statement. (*LG5*)

Balance Sheet (in millions)

Assets		Liabilities and Equity	
Cash and due from banks	$ 9,000	Demand deposits	$ 19,000
Investment securities	23,000	NOW accounts	89,000
Repurchase agreements	42,000	Retail CDs	28,000
Loans	90,000	Debentures	19,000
Fixed assets	15,000	Total liabilities	$155,000
Other assets	4,000	Common stock	12,000
Total assets	$183,000	Paid-in capital	4,000
		Retained earnings	12,000
		Total liabilities and equity	$183,000

Income Statement

Interest on fees and loans	$ 9,000
Interest on investment securities	4,000
Interest on repurchase agreements	6,000
Interest on deposits in banks	1,000
Total interest income	$20,000

Interest on deposits	$ 9,000
Interest on debentures	2,000
Total interest expense	$11,000
Net interest income	$ 9,000
Provision for loan losses	2,000
Noninterest income	2,000
Noninterest expenses	1,000
Income before taxes	$ 8,000
Taxes	3,000
Net income	$ 5,000

For Megalopolis, calculate:

a. Return on equity
b. Return on assets
c. Asset utilization
d. Equity multiplier
e. Profit margin
f. Interest expense ratio
g. Provision for loan loss ratio
h. Noninterest expense ratio
i. Tax ratio

9. Anytown bank has the following ratios: (*LG*5)

a. Profit margin: 21%
b. Asset utilization: 11%
c. Equity multiplier: 12X

Calculate Anytown's ROE and ROA.

10. Everytown bank has the following ratios: (*LG*5)

a. Profit margin: 5%
b. Asset utilization: 20%
c. Equity multiplier: 7.75X

Calculate Everytown's ROE and ROA.

SEARCH THE SITE

Go to the Bank of America's Web site at **www.bankofamerica.com.** Find the most recent Balance Sheet and Income Statement from the Annual Report using the following steps. Click on "About Bank of America." Under "Shareholders," click on "Annual Report." Click on the most recent date for "20XX Annual Report." This will download the most recent Annual Report to your computer. Go to the pages containing the Consolidated Balance Sheet and Consolidated Income Statement.

Questions

1. What is the most recent value of total assets for Bank of America? How has this changed since 2010 as reported in Table 12–1?
2. What is the most recent value of net income for Bank of America? How has this changed since 2010 as reported in Table 12–3?
3. From the most recent balance sheet and income statement, calculate the most recent ROA, ROE, equity multiplier, profit margin, and asset utilization ratios. Which ratio has changed the most since 2010 as reported in Table 12–5?