Solutions for End-of-Chapter Questions and Problems: Chapter Two

1. What are the differences between community banks, regional banks, and money-center banks? Contrast the business activities, location, and markets of each of these bank groups.

Community banks typically have assets under $1 billion and serve consumer and small business customers in local markets. In 2015, 89.5 percent of the banks in the United States were classified as community banks. However, these banks held only 7.5 percent of the assets of the banking industry. In comparison with regional and money-center banks, community banks typically hold a larger percentage of assets in consumer and real estate loans and a smaller percentage of assets in commercial and industrial loans. These banks also rely more heavily on local deposits and less heavily on borrowed and international funds.

Regional or superregional banks range in size from several billion dollars to several hundred billion dollars in assets. The banks normally are headquartered in larger regional cities and often have offices and branches in locations throughout large portions of the United States. They engage in a more complete array of wholesale commercial banking activities, encompassing consumer and residential lending as well as commercial and industrial lending (C&I loans), both regionally and nationally. Although these banks provide lending products to large corporate customers, many of the regional banks have developed sophisticated electronic and branching services to consumer and residential customers. Regional and superregional banks utilize retail deposit bases for funding, but also develop relationships with large corporate customers and international money centers.

Money center banks rely heavily on nondeposit or borrowed sources of funds. Some of these banks have no retail branch systems and most money center banks are major participants in foreign currency markets. These banks compete with the larger regional banks for large commercial loans and with international banks for international commercial loans. Most money center banks have headquarters in New York City.

2. Use the data in Table 2-4 for banks in the two asset size groups (a) $100 million-$1 billion and (b) more than $10 billion to answer the following questions.

    a. Why were ROA and ROE strong for both groups over the 1990-2006 period? Why did ROA and ROE decrease over the period 2007-2009? Why did ROA and ROE increase over the period 2010-2015? Identify and discuss the primary variables that affect ROA and ROE as they relate to these two size groups.

The primary reason for the improvements in ROA and ROE from 1990s through 2006 may be related to the continued strength of the macroeconomy that allowed banks to operate with reduced bad debts, or loan charge-off problems. In addition, the continued low interest rate environment provided relatively low-cost sources of funds, and a shift toward growth in fee income provided additional sources of revenue in many product lines. The result is an increase in bank spreads (i.e., the difference between lending and deposit rates), resulting in higher income and, thus, ROA and ROE. Finally, a growing secondary market for loans allowed banks to control the size of the balance sheet by securitizing many assets. The bigger banks tend to fund

themselves in national markets and lend to larger corporations. This means that their spreads in the past (the 1990s and early 2000s) often were narrower than those of smaller regional banks, which were more sheltered from competition in highly localized markets. As a result, the largest banks' return on assets (ROA) was below that of smaller banks.

In the late 2000s, the U.S. economy experienced its strongest recession since the Great Depression. Commercial banks' performance deteriorated along with the economy. As mortgage borrowers defaulted on their mortgages, financial institutions that held these "toxic" mortgages and "toxic" credit derivatives (in the form of mortgage backed securities) started announcing huge losses on them. Losses from the falling value of OBS securities reached over $1 trillion worldwide through 2009. Bigger banks held more of these toxic assets and, thus, experienced larger losses in income in 2008. As a result, they tended to see smaller spreads and lower, and even negative, ROAs and ROEs during this period. Losses resulted in the failure, acquisition, or bailout of some of the largest FIs and a near meltdown of the world's financial and economic systems.

As the economy recovered in 2010-2015, ROA and ROE returned closer to their pre-crisis levels. The recovery occurred quicker for bigger banks that received more government assistance and monitoring throughout the crisis. The biggest banks' ROAs and ROEs returned to positive by 2009, while the smaller banks' ROAs and ROEs remained negative until 2010.

b. Why is ROA for the smaller banks generally larger than ROA for the large banks?

Small banks historically have benefited from a larger spread between the cost of funds and the rate on assets, each of which is caused by the less severe competition in the localized markets. In addition, small banks have been able to control credit risk more efficiently and to operate with less overhead expense than large banks.

c. Why is the ratio for ROE consistently larger for the large bank group?

ROE is defined as net income divided by total equity, or ROA times the ratio of assets to equity. Because large banks typically operate with less equity per dollar of assets, net income per dollar of equity is larger.

d. Using the information on ROE decomposition in Appendix 2A, calculate the ratio of equity to total assets for each of the two bank groups for the period 1990-2015. Why has there been such dramatic change in the values over this time period and why is there a difference in the size of the ratio for the two groups?

ROE = ROA x (Total Assets/Equity)
Therefore, (Equity/Total Assets) = ROA/ROE

	$100 million - $1 Billion				Over $10 Billion			
Year	ROE	ROA	TA/Equity	Equity/TA	ROE	ROA	TA/Equity	Equity/TA
1990	9.95%	0.78%	12.76	7.84%	6.68%	0.38%	17.58	5.69%
1995	13.48%	1.25%	10.78	9.27%	15.60%	1.10%	14.18	7.05%

2000	13.56%	1.28%	10.59	9.44%	14.42%	1.16%	12.43	8.04%
2001	12.24%	1.20%	10.20	9.80%	13.43%	1.13%	11.88	8.41%
2003	12.80%	1.27%	10.08	9.92%	16.37%	1.42%	11.53	8.67%
2006	12.20%	1.24%	9.84	10.16%	13.40%	1.35%	9.93	10.07%
2007	10.34%	1.06%	9.75	10.25%	9.22%	0.92%	10.02	9.98%
2008	3.68%	0.38%	9.68	10.32%	1.70%	0.16%	10.62	9.41%
2009	-0.15%	-0.01%	15.00	6.67%	1.44%	0.15%	9.71	10.29%
2010	3.35%	0.36%	9.31	10.75%	6.78%	0.75%	9.60	10.42%
2013	8.76%	0.93%	9.41	10.62%	9.61%	1.07%	8.98	11.13%
2015	9.08%	1.00%	9.08	11.01%	9.31%	1.03%	9.04	11.06%

The growth in the equity to total assets ratio has occurred primarily because of the increased profitability of the entire banking industry and (particularly during the financial crisis) the encouragement of regulators to increase the amount of equity financing in the banks. Increased fee income, reduced loan loss reserves, and a low, stable interest rate environment have produced the increased profitability which in turn has allowed banks to increase equity through retained earnings.

Smaller banks tend to have a higher equity ratio because they have more limited asset growth opportunities, generally have less diverse sources of funds, and historically have had greater profitability than larger banks.

3. What factors caused the decrease in loan volume relative to other assets on the balance sheets of commercial banks? How has each of these factors been related to the change and development of the financial services industry during the 1990s and 2000s? What strategic changes have banks implemented to deal with changes in the financial services environment?

Business loans were the major asset on banks' balance sheets between 1965 and 1987. Since then, corporations have utilized the commercial paper markets with increased frequency rather than borrow from banks. In addition, many banks have sold loan packages directly into the capital markets (securitization) as a method to reduce balance sheet risks and to improve liquidity. Finally, the decrease in loan volume during the early 1990s and 2000s was due in part to the short recession in 2001 and the much stronger recession and financial crisis in 2007-2009.

As deregulation of the financial services industry occurred during the 1990s, the position of banks as the primary financial services provider eroded. Banks of all sizes have increased the use of off-balance-sheet activities in an effort to generate additional fee income. Letters of credit, futures, options, swaps, and other derivative products are not reflected on the balance sheet, but do provide fee income for the banks.

4. What are the major uses of funds for commercial banks in the United States? What are the primary risks to a bank caused by each of these? Which of the risks is most critical to the continuing operation of a bank?

Loans and investment securities continue to be the primary assets of the banking industry. Commercial loans are relatively more important for the larger banks, while consumer, small

business loans, and residential mortgages are more important for small banks. Each of these types of loans creates credit, and to varying extents, liquidity risks for the banks. The security portfolio normally is a source of liquidity and interest rate risk, especially with the increased use of various types of mortgage-backed securities and structured notes. In certain environments, each of these risks can create operational and performance problems for a bank.

5. What are the major sources of funds for commercial banks in the United States? How does this differ for small versus large banks?

The primary sources of funds are deposits and borrowed funds. Small banks rely more heavily on the local deposit base (transaction, savings, and retail time deposits), while large banks tend to utilize large, negotiable time deposits and nondeposit liabilities such as federal funds and repurchase agreements. The supply of nontransaction deposits is shrinking because of the increased use by small savers of higher-yielding money market mutual funds.

6. What are the three major segments of deposit funding? How are these segments changing over time? Why? What strategic impact do these changes have on the profitable operation of a bank?

The three major segments of deposit funding are transaction accounts, retail savings accounts, and large time deposits. Transaction accounts are checkable deposits that include deposits that do not pay interest and NOW accounts that pay interest. Retail savings accounts include passbook savings accounts and small, nonnegotiable time deposits. Large time deposits include negotiable certificates of deposits that can be resold in the secondary market. The importance of transaction and retail accounts is shrinking due to the direct investment in money market mutual funds by individual investors. These funds pay a competitive rate of interest based on wholesale money market rates by pooling and investing funds while requiring relatively small-denomination investments by mutual fund investors. The changes in the deposit markets have made theses traditionally low cost sources of funding more expensive and coincide with the efforts to constrain the growth on the asset side of the balance sheet.

7. How does the liability maturity structure of a bank's balance sheet compare with the maturity structure of the asset portfolio? What risks are created or intensified by these differences?

The liability structure of bank balance sheets tends to reflect a shorter maturity structure than does the asset portfolio with relatively more liquid instruments, such as deposits and interbank borrowings, used to fund less liquid assets such as loans. Thus, maturity mismatch or interest rate risk and liquidity risk are key exposure concerns for bank managers.

8. The following balance sheet accounts (in millions of dollars) have been taken from the annual report for a U.S. bank. Arrange the accounts in balance sheet order and determine the value of total assets. Based on the balance sheet structure, would you classify this bank as a community bank, regional bank, or money center bank?

Assets	Liabilities and Equity

Cash	$ 2,660	Demand deposits	$ 5,939
Fed funds sold	110	NOW accounts	12,816
Investment securities	6,092	Savings deposits	3,292
Net loans	29,981	Certificates of deposit (under $100,000)	9,853
Other assets	1,633	Other time deposits	2,333
Premises	1,078	Short-term borrowing	2,080
Total assets	$41,554	Long-term debt	1,191
		Other liabilities	778
		Equity	3,272
		Total liab. and equity	$41,554

This bank has funded the assets primarily with transaction and savings deposits. The certificates of deposit could be either retail or corporate (negotiable). The bank has very little (~5 percent) borrowed funds. On the asset side, about 72 percent of total assets ares in the loan portfolio, but there is no information about the type of loans. The bank actually is a small regional bank with $41.5 billion in assets, but the asset structure could easily be a community bank if the numbers were denominated in millions, e.g., $41.5 million in assets.

9. What types of activities are normally classified as off-balance-sheet (OBS) activities?

OBS activities include issuing various types of guarantees (such as letters of credit), which often have a strong insurance underwriting element, and making future commitments to lend. Both services generate additional fee income for banks. Off-balance-sheet activities also involve engaging in derivative transactions—futures, forwards, options, and swaps.

a. How does an OBS activity move onto the balance sheet as an asset or liability?

The activity becomes an asset or a liability upon the occurrence of a contingent event, which may not be in the control of the bank. an item or activity is an off-balance-sheet asset if, when a contingent event occurs, the item or activity moves onto the asset side of the balance sheet or an income item is realized on the income statement. Conversely, an item or activity is an off-balance-sheet liability if, when a contingent event occurs, the item or activity moves onto the liability side of the balance sheet or an expense item is realized on the income statement.

b. What are the benefits of OBS activities to a bank?

OBS activities generate fee income for banks. The initial benefit is the fee that the bank charges when making the commitment. By moving activities off the balance sheet, banks hope to earn additional fee income to complement declining margins or spreads on their traditional lending business. At the same time, they can avoid regulatory costs or “taxes” since reserve requirements and deposit insurance premiums are not levied on off-balance-sheet activities. Thus, banks have both earnings and regulatory “tax avoidance” incentives to undertake activities off their balance sheets.

c. What are the risks of OBS activities to a bank?

Off-balance-sheet activities, however, can involve risks that add to the overall insolvency exposure of an FI. Indeed, at the very heart of the financial crisis were losses associated with off-balance-sheet mortgage-backed securities created and held by FIs. Losses resulted in the failure, acquisition, or bailout of some of the largest FIs and a near meltdown of the world's financial and economic systems. However, off-balance-sheet activities and instruments have both risk-reducing as well as risk-increasing attributes, and, when used appropriately, they can reduce or hedge an FI's interest rate, credit, and foreign exchange risks.

10. Use the data in Table 2-6 to answer the following questions.

    a. What was the average annual growth rate in OBS total commitments over the period from 1992-2015?

$\$209{,}532.2 = \$10{,}075.8(1+g)^{23} \Rightarrow g = 14.10$ percent

    b. Which categories of contingencies have had the highest annual growth rates?

Category of Contingency or Commitment	Growth Rate
Commitments to lend	6.99%
Future and forward contracts	12.53%
Notional amount of credit derivatives	34.31%
Standby contracts and other option contracts	13.94%
Commitments to buy FX, spot, and forward	7.74%
Standby LCs and foreign office guarantees	9.17%
Commercial LCs	-0.98%
Securities borrowed	11.20%
Notional value of all outstanding swaps	22.13%

Credit derivatives grew at the fastest rate of 34.31 percent, yet they have a relatively low outstanding balance of $8,487.1 billion. The rate of growth in the swaps area has been the second strongest at 22.13 percent, the dollar volume is large at $117,481.3 billion in 2015. Option contracts grew at an annual rate of 13.91 percent with a dollar value outstanding of $31,549.0 billion. Clearly the strongest growth involves derivative areas.

    c. What factors are credited for the significant growth in derivative securities activities by banks?

The primary use of derivative products has been in the areas of interest rate, credit, and foreign exchange risk management. As banks and other financial institutions have pursued the use of these instruments, the international financial markets have responded by extending the variations of the products available to the institutions. However, derivative securities have not grown in significance since the financial crisis. Part of the Wall Street Reform and Consumer Protection Act, passed in 2010 in response to the financial crisis, is the Volker Rule which prohibits U.S. depository institutions (DIs) from engaging in proprietary trading (i.e., trading as a principal for the trading account of the bank). This includes any transaction to purchase or sell derivatives.

Thus, only the investment banking arm of the business is allowed to conduct such trading. The Volcker Rule was implemented in April 2014 and banks had until July 21, 2015 to be in compliance. The result has been a reduction in derivative securities held off-balance-sheet by these financial institutions.

11. For each of the following banking organizations, identify which regulatory agencies (OCC, FRB, FDIC, or state banking commission) may have some regulatory supervision responsibility.

    (a) State-chartered, nonmember, non-holding company bank.
    (b) State-chartered, nonmember holding company bank
    (c) State-chartered member bank
    (d) Nationally chartered non-holding company bank.
    (e) Nationally chartered holding company bank

Bank Type	OCC	FRB	FDIC	SB Comm
(a)			Yes	Yes
(b)		Yes	Yes	Yes
(c)		Yes	Yes	Yes
(d)	Yes	Yes	Yes	
(e)	Yes	Yes	Yes	

12. What are the main features of the Riegle-Neal Interstate Banking and Branching Efficiency Act of 1994? What major impact on commercial banking activity occurred from this legislation?

The main feature of the Riegle-Neal Act of 1994 was the removal of barriers to interstate banking. In September 1995 bank holding companies were allowed to acquire banks in other states. In 1997, banks were allowed to convert out-of-state subsidiaries into branches of a single interstate bank. As a result, consolidations and acquisitions have allowed for the emergence of very large banks with branches across the country.

13. What factors normally are given credit for the revitalization of the banking industry during the decade of the 1990s? How is Internet banking expected to provide benefits in the future?

The most prominent reason was the lengthy economic expansion in both the U.S. and many global economies during the entire decade of the 1990s. This expansion was assisted in the U.S. by low and falling interest rates, and increasing spreads, during the entire period.

The extent of the impact of Internet banking remains unknown. However, the existence of this technology is allowing banks to open markets and develop products that did not exist prior to the Internet. Initial efforts focused on retail customers more than corporate customers. The trend should continue with the advent of faster, more customer friendly products and services, and the continued technology education of customers.

14. What factors are given credit for the strong performance of commercial banks in the early and mid-2000s?

The lowest interest rates in many decades helped bank performance on both sides of the balance sheet. On the asset side, many consumers continued to refinance homes and purchase new homes, an activity that caused fee income from mortgage lending to increase and remain strong. Meanwhile, the rates banks paid on deposits shrunk to all time lows. The result was an increase in bank spreads and net income In addition, the development and more comfortable use of new financial instruments such as credit derivatives and mortgage-backed securities helped banks ease credit risk off the balance sheets. Finally, information technology has helped banks manage their risk more efficiently.

15. What factors are given credit for the weak performance of commercial banks in the late 2000s?

In the late 2000s, the U.S. economy experienced its strongest recession since the Great Depression. Commercial banks' performance deteriorated along with the economy. Sharply higher loss provisions and a very rare decline in noninterest income were primarily responsible for the lower industry profits. Things got even worse in 2008. Net income for all of 2008 was $10.2 billion, a decline of $89.8 billion (89.8 percent) from 2007. The ROA for the year was 0.13 percent, the lowest since 1987. Almost one in four institutions (23.6 percent) was unprofitable in 2008, and almost two out of every three institutions (62.8 percent) reported lower full-year earnings than in 2007. Total noninterest income was $25.6 billion (11 percent), lower as a result of the industry's first ever full-year trading loss ($1.8 billion), a $5.8 billion (27.4 percent) decline in securitization income, and a $6.6 billion drop in proceeds from sales of loans, foreclosed properties, and other assets. Net loan and lease charge-offs totaled $38.0 billion in the fourth quarter, an increase of $21.7 billion (132.7 percent) from the fourth quarter of 2007, the highest charge-off rate in the 25 years that institutions have reported quarterly net charge-offs. As the economy improved in the second half of 2009, so did commercial bank performance. While rising loan-loss provisions continued to dominate industry profitability, growth in operating revenues, combined with appreciation in securities values, helped the industry post an aggregate net profit. Noninterest income was $4.0 billion (6.8 percent) higher than 2008 due to net gains on loan sales (up $2.7 billion) and servicing fees (up $1.9 billion). However, the industry was still feeling the effects of the long recession. Provisions for loan and lease losses totaled $62.5 billion, the fourth consecutive quarter that industry provisions had exceeded $60 billion. Net charge-offs continued to rise, for an 11th consecutive quarter.

16. How do the asset and liability structures of a savings institution compare with the asset and liability structures of a commercial bank? How do these structural differences affect the risks and operating performance of a savings institution? What is the QTL test?

The savings institution industry relies on mortgage loans and mortgage-backed securities as the primary assets, while the commercial banking industry has a variety of loan products, including mortgage products. The large amount of longer-term fixed rate assets continues to cause interest rate risk, while the lack of asset diversity exposes the savings institution to credit risk. Savings institutions hold less cash and U.S. Treasury securities than do commercial banks. On the

liability side, small time and saving deposits remain as the predominant source of funds for savings institutions, with some reliance on FHLB borrowing. The inability to nurture relationships with the capital markets also creates potential liquidity risk for the savings institution industry.

The acronym QTL stands for Qualified Thrift Lender. The QTL test refers to a minimum amount of mortgage-related assets that a savings institution must hold to maintain its charter as a savings institution. The amount currently is 65 percent of total assets.

17. How do savings banks differ from savings associations? Differentiate in terms of risk, operating performance, balance sheet structure, and regulatory responsibility.

The asset structure of savings banks is similar to the asset structure of savings associations with the exception that savings banks are allowed to diversify by holding a larger proportion of corporate stocks and bonds. Savings banks rely more heavily on deposits and thus have a lower level of borrowed funds. Both are regulated at both the state and federal level, with deposits insured by the FDIC's DIF.

18. What happened in 1979 to cause the failure of many savings institutions during the early 1980s? What was the effect of this change on the financial statements of savings associations?

Over the period October 1979 to October 1982, however, the Federal Reserve's restrictive monetary policy action led to a sudden and dramatic surge in interest rates, with rates on T-bills rising as high as 16 percent. This increase in short-term rates and the cost of funds had two effects. First, savings associations faced negative interest spreads or net interest margins in funding much of their fixed-rate long-term residential mortgage portfolios over this period. Second, they had to pay more competitive interest rates on savings deposits to prevent disintermediation and the reinvestment of those funds in money market mutual fund accounts. Their ability to do this was constrained by the Federal Reserve's Regulation Q ceilings, which limited the rates savings associations could pay on traditional passbook savings account and retail time deposits.

19. How did the two pieces of regulatory legislation—the DIDMCA in 1980 and the DIA in 1982—change the profitability of savings institutions in the early 1980s? What impact did these pieces of legislation ultimately have on the risk posture of the savings institution industry? How did the FSLIC react to this change in operating performance and risk?

The two pieces of legislation expanded the deposit-taking and asset-investment powers of savings associations. The acts allowed savings institutions to offer new deposit accounts, such as NOW accounts and money market deposit accounts, in an effort to reduce the net withdrawal flow of deposits from the institutions. In effect this action was an attempt to reduce the liquidity problem. In addition, savings institutions were allowed to offer adjustable-rate mortgages and a limited amount of commercial and consumer loans in an attempt to improve the profitability performance of the industry. Although many savings institutions were safer, more diversified, and more profitable, the FSLIC did not foreclose many of the savings institutions which were

insolvent. Nor did the FSLIC change its policy of assessing higher insurance premiums on companies that remained in high risk categories. Thus, many savings institutions failed, which caused the FSLIC to eventually become insolvent.

20. How did the Financial Institutions Reform, Recovery, and Enforcement Act (FIRREA) of 1989 and the Federal Deposit Insurance Corporation Improvement Act of 1991 reverse some of the key features of earlier legislation?

FIRREA rescinded some of the expanded thrift lending powers of the DIDMCA of 1980 and the Garn-St Germain Act of 1982. The Act also the FIRREA of 1989—abolished the FSLIC and created a new insurance fund (SAIF) under the management of the FDIC. In addition, the act created the Resolution Trust Corporation (RTC) to close the most insolvent savings associations. Further, the FIRREA strengthened the capital requirements of savings institutions and constrained their non-mortgage-related asset-holding powers under a newly imposed qualified thrift lender, or QTL, test that requires that all thrifts must hold portfolios that are comprised primarily of mortgages or mortgage products such as mortgage-backed securities.

The FDICA of 1991 amended the DIDMCA of 1980 by introducing risk-based deposit insurance premiums in 1993 to reduce excess risk-taking. FDICA also provided for the implementation of a policy of prompt corrective actions (PCA) that allows regulators to close banks more quickly in cases where insolvency is imminent. Thus, the ill-advised policy of regulatory forbearance should be curbed.

21. What is the "common bond" membership qualification under which credit unions have been formed and operated? How does this qualification affect the operational objective of a credit union?

In organizing a credit union, members are required to have a common bond of occupation (e.g., police CUs) or association (e.g., university-affiliated CUs), or to cover a well-defined neighborhood, community, or rural district. The common bond policy allows anyone who meets a specific membership requirement to become a member of the credit union. The requirement normally is tied to a place of employment or residence. The primary objective of credit unions is to satisfy the depository and lending needs of their members. Because the common bond policy has been loosely interpreted, implementation has allowed credit union membership and assets to grow at a rate that exceeds similar growth in the commercial banking industry. Since credit unions are mutual organizations where the members are owners, employees essentially use saving deposits to make loans to other employees who need funds. Also, because credit unions are nonprofit organizations, their net income is not taxed and they are not subject to the local investment requirements established under the 1977 Community Reinvestment Act. This tax-exempt status allows CUs to offer higher rates on deposits, and charge lower rates on some types of loans, than do banks and savings institutions.

22. What are the operating advantages of credit unions that have caused concern among commercial bankers? What has been the response of the Credit Union National Association to the banks' criticisms?

Credit unions are tax-exempt organizations. As a result, their net income is not taxed and they are not subject to the local investment requirements established under the 1977 Community Reinvestment Act. This tax-exempt status allows CUs to offer higher rates on deposits, and charge lower rates on some types of loans, than do banks and savings institutions. As CUs have expanded in number, size, and services, bankers have claimed that CUs are unfairly competing with small banks that have historically been the major lenders in small towns. For example, the American Bankers Association has stated that the tax exemption for CUs gives them the equivalent of a $1 billion per year subsidy. The Credit Union National Association's (CUNA) response is that any cost to taxpayers from CUs' tax-exempt status is more than made up in benefits to members and therefore the social good they create. CUNA estimates that the benefits of CU membership can range from $200 to $500 a year per member or, with more than 95 million members, a total benefit of $19 billion to $47.5 billion per year. CUNA has responded saying that the cost to tax payers from the tax-exempt status is replaced by the additional social good created by the benefits to the members.

23. How does the asset structure of credit unions compare with the asset structure of commercial banks and savings institutions? Refer to Tables 2-5, 2-9, and 2-12 to formulate your answer.

The relative proportions of all three types of depository institutions are similar, with almost 30 percent of total assets held as investment securities and over 50 percent as loans. Savings institutions' loans are predominantly mortgage related, nonmortgage loans of credit unions are predominantly consumer loans, and commercial banks hold more business loans than either savings institutions or credit unions. On the liability side of the balance sheet, credit unions differ from banks in that they have less reliance on large time deposits and they differ from savings institutions in that they have virtually no borrowings from any source. The primary sources of funds for credit unions are transaction and small time and savings accounts.

24. Compare and contrast the performance of the worldwide depository institutions with those of major foreign countries during the financial crisis.

Quickly after it hit the U.S., the financial crisis spread worldwide. As the crisis started, banks worldwide saw losses driven by their portfolios of structured finance products and securitized exposures to the subprime mortgage market. Losses were magnified by illiquidity in the markets for those instruments. As with U.S. banks, this led to substantial losses in their marked to market valuations. In Europe, the general picture of bank performance in 2008 was similar to that in the U.S. That is, net income fell sharply at all banks. The largest banks in the Netherlands, Switzerland and the United Kingdom had net losses for the year. Banks in Ireland, Spain and the United Kingdom were especially hard hit as they had large investments in mortgages and mortgage-backed securities. Because they focused on the domestic retail banking, French and Italian banks were less affected by losses on mortgage-backed securities. Continental European banks, in contrast to UK banks, partially cushioned losses through an increase in their net interest margins.

A number of European banks averted outright bankruptcy thanks to direct support from the central banks and national governments. During the last week of September and first week of October 2008, the German government guaranteed all consumer bank deposits and arranged a

bailout of Hypo Real Estate, the country's second largest commercial property lender. The United Kingdom nationalized mortgage lender Bradford & Bingley (the country's eighth largest mortgage lender) and raised deposit guarantees from $62,220 to $88,890 per account. Ireland guaranteed deposits and debt of its six major financial institutions. Iceland rescued its third largest bank with a $860 million purchase of 75 percent of the banks stock and a few days later seized the country's entire banking system. The Netherlands, Belgium, and Luxembourg central governments together agreed to inject $16.37 billion into Fortis NV (Europe's first ever cross-border financial services company) to keep it afloat. However, five days later this deal fell apart, and the bank was split up. The Dutch bought all assets located in the Netherlands for approximately $23 billion. The central bank in India stepped in to stop a run on the country's second largest bank ICICI Bank, by promising to pump in cash. Central banks in Asia injected cash into their banking systems as banks' reluctance to lend to each other led the Hong Kong Monetary Authority to inject liquidity into its banking system after rumors led to a run on Bank of East Asia Ltd. South Korean authorities offered loans and debt guarantees to help small and midsize businesses with short term funding. The United Kingdom, Belgium, Canada, Italy, and Ireland were just a few of the countries to pass an economic stimulus plan and/or bank bailout plan. The Bank of England lowered its target interest rate to a record low of 1 percent hoping to help the British economy out of a recession. The Bank of Canada, Bank of Japan, and Swiss National Bank also lowered their main interest rate to 1 percent or below. All of these actions were a result of the spread of the U.S. financial market crisis to world financial markets.

The worldwide economic slowdown experienced in the later stages of the crisis meant that bank losses became more closely connected to macroeconomic performance. Countries across the world saw companies scrambling for credit and cutting their growth plans. Additionally, consumers worldwide reduced their spending. Even China's booming economy slowed faster than had been predicted, from 10.1 percent in the second quarter of 2008 to 9 percent in the third quarter. This was the first time since 2002 that China's growth was below 10 percent and dimmed hopes that Chinese demand could help keep world economies going. In late October, the global crisis hit the Persian Gulf as Kuwait's central bank intervened to rescue Gulf Bank, the first bank rescue in the oil rich Gulf. Until this time, the area had been relatively immune to the world financial crisis. However, plummeting oil prices (which had dropped over 50 percent between July and October) left the area's economies vulnerable. In this period, the majority of bank losses were more directly linked to a surge in borrower defaults and to anticipated defaults as evidenced by the increase in the amount and relative importance of loan loss provision expenses.

International banks' balance sheets continued to shrink during the first half of 2009 (although at a much slower pace than in the preceding six months) and, as in the U.S., began to recover in the latter half of the year. In the fall of 2009, a steady stream of mostly positive macroeconomic news reassured investors that the global economy had turned around, but investor confidence remained fragile. For example, in late November 2009, security prices worldwide dropped sharply as investors reacted to news that government-owned Dubai World had asked for a delay in some payments on its debt. Further, throughout the spring of 2010 Greece struggled with a severe debt crisis. Early on, some of the healthier European countries tried to step in and assist the debt ridden country. Specifically, in March 2010 a plan led by Germany and France to bail out Greece with as much as $41 billion in aid began to take shape. However, in late April Greek bond prices dropped dramatically as traders began betting a debt default was inevitable, even if

the country received a massive bailout. The selloff was the result of still more bad news for Greece, which showed that the 2009 budget deficit was worse than had been previously reported, and as a result politicians in Germany began to voice opposition to a Greek bailout. Further, Moody's Investors Service downgraded Greece's debt rating and warned that additional cuts could be on the way. Greece's debt created heavy losses across the Greek banking sector. A run on Greek banks ensued. Initially, between €100 and €500 million per day was being withdrawn from Greek banks. At its peak, the run on Greek banks produced deposit withdrawals of as high as €750 billion a day, nearly 0.5 percent of the entire €170 billion deposit base in the Greek banking system.

Problems in the Greek banking system then spread to other European nations with fiscal problems, such as Portugal, Spain, and Italy. The risk of a full blown banking crisis arose in Spain where the debt rating of 16 banks and four regions were downgraded by Moody's Investor Service. Throughout Europe, some of the biggest banks announced billions of euros lost from write downs on Greek loans. In 2011, Crédit Agricole reported a record quarterly net loss of €3.07 billion ($4.06 billion U.S.) after a €220 million charge on its Greek debt. Great Britain's Royal Bank of Scotland revalued its Greek bonds at a 79 percent loss—or £1.1 billion ($1.7 billion U.S.)—for 2011. Germany's Commerzbank's fourth quarter 2011 earnings decreased by a €700 million due to losses on Greek sovereign debt. The bank needed to find €5.3 billion euros to meet the stricter new capital requirements set by Europe's banking regulator. Bailed out Franco-Belgian bank Dexia warned it risked going out of business due to losses of €11.6 billion from its break-up and exposure to Greek debt and other toxic assets such as U.S. mortgage-backed securities. Even U.S. banks were affected by the European crisis. In late 2010, U.S. banks had sovereign risk exposure to Greece totaling $43.1 billion. In addition, exposures to Ireland totaled $113.9 billion, to Portugal totaled $47.1 billion, and to Spain $187.5 billion. Worldwide, bank exposure to these four countries totaled $2,512.3 billion. Default by small country like Greece cascaded into something that threatened the world's financial system.

Worried about the affect a Greek debt crisis might have on the European Union, other European countries tried to step in and assist Greece. On May 9, 2010, in return for huge budget cuts, Europe's finance ministers and the International Monetary Fund approved a rescue package worth $147 billion and a "safety net" of $1 trillion aimed at ensuring financial stability across Europe. Through the rest of 2010 and into 2012, Eurozone leaders agreed on more measures designed to prevent the collapse of Greece and other member economies. In return, Greece continued to offer additional austerity reforms and agreed to reduce its budget deficits. At times, the extent of these reforms and budget cuts led to worker strikes and protests (some of which turned violent), as well as changes in Greek political leadership. In December 2011, the leaders of France and Germany agreed on a new fiscal pact that they said would help prevent another debt crisis. Then French President Nicolas Sarkozy outlined the basic elements of the plan to increase budget discipline after meeting with German Chancellor Angela Merkel in Paris. The pact, which involved amending or rewriting the treaties that govern the European Union, was presented in detail at a meeting of European leaders and approved. Efforts by the EU and reforms enacted by the Greek and other European country governments appear to have worked. As on December 18, 2012, Standard & Poor's raised its rating on Greek debt by six notches to B minus from selective default Tuesday. S&P cited a strong and clear commitment from members of the euro zone to keep Greece in the common currency bloc as the main reason for the upgrade.

The situation in Greece and the European Union stabilized after 2012. However, a major debt payment was due from Greece to its creditors on June 30, 2015, a payment required to continue to receive rescue funds from the EU. Knowing that they could not make the payment, Greek officials met with Eurozone leaders in an attempt to get a better deal. Greece, however, was unwilling to agree to more spending cuts and other concessions requested by the EU and talks broke down. Greece would be the first developed country to default on its debt and faced the real possibility that it would be forced to leave the European Union. With its financial system near collapse and a debt payment due to the ECB on July 20, Greece was forced to continue negotiations with its creditors. A deal was reached on July 13 that essentially required Greece to surrender to all of its creditors' demands: including tax increases, pension reform, and the creation of a fund (under European supervision) that would hold some €50 billion in state-owned assets earmarked to be privatized or liquidated (with the proceeds to be used to pay off Greece's debt and help recapitalize its banks).

The questions and problems that follow refer to Appendix 2B.

25. The financial statements for First National Bank (FNB) are shown below:

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.

Earning assets = investment securities + net loans
= $4,050 + $2,025 + $15,525 – $1,125 = $20,475

b. Calculate FNB's ROA.

ROA = ($2,600 – $1,650 – $180 + $140 – $420 – $90)/$23,960 = 1.67%

c. Calculate FNB's asset utilization ratio.

Asset utilization = ($2,600 + $140)/$23,960 = 11.44%

d. Calculate FNB's spread.

Spread = ($2,600/$20,475) – ($1,650/($10,800 + $3,200 + $2,250)) = 2.54%

26. Megalopolis Bank has the following balance sheet and income statement.

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
Operating income	$9,000
Provision for loan losses	2,000
Other income	2,000
Other expenses	1,000
Income before taxes	$8,000
Taxes	3,000
Net income	$5,000

For Megalopolis, calculate:

a. Return on equity

Return on equity = 5,000m/28,000m = 17.86%

b. Return on assets

Return on assets = 5,000m/183,000m = 2.73%

c. Asset utilization

Asset utilization = (20,000m + 2,000m)/183,000m = 12.02%

d. Equity multiplier

Equity multiplier = 183,000m/(12,000m + 4,000m + 12,000m) = 6.54X

e. Profit margin

Profit margin = 5,000m/(20,000m + 2,000m) = 22.73%

f. Interest expense ratio

Interest expense ratio = 11,000m/(20,000m + 2,000m) = 50.00%

g. Provision for loan loss ratio

Provision for loan loss ratio = 2,000m/(20,000m + 2,000m) = 9.09%

h. Noninterest expense ratio

Noninterest expense ratio = 1,000m/(20,000m + 2,000m) = 4.55%

i. Tax ratio

Tax ratio = 3,000m/(20,000m + 2,000m) = 13.64%

CHAPTER 2

Financial Services: Depository Institutions

Overview of Depository Institutions

- This chapter recognizes three major FI groups:
  - Commercial banks, savings institutions, and credit unions
- This chapter discusses depository FIs:
  - Size, structure, and composition
  - Balance sheets and recent trends
  - Regulation of depository institutions
  - Depository institutions performance

Products of U.S. FIs

- Comparing the products of FIs in 1950, to products of FIs in 2016:
  - Much greater distinction between types of FIs in terms of products offered in 1950 than in 2016
  - Blurring of product lines and services over time and wider array of services
  - (Refer to Tables 2-1A and 2-1B in the text)

Specialness of Depository FIs

- Products offered on both sides of the balance sheet
  - Offer loans
    - Asset side
  - Accept deposits
    - Liabilities side

Other Outputs of Depository FIs

- Other products and services in 1950:
  - Payment services, savings products, fiduciary services
- By 2016, products and services further expanded to frequently include:
  - Underwriting of debt and equity, insurance and risk management products

Size of Depository FIs

- Consolidation has created some very large FIs
- Combined effects of disintermediation, global competition, regulatory changes, technological developments, competition across different types of FIs

Largest US Depository Institutions

Company	Banking Assets	Holding Company Assets ($ billions)
J.P. Morgan Chase	$2,134.1	$2,448.0
Bank of America	1,629.5	2,152.0
Wells Fargo	1,629.5	1,720.6
Citigroup	1,337.5	1,829.4
U.S. Bancorp	414.0	419.1
PNC Financial Services Corp.	343.6	354.2
Bank of New York Mellon	343.6	395.3
State Street Corp.	289.4	294.6
Capital One	254.4	310.6
TD Bank	252.4	253.2

Commercial Banks

- Largest group of depository institutions
- Differ from other FIs in composition of assets and liabilities, as well as regulatory oversight
- Large and small commercial banks differ with regards to structure and composition
  - E.g., larger banks make more commercial/industrial loans and small banks make more real estate loans
- Mix of very large banks with very small banks

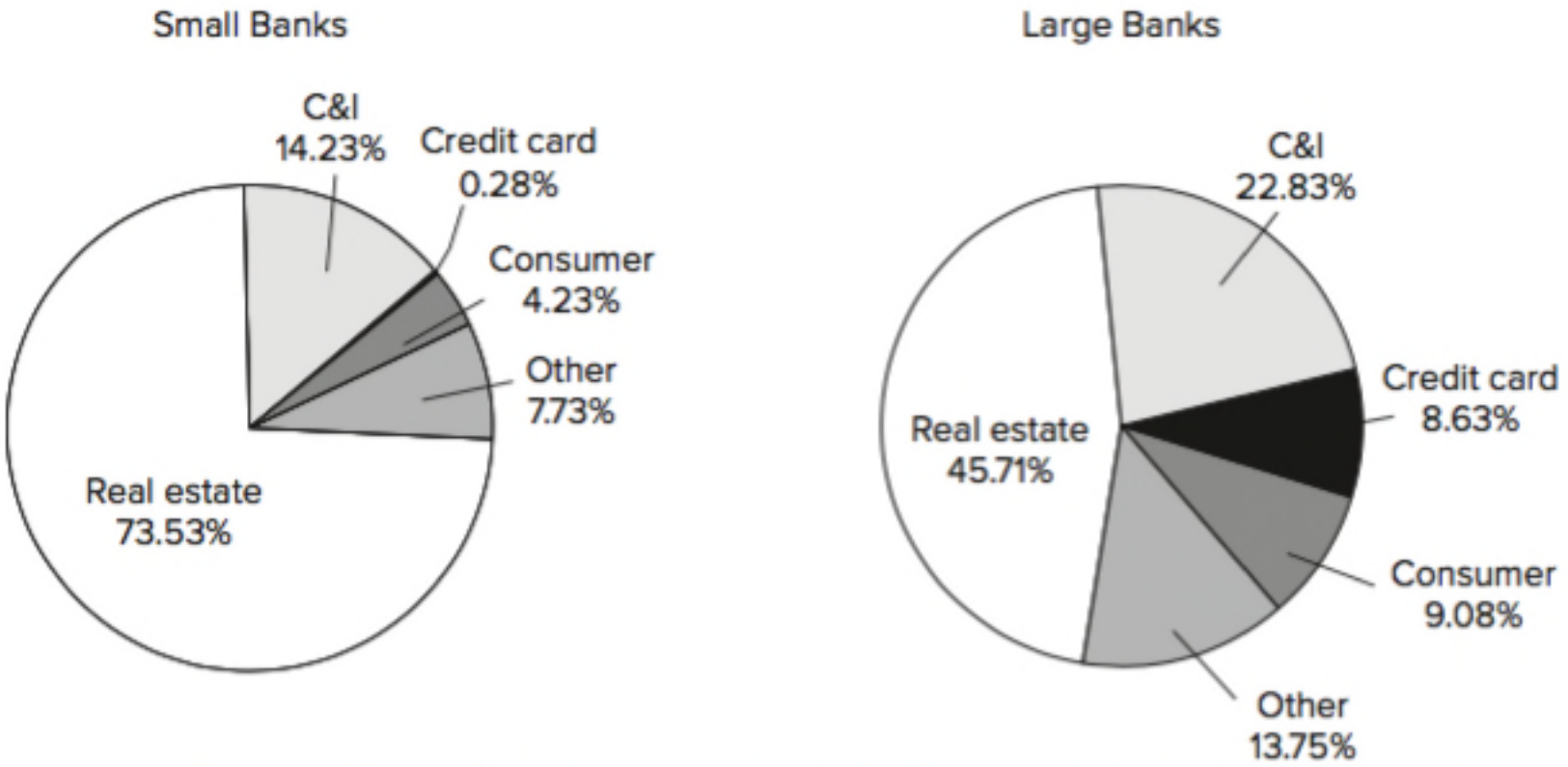
Structure and Composition

- Shrinking number of banks:
  - 14,416 commercial banks in 1985
  - 12,744 in 1989
  - 5,472 in 2015
- Mostly the result of Mergers and Acquisitions
  - M&A prevented prior to 1980s, 1990s
  - Consolidation has reduced asset share of smallest banks (under $1 billion)

Regulation, Functions & Structure

- Functions of depository institutions
  - Regulatory sources of differences across types of depository institutions
- Structural changes generally resulted from changes in regulatory policy
  - Example: Changes permitting interstate branching
    - Riegle-Neal Act, 1994

Breakdown of Loan Portfolios



Note: Small banks are defined as banks with assets less than $1 billion. Large banks are defined as banks with assets of $1 billion or more.

Commercial Banks: Asset Concentration

Size	2015 Assets	Percent of Total	1984 Assets	Percent of Total
All FDIC Insured	14,679.2	100.0	2,508.9	100.0
$100M or Less	93.5	6.0	404.2	16.1
$100M - $1B	1,014.7	6.9	513.9	20.5
$1B - $10B	1,336.8	9.1	725.9	28.9
$10B or more	12,234.3	83.4	864.8	34.5

Structure and Composition of Commercial Banks

- Limited powers to underwrite corporate securities have existed only since 1987
- Financial Services Modernization Act 1999
  - Permitted commercial banks, investment banks, and insurance companies to merge

Composition of Commercial Banking Sector

- Community Banks
- Regional or Superregional
  - Access to federal funds market to finance their lending and investment activities
- Money Center Banks
  - Bank of New York Mellon, Deutsche Bank (Bankers Trust), Citigroup, J.P. Morgan Chase, HSBC Bank USA

Balance Sheet and Trends

- Key trends since 1987
  - Business loans have declined in importance while securities and mortgages have increased
- What influences these trends?
  - Increased importance of alternative funding via commercial paper market
  - Securitization of mortgage loans
  - Temporary effects: credit crunch during recessions of 1989-92 and 2001-02

Commercial Banks, June 2015

- Primary assets:
  - Real Estate Loans: $3,801.9 B
  - C&I loans: $1,737.6 B
  - Loans to individuals: $1,301.2 B
  - Investment security portfolio: $3,953.0 B
  - Of which, Treasury securities: $2,015.3 B

- Credit/default risk is a major exposure

Commercial Banks, June 2015 Continued

- Primary liabilities:
  - Deposits: $11,108.4 billion
  - Borrowings: $1,578.2 billion
  - Other liabilities: $339.1 billion

- Inference:
  - Maturity mismatch/interest rate risk and liquidity risk are key areas of exposure

Terminology

- Transaction accounts
- Negotiable Order of Withdrawal (NOW) accounts
- Money Market Mutual Funds
- Negotiable CDs

Equity

- Commercial bank equity capital
  - 11.26 percent of total liabilities and equity (2015)
  - TARP program 2008-2009 intended to encourage increase in capital
    - Citigroup $25 B
    - BOA $20 B
  - Through 2015: $245 B in capital injections through TARP

Off-Balance-Sheet Activities

- Heightened importance of off-balance-sheet items
  - OBS assets, OBS liabilities
  - Earnings and regulatory incentives
  - Risk control and risk producing
    - Role of mortgage backed securities
    - "Toxic" assets
    - Expansion of oversight to unregulated OTC derivative securities

Major OBS Activities

- Issuing guarantees
  - E.g., letters of credit
  - Typically contain an insurance underwriting element
- Loan commitments
- Derivative transactions
  - Futures
  - Forwards
  - Options
  - Swaps

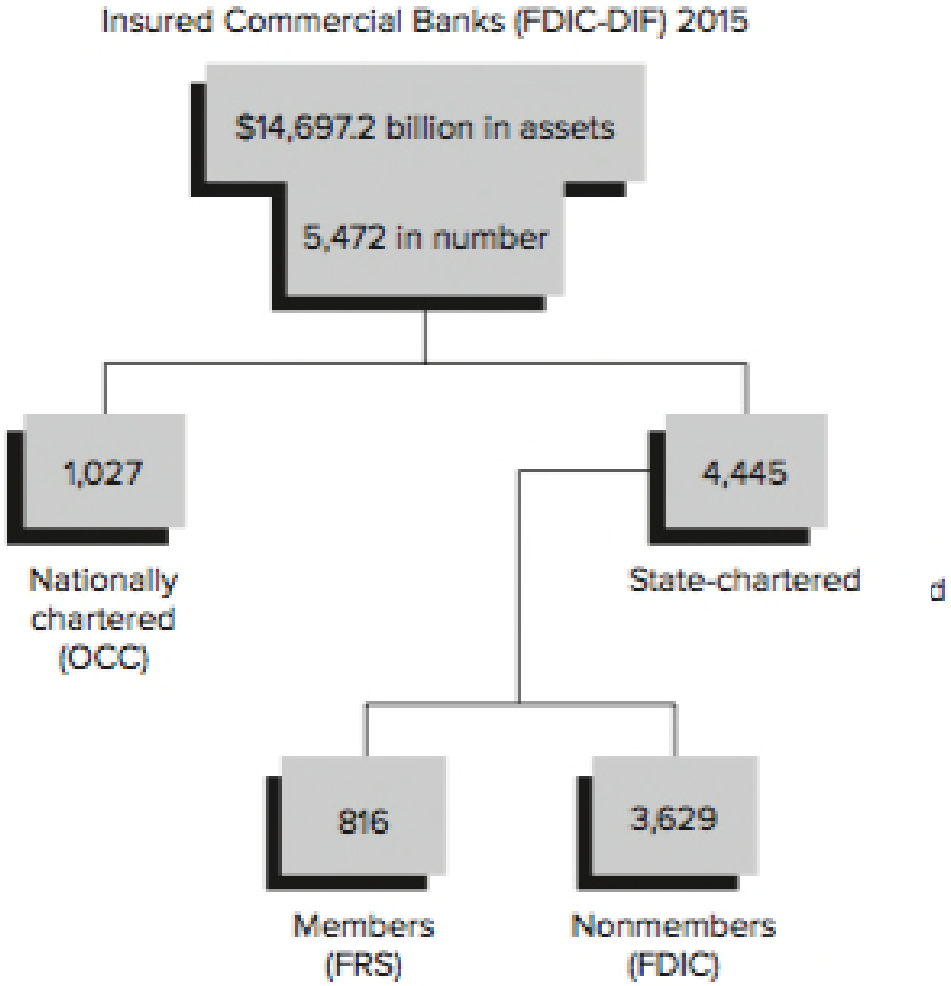
Other Fee-Generating Activities

- Trust services
- Correspondent banking
  - Services generally sold as a package
  - Types of services offered:
    - Check clearing and collection
    - Foreign exchange trading
    - Hedging
    - Participation in large loan and security issuances

Key Regulatory Agencies

- FDIC
  - Deposit Insurance Fund (DIF)
  - Role in preventing contagious "runs" or panics
- OCC: Primary function is to charter (and close) national banks
- FRS: Monetary policy, lender of last resort
  - National banks are automatically members of the FRS; state-chartered banks can elect to become members
- State bank regulators
- Dual Banking System: Coexistence of national and state-chartered banks

Bank Regulators



Legislation, 1927-1956

- 1927 McFadden Act: Controls branching of national banks
- 1933 Glass-Steagall: Separates securities and banking activities, established FDIC, prohibited interest on demand deposits
- 1956 Bank Holding Company Act and subsequent amendments specifies permissible activities and regulation by FRS of BHCs

Legislation, 1970-1978

- 1970 Amendments to the Bank Holding Company Act: Extension to one-bank holding companies
- 1978 International Banking Act: Regulated foreign bank branches and agencies in US

Legislation, 1980 - 1982

- 1980 DIDMCA and 1982 Garn-St. Germain Depository Institutions Act (DIA)
  - Mainly deregulation acts
  - Phased out Regulation Q
  - Authorized NOW accounts nationwide
  - Increased deposit insurance from $40,000 to $100,000
  - Reaffirmed limitations on bank powers to underwrite and distribute insurance products

Legislation, 1987-1989

- 1987 Competitive Equality in Banking Act (CEBA)
  - Redefined *bank* to limit growth of nonbank banks
  - Focus on recapitalization of FSLIC
- 1989 FIRREA
  - Imposed restrictions on investment activities
  - Replaced FSLIC with FDIC-SAIF
  - Replaced FHLB with Office of Thrift Supervision (OTS)
  - Created Resolution Trust Corporation (RTC)

Legislation, 1991

- 1991 FDIC Improvement Act
  - Introduced prompt corrective action (PCA)
  - Risk-based deposit insurance premiums
  - Limited "too big to fail" bailouts by federal regulators
  - Extended federal regulation over foreign bank branches and agencies in FBSEA

Legislation, 1994

- 1994 Riegle-Neal Interstate Banking and Branching Efficiency Act
  - Permits BHCs to acquire banks in other states
  - Invalidates some restrictive state laws
  - Permits BHCs to convert out-of-state subsidiary banks to branches of single interstate bank
  - Newly chartered branches permitted interstate if allowed by state law

Legislation, 1999

- 1999 Financial Services Modernization Act
  - Allowed banks, insurance companies, and securities firms to enter each others' business areas
  - Provided for state regulation of insurance
  - Streamlined regulation of BHCs
  - Prohibited FDIC assistance to affiliates and subsidiaries of banks and savings institutions
  - Provided for national treatment of foreign banks

Legislation, 2010

- 2010 Wall Street Reform and Consumer Protection Act
  - Financial Services Oversight Council created
  - Government gained power to break up FIs that pose a systemic risk to the system
  - Consumer Financial Protection Bureau created
  - GAO to audit Federal Reserve activities
  - Nonbinding proxy vote on executive pay
  - Trading via clearinghouse for some derivatives

Industry Performance

- Economic expansion and falling interest rates through 1990s
- Brief downturn in early 2000s followed by strong performance improvements
  - Record earnings $106.3 billion 2003
- Performance remained stable through mid 2000s as interest rates rose
- Late 2000s: Strongest recession since Great Depression

Savings Institutions

- Comprised of:
  - Savings Associations (SAs)
  - Savings Banks (SBs)
  - Effects of changes in Federal Reserve's policy of interest rate targeting combined with Regulation Q and disintermediation
  - Effects of moral hazard and regulator forbearance
  - Qualified thrift lender (QTL) test

Savings Institutions: Recent Trends

- Industry is smaller overall
- Intense competition from other FIs
  - E.g., mortgages

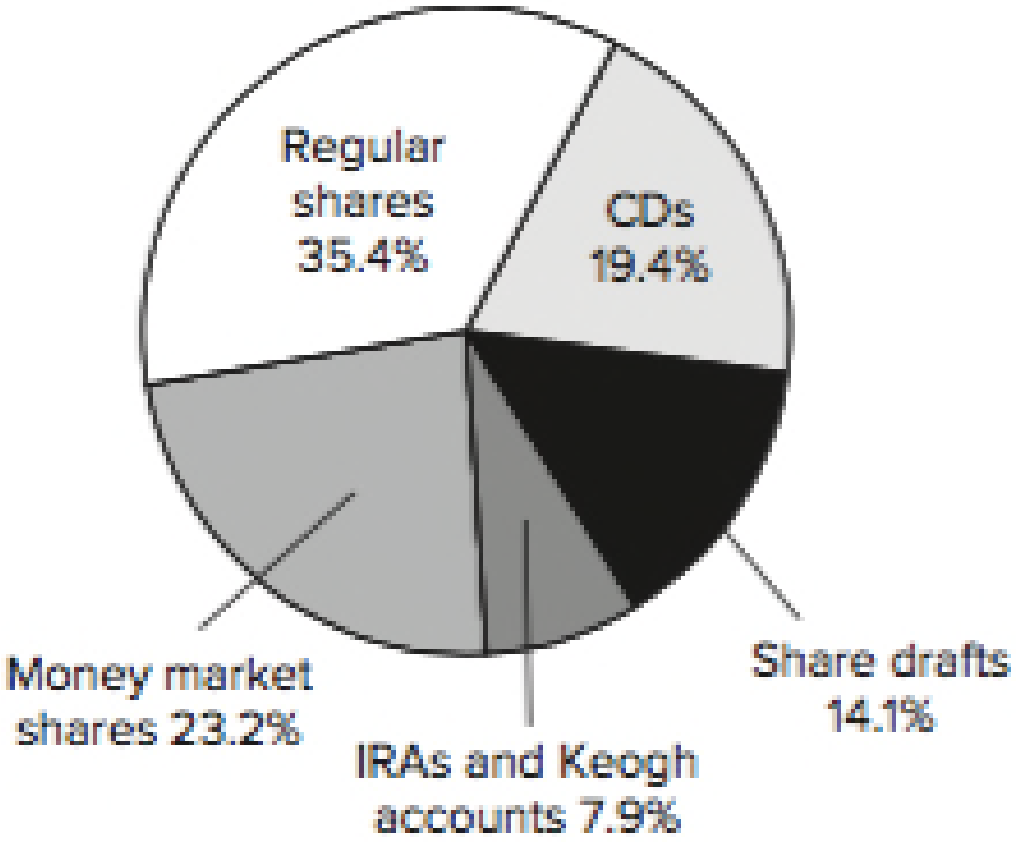
Primary Regulators

- Office of the Comptroller of Currency (OCC)
- FDIC-DIF Fund
  - FDIC oversaw and managed Savings Association Insurance Fund (SAIF)
  - SAIF and Bank Insurance Fund (BIF) merged in January 2007 to form DIF
  - Same regulatory structure applied to commercial banks

Credit Unions

- Nonprofit DIs owned by member-depositors with a common bond
- Specialize in small consumer loans
- Exempt from taxes and Community Reinvestment Act (CRA)
- Expansion of services offered in order to compete with other FIs
- Claim of unfair advantage of CUs over small commercial banks

Composition of Credit Union Deposits, 2015



Global Issues

- Spread of US financial crisis to other countries
- Many European banks saved from bankruptcy through support of governments and central banks
- Target interest rates at or below 1 percent
- Links to macroeconomic performance

Financial Statement Analysis

- Return on equity (ROE): measures overall profitability per dollar of equity
- Return on assets (ROA): measures profit generated relative to assets
- Equity multiplier (EM): measures extent to which assets are funded with equity relative to debt
- Profit margin (PM): measures ability to pay expenses and generate net income
- Asset utilization (AU): measures amount of interest and noninterest income generated per dollar of total assets

CAMELS Ratings

- Composite 1: Institutions are generally sound in every respect
- Composite 2: Institutions are fundamentally sound, but may reflect modest weaknesses
- Composite 3: Institutions exhibit financial, operational, or compliance weaknesses
- Composite 4: Immoderate volume of serious financial weaknesses
- Composite 5: Extremely high immediate or near term probability of failure

DIs and Regulators

The matrix provides an overview of primary regulators of depository institutions. It is not intended to cover each area of regulatory responsibility in detail.

A.	National banks	Federal Reserve, FDIC, OCC
B.	State member bank	State authority, Federal Reserve, FDIC
C.	State nonmember banks, insured	State authority, Federal Reserve, FDIC
D.	Noninsured state banks	State authority, Federal Reserve, FTC
E.	Insured savings institution, federal*	OCC, Federal Reserve, FDIC
	Insured savings institution, state†	State authority, OCC, Federal Reserve, FDIC
F.	Uninsured savings institutions, state institutions	State authority, Federal Reserve, FTC
G.	Credit unions, federal	NCUA, Federal Reserve, state authority
	Credit unions, state	State authority, NCUA, Federal Reserve, FTC
H.	Bank holding companies	Federal Reserve, state authority, FTC
I.	Savings institution holding company	OCC, state authority, Federal Reserve, FTC
J.	Foreign branches of U.S. banks, national and state members	Federal Reserve, state authority, OCC
	Foreign branches of U.S. banks, insured state nonmembers	State authority, FDIC
K.	Edge Act corporations	Federal Reserve
	Agreement corporations	State authority, Federal Reserve
L.	U.S. branches and agencies of foreign banks, federal	OCC, Federal Reserve, FDIC, FTC, state authority
	U.S. branches and agencies of foreign banks, state	State authority, Federal Reserve, FDIC, OCC, FTC

Notes: FDIC = Federal Deposit Insurance Corporation; FTC = Federal Trade Commission; Federal Reserve: Board of Governors of the Federal Reserve System/Federal Reserve Banks; NCUA = National Credit Union Administration; OCC = Office of the Comptroller of Currency.

*Federal savings associations include any thrift institution such as federal savings banks, federally chartered under Section 5 of the Home Owners' Act.

† State savings institutions include any state-chartered savings bank, savings and loan association, building and loan association, homestead association, or cooperative bank.

Source: Public Information Department, Federal Reserve Bank of New York, 33 Liberty Street, New York, NY 10045.

Technology in Commercial Banking

- Wholesale banking services
  - E.g., account reconciliation, electronic funds transfer, electronic billing, cloud computing, etc.
- Retail banking services
  - E.g., ATMs, smart cards, online/mobile banking, tablet banking, loyalty programs, etc.
- Advanced technology requirements