

## Chapter 2

# Banks

**T**he word “bank” originates from the Italian word *banco*. This is a desk or bench, covered by a green tablecloth, that was used several hundred years ago by Florentine bankers. The traditional role of banks has been to take deposits and make loans. The interest charged on the loans is greater than the interest paid on deposits. The difference between the two has to cover administrative costs and loan losses (i.e., losses when borrowers fail to make the agreed payments of interest and principal), while providing a satisfactory return on equity.

Today, most large banks engage in both commercial and investment banking. Commercial banking involves, among other things, the deposit-taking and lending activities we have just mentioned. Investment banking is concerned with assisting companies in raising debt and equity, and providing advice on mergers and acquisitions, major corporate restructurings, and other corporate finance decisions. Large banks are also often involved in securities trading (e.g., by providing brokerage services).

Commercial banking can be classified as *retail banking* or *wholesale banking*. Retail banking, as its name implies, involves taking relatively small deposits from private individuals or small businesses and making relatively small loans to them. Wholesale banking involves the provision of banking services to medium and large corporate clients, fund managers, and other financial institutions. Both loans and deposits are much larger in wholesale banking than in retail banking. Sometimes banks fund their lending by borrowing in financial markets themselves.

Typically the spread between the cost of funds and the lending rate is smaller for wholesale banking than for retail banking. However, this tends to be offset by lower costs. (When a certain dollar amount of wholesale lending is compared to the same

dollar amount of retail lending, the expected loan losses and administrative costs are usually much less.) Banks that are heavily involved in wholesale banking and may fund their lending by borrowing in financial markets are referred to as *money center banks*.

This chapter will review how commercial and investment banking have evolved in the United States over the last hundred years. It will take a first look at the way the banks are regulated, the nature of the risks facing the banks, and the key role of capital in providing a cushion against losses.

## 2.1 Commercial Banking

Commercial banking in virtually all countries has been subject to a great deal of regulation. This is because most national governments consider it important that individuals and companies have confidence in the banking system. Among the issues addressed by regulation is the capital that banks must keep, the activities they are allowed to engage in, deposit insurance, and the extent to which mergers and foreign ownership are allowed. The nature of bank regulation during the twentieth century has influenced the structure of commercial banking in different countries. To illustrate this, we consider the case of the United States.

The United States is unusual in that it has a large number of banks (5,060 in 2017). This leads to a relatively complicated payment system compared with those of other countries with fewer banks. There are a few large money center banks such as Citigroup and JPMorgan Chase. There are several hundred regional banks that engage in a mixture of wholesale and retail banking, and several thousand community banks that specialize in retail banking.

Table 2.1 summarizes the size distribution of banks in the United States in 1984 and 2017. The number of banks declined by over 65% between the two dates. In 2017, there were fewer small community banks and more large banks than in 1984. Although there were only 102 banks (2% of the total) with assets of \$10 billion or more in 2017, they accounted for over 84% of the assets in the U.S. banking system.

The structure of banking in the United States is largely a result of regulatory restrictions on interstate banking. At the beginning of the twentieth century, most U.S. banks had a single branch from which they served customers. During the early part of the twentieth century, many of these banks expanded by opening more branches in order to serve their customers better. This ran into opposition from two quarters. First, small banks that still had only a single branch were concerned that they would lose market share. Second, large money center banks were concerned that the multibranch banks would be able to offer check-clearing and other payment services and erode the profits that they themselves made from offering these services. As a result, there was pressure to control the extent to which community banks could expand. Several states passed laws restricting the ability of banks to open more than one branch within a state.

The McFadden Act was passed in 1927 and amended in 1933. This act had the effect of restricting all banks from opening branches in more than one state. This restriction

**Table 2.1** Bank Concentration in the United States in 1984 and 2017

1984				
Size (Assets)	Number	Percent of Total	Assets (\$ billions)	Percent of Total
Under \$100 million	12,044	83.2	404.2	16.1
\$100 million to \$1 billion	2,161	14.9	513.9	20.5
\$1 billion to \$10 billion	254	1.7	725.9	28.9
Over \$10 billion	24	0.2	864.8	34.5
Total	14,483		2,508.9	

  

2017				
Size (Assets)	Number	Percent of Total	Assets (\$ billions)	Percent of Total
Under \$100 million	1,318	26.0	78.6	0.5
\$100 million to \$1 billion	3,123	61.7	988.5	6.3
\$1 billion to \$10 billion	517	10.2	1,441.5	9.1
Over \$10 billion	102	2.0	13,281.2	84.1
Total	5,060		15,789.5	

SOURCE: FDIC Quarterly Banking Profile, [www.fdic.gov](http://www.fdic.gov).

applied to nationally chartered as well as to state-chartered banks. One way of getting around the McFadden Act was to establish a *multibank holding company*. This is a company that acquires more than one bank as a subsidiary. By 1956, there were 47 multibank holding companies. This led to the Douglas Amendment to the Bank Holding Company Act. This did not allow a multibank holding company to acquire a bank in a state that prohibited out-of-state acquisitions. However, acquisitions prior to 1956 were grandfathered (that is, multibank holding companies did not have to dispose of acquisitions made prior to 1956).

Banks are creative in finding ways around regulations—particularly when it is profitable for them to do so. After 1956, one approach was to form a one-bank holding company. This is a holding company with just one bank as a subsidiary and a number of nonbank subsidiaries in different states from the bank. The nonbank subsidiaries offered financial services such as consumer finance, data processing, and leasing and were able to create a presence for the bank in other states.

The 1970 Bank Holding Companies Act restricted the activities of one-bank holding companies. They were only allowed to engage in activities that were closely related to banking, and acquisitions by them were subject to approval by the Federal Reserve. They had to divest themselves of acquisitions that did not conform to the act.

After 1970, the interstate banking restrictions started to disappear. Individual states passed laws allowing banks from other states to enter and acquire local banks. (Maine was the first to do so, in 1978.) Some states allowed free entry of other banks. Some allowed banks from other states to enter only if there were reciprocal agreements. (This means that state A allowed banks from state B to enter only if state B allowed banks from state

**Table 2.2** Summary Balance Sheet for DLC at End of 2018 (\$ millions)

Assets		Liabilities and Net Worth	
Cash	5	Deposits	90
Marketable Securities	10	Subordinated Long-Term Debt	5
Loans	80	Equity Capital	5
Fixed Assets	<u>5</u>		
Total	100	Total	<u>100</u>

A to do so.) In some cases, groups of states developed regional banking pacts that allowed interstate banking.

In 1994, the U.S. Congress passed the Riegel-Neal Interstate Banking and Branching Efficiency Act. This Act led to full interstate banking becoming a reality. It permitted bank holding companies to acquire branches in other states. It invalidated state laws that allowed interstate banking on a reciprocal or regional basis. Starting in 1997, bank holding companies were allowed to convert out-of-state subsidiary banks into branches of a single bank. Many people argued that this type of consolidation was necessary to enable U.S. banks to be large enough to compete internationally. The Riegel-Neal Act prepared the way for a wave of consolidation in the U.S. banking system (for example, the acquisition by JPMorgan of banks formerly named Chemical, Chase, Bear Stearns, and Washington Mutual).

As a result of the credit crisis that started in 2007 and led to a number of bank failures, the Dodd-Frank Wall Street Reform and Consumer Protection Act was signed into law by President Barack Obama on July 21, 2010. This is discussed further in Section 16.5.

## 2.2 The Capital Requirements of a Small Commercial Bank

To illustrate the role of capital in banking, we consider a hypothetical small community bank named Deposits and Loans Corporation (DLC). DLC is primarily engaged in the traditional banking activities of taking deposits and making loans. A summary balance sheet for DLC at the end of 2018 is shown in Table 2.2 and a summary income statement for 2018 is shown in Table 2.3.

Table 2.2 shows that the bank has \$100 million in assets. Most of the assets (80% of the total) are loans made by the bank to private individuals and small corporations. Cash and marketable securities account for a further 15% of the assets. The remaining 5% of the assets are fixed assets (i.e., buildings, equipment, etc.). A total of 90% of the funding for

**Table 2.3** Summary Income Statement for DLC in 2018 (\$ millions)

Net Interest Income	3.00
Loan Losses	(0.80)
Non-Interest Income	0.90
Non-Interest Expense	<u>(2.50)</u>
Pre-Tax Operating Income	0.60

the assets comes from deposits of one sort or another from the bank's customers. A further 5% is financed by subordinated long-term debt. (These are bonds issued by the bank to investors that rank below deposits in the event of a liquidation.) The remaining 5% is financed by the bank's shareholders in the form of equity capital. The equity capital consists of the original cash investment of the shareholders and earnings retained in the bank.

Consider next the income statement for 2018 shown in Table 2.3. The first item on the income statement is net interest income. This is the excess of the interest earned over the interest paid and is 3% of the total assets in our example. It is important for the bank to be managed so that net interest income remains roughly constant regardless of movements in interest rates of different maturities. We will discuss this in more detail in Chapter 9.

The next item is loan losses. This is 0.8% of total assets for the year in question. Clearly it is very important for management to quantify credit risks and manage them carefully. But however carefully a bank assesses the financial health of its clients before making a loan, it is inevitable that some borrowers will default. This is what leads to loan losses. The percentage of loans that default will tend to fluctuate from year to year with economic conditions. It is likely that in some years default rates will be quite low, while in others they will be quite high.

The next item, non-interest income, consists of income from all the activities of the bank other than lending money. This includes fees for the services the bank provides for its clients. In the case of DLC non-interest income is 0.9% of assets.

The final item is non-interest expense and is 2.5% of assets in our example. This consists of all expenses other than interest paid. It includes salaries, technology-related costs, and other overheads. As in the case of all large businesses, these have a tendency to increase over time unless they are managed carefully. Banks must try to avoid large losses from litigation, business disruption, employee fraud, and so on. The risk associated with these types of losses is known as *operational risk* and will be discussed in Chapter 23.

### 2.2.1 Capital Adequacy

One measure of the performance of a bank is return on equity (ROE). Tables 2.2 and 2.3 show that DLC's before-tax ROE is 0.6/5 or 12%. If this is considered unsatisfactory, one way DLC might consider improving its ROE is by buying back its shares and replacing them with deposits so that equity financing is lower and ROE is higher. For example, if it moved to the balance sheet in Table 2.4 where equity is reduced to 1% of assets and deposits are increased to 94% of assets, its before-tax ROE would jump to 60%.

How much equity capital does DLC need? This question can be answered by hypothesizing an extremely adverse scenario and considering whether the bank would survive. Suppose that there is a severe recession and as a result the bank's loan losses rise by 3.2% of assets to 4% next year. (We assume that other items on the income statement in Table 2.3 are unaffected.) The result will be a pre-tax net operating loss of 2.6% of assets ( $0.6 - 3.2 = -2.6$ ). Assuming a tax rate of 30%, this would result in an after-tax loss of about 1.8% of assets.<sup>1</sup>

<sup>1</sup> This assumes that tax losses can be carried back to offset previous profits.

**Table 2.4** Alternative Balance Sheet for DLC at End of 2018 with Equity Only 1% of Assets (\$ millions)

Assets		Liabilities and Net Worth	
Cash	5	Deposits	94
Marketable Securities	10	Subordinated Long-Term Debt	5
Loans	80	Equity Capital	1
Fixed Assets	5		
Total	100	Total	100

In Table 2.2, equity capital is 5% of assets, so an after-tax loss equal to 1.8% of assets, although not at all welcome, can be absorbed. It would result in a reduction of the equity capital to 3.2% of assets. Even a second bad year similar to the first would not totally wipe out the equity.

If DLC has moved to the more aggressive capital structure shown in Table 2.4, it is far less likely to survive. One year where the loan losses are 4% of assets would totally wipe out equity capital and the bank would find itself in serious financial difficulties. It would no doubt try to raise additional equity capital, but it is likely to find this difficult when in such a weak financial position. It is possible that there would be a run on the bank (where all depositors decide to withdraw funds at the same time) and the bank would be forced into liquidation. If all assets could be liquidated for book value (a big assumption), the long-term debt-holders would likely receive about \$4.2 million rather than \$5 million (they would in effect absorb the negative equity) and the depositors would be repaid in full.

Clearly, it is inadequate for a bank to have only 1% of assets funded by equity capital. Maintaining equity capital equal to 5% of assets as in Table 2.2 is more reasonable. Note that equity and subordinated long-term debt are both sources of capital. Equity provides the best protection against adverse events. (In our example, when the bank has \$5 million of equity capital rather than \$1 million, it stays solvent and is unlikely to be liquidated.) Subordinated long-term debt-holders rank below depositors in the event of default, but subordinated debt does not provide as good a cushion for the bank as equity because it does not prevent the bank's insolvency.

As we shall see in Chapters 15 to 18, bank regulators have tried to ensure that the capital a bank keeps is sufficient to cover the risks it takes. The risks include market risks, credit risks, and operational risks. Equity capital is categorized as "Tier 1 capital" while subordinated long-term debt is categorized as "Tier 2 capital."

## 2.3 Deposit Insurance

To maintain confidence in banks, government regulators in many countries have introduced guaranty programs. These typically insure depositors against losses up to a certain level.

The United States with its large number of small banks is particularly prone to bank failures. After the stock market crash of 1929 the United States experienced a major recession and about 10,000 banks failed between 1930 and 1933. Runs on banks and panics were common. In 1933, the United States government created the Federal Deposit Insurance Corporation (FDIC) to provide protection for depositors. Originally, the maximum level of protection provided was \$2,500. This has been increased several times and became \$250,000 per depositor per bank in October 2008. Banks pay an insurance premium that is a percentage of their domestic deposits. Since 2007, the size of the premium paid has depended on the bank's capital and how safe it is considered to be by regulators. For well-capitalized banks, the premium might be less than 0.1% of the amount insured; for under-capitalized banks, it could be over 0.35% of the amount insured.

Up to 1980, the system worked well. There were no runs on banks and few bank failures. However, between 1980 and 1990, bank failures in the United States accelerated, with the total number of failures during this decade being over 1,000 (larger than for the whole 1933 to 1979 period). There were several reasons for this. One was the way in which banks managed interest rate risk and we will talk about that in Chapter 9. Another reason was the reduction in oil and other commodity prices, which led to many loans to oil, gas, and agricultural companies not being repaid.

A further reason for the bank failures was that the existence of deposit insurance allowed banks to follow risky strategies that would not otherwise be feasible. For example, they could increase their deposit base by offering high rates of interest to depositors and use the funds to make risky loans. Without deposit insurance, a bank could not follow this strategy because its depositors would see what the bank was doing, decide that the bank was too risky, and withdraw their funds. With deposit insurance, it can follow the strategy because depositors know that, if the worst happens, they are protected under FDIC. This is an example of what is known as *moral hazard*. We will talk about moral hazard further in Chapter 3. It can be defined as the possibility that the existence of insurance changes the behavior of the insured party. The introduction of risk-based deposit insurance premiums has reduced moral hazard to some extent.

During the 1980s, the funds of FDIC became seriously depleted and it had to borrow \$30 billion from the U.S. Treasury. In December 1991, Congress passed the FDIC Improvement Act to prevent any possibility of the fund becoming insolvent in the future. Between 1991 and 2006, bank failures in the United States were relatively rare and by 2006 the fund had reserves of about \$50 billion. FDIC funds were again depleted by the banks that failed as a result of the credit crisis that started in 2007. However, by 2017 the reserves had been built up again.

## 2.4 Investment Banking

The main activity of investment banking is raising debt and equity financing for corporations or governments. This involves originating the securities, underwriting them, and

then placing them with investors. In a typical arrangement a corporation approaches an investment bank indicating that it wants to raise a certain amount of financing in the form of debt, equity, or hybrid instruments such as convertible bonds. The securities are originated complete with legal documentation itemizing the rights of the security holder. A prospectus is created outlining the company's past performance and future prospects. The risks faced by the company from such things as major lawsuits are included. There is a "road show" in which the investment bank and senior management from the company attempt to market the securities to large fund managers. A price for the securities is agreed between the bank and the corporation. The bank then sells the securities in the market.

There are a number of different types of arrangement between the investment bank and the corporation. Sometimes the financing takes the form of a *private placement* in which the securities are sold to a small number of large institutional investors, such as life insurance companies or pension funds, and the investment bank receives a fee. On other occasions it takes the form of a *public offering*, where securities are offered to the general public. A public offering may be on a *best efforts* or *firm commitment* basis. In the case of a best efforts public offering, the investment bank does as well as it can to place the securities with investors and is paid a fee that depends, to some extent, on its success. In the case of a firm commitment public offering, the investment bank agrees to buy the securities from the issuer at a particular price and then attempts to sell them in the market for a slightly higher price. It makes a profit equal to the difference between the price at which it sells the securities and the price it pays the issuer. If for any reason it is unable to sell the securities, it ends up owning them itself. The difference between the two arrangements is illustrated in Example 2.1.

---

**Example 2.1**

A bank has agreed to underwrite an issue of 50 million shares by ABC Corporation. In negotiations between the bank and the corporation the target price to be received by the corporation has been set at \$30 per share. This means that the corporation is expecting to raise  $30 \times 50$  million dollars or \$1.5 billion in total. The bank can either offer the client a best efforts arrangement where it charges a fee of \$0.30 per share sold so that, assuming all shares are sold, it obtains a total fee of  $0.3 \times 50 = \$15$  million. Alternatively, it can offer a firm commitment where it agrees to buy the shares from ABC Corporation for \$30 per share.

The bank is confident that it will be able to sell the shares, but is uncertain about the price. As part of its procedures for assessing risk, it considers two alternative scenarios. Under the first scenario, it can obtain a price of \$32 per share; under the second scenario, it is able to obtain only \$29 per share.

In a best-efforts deal, the bank obtains a fee of \$15 million in both cases. In a firm commitment deal, its profit depends on the price it is able to obtain. If it sells the shares for \$32, it makes a profit of  $(32 - 30) \times 50 = \$100$  million because it has agreed to pay



ABC Corporation \$30 per share. However, if it can only sell the shares for \$29 per share, it loses  $(30 - 29) \times 50 = \$50$  million because it still has to pay ABC Corporation \$30 per share. The situation is summarized in the table below. The decision taken is likely to depend on the probabilities assigned by the bank to different outcomes and what is referred to as its “risk appetite” (see Section 27.1).

	<b>Profits If Best Efforts</b>	<b>Profits If Firm Commitment</b>
Can sell at \$29	+\$15 million	−\$50 million
Can sell at \$32	+\$15 million	+\$100 million

When equity financing is being raised and the company is already publicly traded, the investment bank can look at the prices at which the company’s shares are trading a few days before the issue is to be sold as a guide to the issue price. Typically it will agree to attempt to issue new shares at a target price slightly below the current price. The main risk then is that the price of the company’s shares will show a substantial decline before the new shares are sold.

#### **2.4.1 IPOs**

When the company wishing to issue shares is not publicly traded, the share issue is known as an *initial public offering* (IPO). This type of offering is typically made on a best efforts basis. The correct offering price is difficult to determine and depends on the investment bank’s assessment of the company’s value. The bank’s best estimate of the market price is its estimate of the company’s value divided by the number of shares currently outstanding. However, the bank will typically set the offering price below its best estimate of the market price. This is because it does not want to take the chance that the issue will not sell. (It typically earns the same fee per share sold regardless of the offering price.)

Often there is a substantial increase in the share price immediately after shares are sold in an IPO (sometimes as much as 40%), indicating that the company could have raised more money if the issue price had been higher. As a result, IPOs are considered attractive buys by many investors. Banks frequently offer IPOs to the fund managers who are their best customers and to senior executives of large companies in the hope that they will provide them with business. (The latter is known as “spinning” and is frowned upon by regulators.)

#### **2.4.2 Dutch Auction Approach**

A few companies have used a Dutch auction approach for their IPOs. As for a regular IPO, a prospectus is issued and usually there is a road show. Individuals and companies

bid by indicating the number of shares they want and the price they are prepared to pay. Shares are first issued to the highest bidder, then to the next highest bidder, and so on, until all the shares have been sold. The price paid by all successful bidders is the lowest bid that leads to a share allocation. This is illustrated in Example 2.2.

---

**Example 2.2**

A company wants to sell one million shares in an IPO. It decides to use the Dutch auction approach. The bidders are shown in the table below. In this case, shares are allocated first to C, then to F, then to E, then to H, then to A. At this point, 800,000 shares have been allocated. The next highest bidder is D, who has bid for 300,000 shares. Because only 200,000 shares remain unallocated, D's order is only two-thirds filled. The price paid by all the investors to whom shares are allocated (A, C, D, E, F, and H) is the price bid by D, or \$29.00.

Bidder	Number of Shares	Price
A	100,000	\$30.00
B	200,000	\$28.00
C	50,000	\$33.00
D	300,000	\$29.00
E	150,000	\$30.50
F	300,000	\$31.50
G	400,000	\$25.00
H	200,000	\$30.25

---

Dutch auctions potentially overcome two of the problems with a traditional IPO that we have mentioned. First, the price that clears the market (\$29.00 in Example 2.2) should be the market price if all potential investors have participated in the bidding process. Second, the situations where investment banks offer IPOs only to their favored clients are avoided. However, the company does not take advantage of the relationships that investment bankers have developed with large investors that usually enable the investment bankers to sell an IPO very quickly. One high-profile IPO that used a Dutch auction was the Google IPO in 2004. This is discussed in Business Snapshot 2.1.

**2.4.3 Advisory Services**

In addition to assisting companies with new issues of securities, investment banks offer advice to companies on mergers and acquisitions, divestments, major corporate restructurings, and so on. They will assist in finding merger partners and takeover targets or help companies find buyers for divisions or subsidiaries of which they want to divest themselves. They will also advise the management of companies that are themselves merger or takeover targets.

**BUSINESS SNAPSHOT 2.1****Google's IPO**

Google, developer of the well-known Internet search engine, decided to go public in 2004. It chose the Dutch auction approach. It was assisted by two investment banks, Morgan Stanley and Credit Suisse First Boston. The SEC gave approval for it to raise funds up to a maximum of \$2,718,281,828. (Why the odd number? The mathematical constant  $e$  is 2.7182818 ...) The IPO method was not a pure Dutch auction because Google reserved the right to change the number of shares that would be issued and the percentage allocated to each bidder when it saw the bids.

Some investors expected the price of the shares to be as high as \$120. But when Google saw the bids, it decided that the number of shares offered would be 19,605,052 at a price of \$85. This meant that the total value of the offering was  $19,605,052 \times 85$  or \$1.67 billion. Investors who had bid \$85 or above obtained 74.2% of the shares they had bid for. The date of the IPO was August 19, 2004. Most companies would have given investors who bid \$85 or more 100% of the amount they bid for and raised \$2.25 billion, instead of \$1.67 billion. Perhaps Google (stock symbol: GOOG) correctly anticipated it would have no difficulty in selling further shares at a higher price later.

The initial market capitalization was \$23.1 billion with over 90% of the shares being held by employees. These employees included the founders, Sergey Brin and Larry Page, and the CEO, Eric Schmidt. On the first day of trading, the shares closed at \$100.34, 18% above the offer price, and there was a further 7% increase on the second day. Google's issue therefore proved to be underpriced—but not as underpriced as some other IPOs of technology stocks where traditional IPO methods were used.

The cost of Google's IPO (fees paid to investment banks, etc.) was 2.8% of the amount raised. This compares with an average of about 4% for a regular IPO.

There were some mistakes made and Google was lucky that these did not prevent the IPO from going ahead as planned. Sergey Brin and Larry Page gave an interview to *Playboy* magazine in April 2004. The interview appeared in the September issue. This violated SEC requirements that there be a "quiet period" with no promoting of the company's stock in the period leading up to an IPO. To avoid SEC sanctions, Google had to include the *Playboy* interview (together with some factual corrections) in its SEC filings. Google also forgot to register 23.2 million shares and 5.6 million stock options.

Google's stock price rose rapidly in the period after the IPO. Approximately one year later (in September 2005) it was able to raise a further \$4.18 billion by issuing an additional 14,159,265 shares at \$295. (Why the odd number? The mathematical constant  $\pi$  is 3.14159265 ...)

Sometimes banks suggest steps their clients should take to avoid a merger or takeover. These are known as *poison pills*. Examples of poison pills are:

1. A potential target adds to its charter a provision where, if another company acquires one third of the shares, other shareholders have the right to sell their shares to that company for twice the recent average share price.
2. A potential target grants to its key employees stock options that vest (i.e., can be exercised) in the event of a takeover. This is liable to create an exodus of key employees immediately after a takeover, leaving an empty shell for the new owner.
3. A potential target adds to its charter provisions making it impossible for a new owner to get rid of existing directors for one or two years after an acquisition.
4. A potential target issues preferred shares that automatically get converted to regular shares when there is a change in control.
5. A potential target adds a provision where existing shareholders have the right to purchase shares at a discounted price during or after a takeover.
6. A potential target changes the voting structure so that shares owned by management have more votes than those owned by others.

Poison pills, which are illegal in many countries outside the United States, have to be approved by a majority of shareholders. Often shareholders oppose poison pills because they see them as benefiting only management. An unusual poison pill, tried by PeopleSoft to fight a takeover by Oracle, is explained in Business Snapshot 2.2.

Valuation, strategy, and tactics are key aspects of the advisory services offered by an investment bank. For example, in advising Company A on a potential takeover of Company B, it is necessary for the investment bank to value Company B and help Company A assess possible synergies between the operations of the two companies. It must also consider whether it is better to offer Company B's shareholders cash or a share-for-share exchange (i.e., a certain number of shares in Company A in exchange for each share of Company B). What should the initial offer be? What does it expect the final offer that will close the deal to be? It must assess the best way to approach the senior managers of Company B and consider what the motivations of the managers will be. Will the takeover be a hostile one (opposed by the management of Company B) or friendly one (supported by the management of Company B)? In some instances there will be antitrust issues, and approval from some branch of government may be required.

## 2.5 Securities Trading

Banks often get involved in securities trading, providing brokerage services, and making a market in individual securities. In doing so, they compete with smaller securities firms that do not offer other banking services. The Dodd-Frank Act in the United States, which will be discussed later in this book, does not allow banks to engage in proprietary

**BUSINESS SNAPSHOT 2.2****PeopleSoft's Poison Pill**

In 2003, the management of PeopleSoft, Inc., a company that provided human resource management systems, was concerned about a takeover by Oracle, a company specializing in database management systems. It took the unusual step of guaranteeing to its customers that, if it were acquired within two years and product support was reduced within four years, its customers would receive a refund of between two and five times the fees paid for their software licenses. The hypothetical cost to Oracle was estimated at \$1.5 billion. The guarantee was opposed by PeopleSoft's shareholders. (It appears to be not in their interests.) PeopleSoft discontinued the guarantee in April 2004.

Oracle did succeed in acquiring PeopleSoft in December 2004. Although some jobs at PeopleSoft were eliminated, Oracle maintained at least 90% of PeopleSoft's product development and support staff.

trading. In some other countries, proprietary trading is allowed, but it usually has to be organized so that losses do not affect depositors.

Most large investment and commercial banks have extensive trading activities. Apart from proprietary trading (which may or may not be allowed), banks trade to provide services to their clients. (For example, a bank might enter into a derivatives transaction with a corporate client to help it reduce its foreign exchange risk.) They also trade (typically with other financial institutions) to hedge their risks.

A broker assists in the trading of securities by taking orders from clients and arranging for them to be carried out on an exchange. Some brokers operate nationally, and some serve only a particular region. Some, known as full-service brokers, offer investment research and advice. Others, known as discount brokers, charge lower commissions, but provide no advice. Some offer online services, and some, such as E\*Trade, provide a platform for customers to trade without a broker.

A market maker facilitates trading by always being prepared to quote a bid (the price at which it is prepared to buy) and an offer (the price at which it is prepared to sell). When providing a quote, it does not know whether the person requesting the quote wants to buy or sell. The market maker makes a profit from the spread between the bid and the offer, but takes the risk that it will be left with a big long or short position and lose money.

Many exchanges on which stocks, options, and futures trade use market makers. Typically, an exchange will specify a maximum level for the size of a market maker's bid-offer spread (the difference between the offer and the bid). Banks have in the past been market makers for instruments such as forward contracts, swaps, and options trading in the

over-the-counter (OTC) market. (See Chapter 5 for a discussion of these instruments and the over-the-counter market.) The trading and market making of these types of instruments is now increasingly being carried out on electronic platforms that are known as swap execution facilities (SEFs) in the United States and organized trading facilities (OTFs) in Europe. (See Sections 16.5 and 17.2.)

## **2.6 Potential Conflicts of Interest in Banking**

There are many potential conflicts of interest between commercial banking, securities services, and investment banking when they are all conducted under the same corporate umbrella. For example:

1. When asked for advice by an investor, a bank might be tempted to recommend securities that the investment banking part of its organization is trying to sell. When it has a fiduciary account (i.e., a customer account where the bank can choose trades for the customer), the bank can “stuff” difficult-to-sell securities into the account.
2. A bank, when it lends money to a company, often obtains confidential information about the company. It might be tempted to pass that information to the mergers and acquisitions arm of the investment bank to help it provide advice to one of its clients on potential takeover opportunities.
3. The research end of the securities business might be tempted to recommend a company's share as a “buy” in order to please the company's management and obtain investment banking business.
4. Suppose a commercial bank no longer wants a loan it has made to a company on its books because the confidential information it has obtained from the company leads it to believe that there is an increased chance of bankruptcy. It might be tempted to ask the investment bank to arrange a bond issue for the company, with the proceeds being used to pay off the loan. This would have the effect of replacing its loan with a loan made by investors who were less well informed.

As a result of these types of conflicts of interest, some countries have in the past attempted to separate commercial banking from investment banking. The Glass-Steagall Act of 1933 in the United States limited the ability of commercial banks and investment banks to engage in each other's activities. Commercial banks were allowed to continue underwriting Treasury instruments and some municipal bonds. They were also allowed to do private placements. But they were not allowed to engage in other activities such as public offerings. Similarly, investment banks were not allowed to take deposits and make commercial loans.

In 1987, the Federal Reserve Board relaxed the rules somewhat and allowed banks to establish holding companies with two subsidiaries, one in investment banking and the other in commercial banking. The revenue of the investment banking subsidiary was restricted to being a certain percentage of the group's total revenue.

In 1997, the rules were relaxed further so that commercial banks could acquire existing investment banks. Finally, in 1999, the Financial Services Modernization Act was passed. This effectively eliminated all restrictions on the operations of banks, insurance companies, and securities firms. In 2007, there were five large investment banks in the United States that had little or no commercial banking interests. These were Goldman Sachs, Morgan Stanley, Merrill Lynch, Bear Stearns, and Lehman Brothers. In 2008, the credit crisis led to Lehman Brothers going bankrupt, Bear Stearns being taken over by JPMorgan Chase, and Merrill Lynch being taken over by Bank of America. Goldman Sachs and Morgan Stanley became bank holding companies with both commercial and investment banking interests. (As a result, they have had to subject themselves to more regulatory scrutiny.) The year 2008 therefore marked the end of an era for investment banking in the United States.

We have not returned to the Glass–Steagall world where investment banks and commercial banks were kept separate. But increasingly banks are required to ring-fence their deposit-taking businesses so that they cannot be affected by losses in investment banking.

## 2.7 Today's Large Banks

Today's large banks operate globally and transact business in many different areas. They are still engaged in the traditional commercial banking activities of taking deposits, making loans, and clearing checks (both nationally and internationally). They offer retail customers credit cards, telephone banking, Internet banking, and automatic teller machines (ATMs). They provide payroll services to businesses and, as already mentioned, they have large trading activities.

Banks offer lines of credit to businesses and individual customers. They provide a range of services to companies when they export goods and services. Companies can enter into a variety of contracts with banks that are designed to hedge risks they face relating to foreign exchange, commodity prices, interest rates, and other market variables. These contracts will be discussed in later chapters. Even risks related to the weather can be hedged.

Banks undertake securities research and offer “buy,” “sell,” and “hold” recommendations on individual stocks. They offer brokerage services (discount and full service). They offer trust services where they are prepared to manage portfolios of assets for clients. They have economics departments that consider macroeconomic trends and actions likely to be taken by central banks. These departments produce forecasts on interest rates, exchange rates, commodity prices, and other variables. Banks offer a range of mutual funds and in some cases have their own hedge funds. Increasingly banks are offering insurance products.

The investment banking arm of a bank has complete freedom to underwrite securities for governments and corporations. It can provide advice to corporations on mergers and acquisitions and other topics relating to corporate finance.

How are the conflicts of interest outlined in Section 2.6 handled? There are internal barriers known as *Chinese walls*. These internal barriers prohibit the transfer of information from one part of the bank to another when this is not in the best interests of one or more of the bank's customers. There have been some well-publicized violations of conflict-of-interest rules by large banks. These have led to hefty fines and lawsuits. Top management has a big incentive to enforce Chinese walls. This is not only because of the fines and lawsuits. A bank's reputation is its most valuable asset. The adverse publicity associated with conflict-of-interest violations can lead to a loss of confidence in the bank and business being lost in many different areas.

### 2.7.1 Accounting

It is appropriate at this point to provide a brief discussion of how a bank calculates a profit or loss from its many diverse activities. Activities that generate fees, such as most investment banking activities, are straightforward. Accrual accounting rules similar to those that would be used by any other business apply.

For other banking activities, there is an important distinction between the “banking book” and the “trading book.” As its name implies, the trading book includes all the assets and liabilities the bank has as a result of its trading operations. The values of these assets and liabilities are *marked to market* daily. This means that the value of the book is adjusted daily to reflect changes in market prices. If a bank trader buys an asset for \$100 on one day and the price falls to \$60 the next day, the bank records an immediate loss of \$40—even if it has not sold the asset. Sometimes it is not easy to estimate the value of a contract that has been entered into because there are no market prices for similar transactions. For example, there might be a lack of liquidity in the market or it might be the case that the transaction is a complex nonstandard derivative that does not trade sufficiently frequently for benchmark market prices to be available. Banks are nevertheless expected to come up with a market price in these circumstances. Often a model has to be assumed. The process of coming up with a “market price” is then sometimes termed *marking to model*. (Chapter 25 discusses model risk and accounting issues further.)

The banking book includes loans made to corporations and individuals. Traditionally these have not been marked to market. However, this is changing as a result of a new accounting standard from the International Accounting Standards Board, IFRS 9, and similar accounting updates from the Financial Accounting Standards Board in the United States. The new accounting rules require lenders to estimate the amount of credit losses expected in their loan portfolios and adjust the value of the loan portfolios accordingly. The new rules are partly a result of the financial crisis that started in 2007. Banks had portfolios of subprime mortgages that performed badly. However, losses did not have to be reported until they had been actually incurred.

Occasionally banks have resorted to artificial ways of avoiding the recognition of loan losses, as outlined in Business Snapshot 2.3.



**BUSINESS SNAPSHOT 2.3****How to Avoid Loan Losses**

When a borrower is experiencing financial difficulties and is unable to make interest and principal payments as they become due, it is sometimes tempting to lend more money to the borrower so that the payments on the old loans can be kept up to date. No losses are then recorded.

In the 1970s, banks in the United States and other countries lent huge amounts of money to Eastern European, Latin American, and other less developed countries (LDCs). Some of the loans were made to help countries develop their infrastructure, but others were less justifiable (e.g., one was to finance the coronation of a ruler in Africa). Sometimes the money found its way into the pockets of dictators. For example, the Marcos family in the Philippines allegedly transferred billions of dollars into its own bank accounts.

In the early 1980s, many LDCs were unable to service their loans. One option for them was *debt repudiation*, but a more attractive alternative was *debt rescheduling*, where more money was lent to cover required payments on existing loans.

In 1987, Citicorp (now Citigroup) took the lead in refusing to reschedule LDC debt and increased its loan loss reserves by \$3 billion in recognition of expected losses on the debt. Other banks with large LDC exposures followed suit.

**2.7.2 The Originate-to-Distribute Model**

DLC, the small hypothetical bank we looked at in Tables 2.2 to 2.4, took deposits and used them to finance loans. An alternative approach is known as the *originate-to-distribute model*. This involves the bank originating but not keeping loans. Portfolios of loans are packaged into tranches that are then sold to investors.

The originate-to-distribute model has been used in the U.S. mortgage market for many years. In order to increase the liquidity of the U.S. mortgage market and facilitate the growth of home ownership, three government sponsored entities have been created: the Government National Mortgage Association (GNMA) or “Ginnie Mae,” the Federal National Mortgage Association (FNMA) or “Fannie Mae,” and the Federal Home Loan Mortgage Corporation (FHLMC) or “Freddie Mac.” These agencies buy pools of mortgages from banks and other mortgage originators, guarantee the timely repayment of interest and principal, and then package the cash flow streams and sell them to investors. The investors typically take what is known as prepayment risk. This is the risk that interest rates will decrease and mortgages will be paid off earlier than expected. However, they do not take any credit risk because the mortgages are guaranteed by GNMA, FNMA, or

FHLMC. In 1999, the agencies started to guarantee subprime loans and as a result ran into serious financial difficulties.<sup>2</sup>

The originate-to-distribute model has been used for many types of bank lending, including student loans, commercial loans, commercial mortgages, residential mortgages, and credit card receivables. In many cases there is no guarantee that payment will be made so that it is the investors who bear the credit risk when the loans are packaged and sold.

The originate-to-distribute model is also termed *securitization* because securities are created from cash flow streams originated by the bank. It is an attractive model for banks. By securitizing its loans it gets them off the balance sheet and frees up funds to enable it to make more loans. It also frees up capital that can be used to cover risks being taken elsewhere in the bank. (This is particularly attractive if the bank feels that the capital required by regulators for a loan is too high.) A bank earns a fee for originating a loan and a further fee if it services the loan after it has been sold.

As we will explain in Chapter 6, the originate-to-distribute model got out of control during the 2000 to 2006 period. Banks relaxed their mortgage lending standards and the credit quality of the instruments being originated declined sharply. This led to a severe credit crisis and a period during which the originate-to-distribute model could not be used by banks because investors had lost confidence in the securities that had been created.

## 2.8 The Risks Facing Banks

A bank's operations give rise to many risks. Much of the rest of this book is devoted to considering these risks in detail.

Central bank regulators require banks to hold capital for the risks they are bearing. In 1988, international standards were developed for the determination of this capital. These standards and the way they have evolved since 1988 are discussed in Chapters 15, 16, and 17. Capital is now required for three types of risk: credit risk, market risk, and operational risk.

Credit risk is the risk that counterparties in loan transactions and derivatives transactions will default. This has traditionally been the greatest risk facing a bank and is usually the one for which the most regulatory capital is required. Market risk arises primarily from the bank's trading operations. It is the risk relating to the possibility that instruments in the bank's trading book will decline in value. Operational risk, which is often considered to be the biggest risk facing banks, is the risk that losses are created because internal systems fail to work as they are supposed to or because of external events. The time horizon used by regulators for considering losses from credit risks and operational risks is one year, whereas the time horizon for considering losses from market risks is

---

<sup>2</sup>GNMA has always been government owned whereas FNMA and FHLMC used to be private corporations with shareholders. As a result of their financial difficulties in 2008, the U.S. government had to step in and assume complete control of FNMA and FHLMC.

usually much shorter. The objective of regulators is to keep the total capital of a bank sufficiently high that the chance of a bank failure is very low. For example, in the case of credit risk and operational risk, the capital is chosen so that the chance of unexpected losses exceeding the capital in a year is 0.1%.

In addition to calculating regulatory capital, most large banks have systems in place for calculating what is termed *economic capital* (see Chapter 26). This is the capital that the bank, using its own models rather than those prescribed by regulators, thinks it needs. Economic capital is often less than regulatory capital. However, banks have no choice but to maintain their capital above the regulatory capital level. The form the capital can take (equity, subordinated debt, etc.) is prescribed by regulators. To avoid having to raise capital at short notice, banks try to keep their capital comfortably above the regulatory minimum.

When banks announced huge losses on their subprime mortgage portfolios in 2007 and 2008, many had to raise new equity capital in a hurry. *Sovereign wealth funds*, which are investment funds controlled by the government of a country, have provided some of this capital. For example, Citigroup, which reported losses in the region of \$40 billion, raised \$7.5 billion in equity from the Abu Dhabi Investment Authority in November 2007 and \$14.5 billion from investors that included the governments of Singapore and Kuwait in January 2008. Later, Citigroup and many other banks required capital injections from their own governments to survive.

## Summary

Banks are complex global organizations engaged in many different types of activities. Today, the world's large banks are engaged in taking deposits, making loans, underwriting securities, trading, providing brokerage services, providing fiduciary services, advising on a range of corporate finance issues, offering mutual funds, providing services to hedge funds, and so on. There are potential conflicts of interest and banks develop internal rules to avoid them. It is important that senior managers are vigilant in ensuring that employees obey these rules. The cost in terms of reputation, lawsuits, and fines from inappropriate behavior where one client (or the bank) is advantaged at the expense of another client can be very high.

There are now international agreements on the regulation of banks. This means that the capital banks are required to keep for the risks they are bearing does not vary too much from one country to another. Many countries have guaranty programs that protect small depositors from losses arising from bank failures. This has the effect of maintaining confidence in the banking system and avoiding mass withdrawals of deposits when there is negative news (or perhaps just a rumor) about problems faced by a particular bank.

## Further Reading

Saunders, A., and M. M. Cornett. *Financial Institutions Management: A Risk Management Approach*. 9th ed. New York: McGraw-Hill, 2017.

### Practice Questions and Problems (Answers at End of Book)

- 2.1 How did concentration in the U.S. banking system change between 1984 and 2017?
- 2.2 What government policies led to the large number of small community banks in the United States?
- 2.3 What risks does a bank take if it funds long-term loans with short-term deposits?
- 2.4 Suppose that an out-of-control trader working for DLC Bank (see Tables 2.2 and 2.3) loses \$7 million trading foreign exchange. What do you think would happen?
- 2.5 What is meant by net interest income?
- 2.6 Which items on the income statement of DLC Bank in Section 2.2 are most likely to be affected by (a) credit risk, (b) market risk, and (c) operational risk?
- 2.7 Explain the terms “private placement” and “public offering.” What is the difference between “best efforts” and “firm commitment” for a public offering?
- 2.8 The bidders in a Dutch auction are as follows:

Bidder	Number of Shares	Price
A	20,000	\$100.00
B	30,000	\$93.00
C	50,000	\$110.00
D	70,000	\$88.00
E	60,000	\$80.00
F	10,000	\$105.00
G	90,000	\$70.00
H	80,000	\$125.00

The number of shares being auctioned is 150,000. What is the price paid by investors? How many shares does each investor receive?

- 2.9 What is the attraction of a Dutch auction over the normal procedure for an IPO? In what ways was Google’s IPO different from a standard Dutch auction?
- 2.10 Management sometimes argues that poison pills are in the best interests of shareholders because they enable management to extract a higher price from would-be acquirers. Discuss this argument.
- 2.11 Give three examples of the conflicts of interest in a large bank. How are conflicts of interest handled?
- 2.12 What is the difference between the banking book and the trading book?
- 2.13 How has accounting for loans changed since the 2007–2008 financial crisis?
- 2.14 What is the originate-to-distribute model?

### Further Questions

- 2.15 Regulators calculate that DLC bank (see Section 2.2) will report a profit that is normally distributed with a mean of \$0.6 million and a standard deviation of \$2 million.

How much equity capital in addition to that in Table 2.2 should regulators require for there to be a 99.9% chance of the capital not being wiped out by losses?

- 2.16 Explain the moral hazard problems with deposit insurance. How can they be overcome?
- 2.17 The bidders in a Dutch auction are as follows:

Bidder	Number of Shares	Price
A	60,000	\$50.00
B	20,000	\$80.00
C	30,000	\$55.00
D	40,000	\$38.00
E	40,000	\$42.00
F	40,000	\$42.00
G	50,000	\$35.00
H	50,000	\$60.00

The number of shares being auctioned is 210,000. What is the price paid by investors? How many shares does each investor receive?

- 2.18 An investment bank has been asked to underwrite an issue of 10 million shares by a company. It is trying to decide between a firm commitment where it buys the shares for \$10 per share and a best efforts where it charges a fee of 20 cents for each share sold. Explain the pros and cons of the two alternatives.

