

## **Chapter 4: Depository Institutions and Corporate Banking**

### **A. Commercial Banks**

Commercial banks and other depository institutions play essential roles in the world economies. They serve as financial intermediaries facilitating the flow of capital to production of goods and services, they are integral to the payments and money supply systems and they even play an important role in monitoring their borrowers. The traditional commercial bank role is to serve two primary functions: financial intermediation (transform deposits into loans, thereby earning spread income by lending at higher rates than those at which they borrow) and facilitate payments (through bank drafts or checks, though in earlier times and still in the U.K. and Hong Kong, by issuing currency). Depository institutions are so named because they derive a significant portion of their funding from customer deposits.

*Corporate banking* services, typically offered by commercial banks, refer to financial services needed by and offered to corporations, including extension of loans, treasury and cash management services and services related to trade and international exchange. The term is often also used to describe providing banking to larger institutional (wholesale) clients. Corporate bankers often offer wholesale clients (which might include banks, governments, pension funds, large businesses, etc.) a variety of services, including international transactions facilitation, investment banking, project finance, financial advisory services, shareholder services, and insurance.

Commercial banks also tend to offer retail services to individual clients, known as *retail banking*. The more general term, commercial bank, is largely a term used in the U.S. and the U.K. to distinguish other corporate banking services from traditional investment banking, as required by regulations prevalent in the U.S. during much of the 20th century. We will focus more on corporate banking in this book.

Universal banks engage in many kinds of financial activities and are generally considered to be both commercial banks and investment banks, and often provide other financial services such as insurance. Universal banks are often called full-service financial firms. Until significant deregulatory activity in the U.S., particularly in the 1990s, such institutions were more prevalent in Europe, especially Germany, and Japan than in the U.S.

### **Commercial Banks in the U.S.**

The most significant type of depository institution in the United States is the commercial bank. As of December 31, 2019, there were 4,518 FDIC-insured commercial banks operating in the United States.<sup>1</sup> However, the largest 4% of these institutions, including Citigroup and JPMorgan Chase, held over 70% of the total assets in the commercial banking system. Many years of regulation-induced merger and branching restrictions intended to promote banking system stability significantly inhibited the growth of the largest U.S. commercial banks, but this regulation has been steadily eroded since the early 1980s. Thus, continued deregulation during the 1990s and in the early part of this century has spurred tremendous growth in and consolidation of U.S. banks. Now, unlike two decades ago, the largest U.S. banks, Citigroup, JPMorgan Chase, Wells Fargo and Bank of America are all among the largest banks in the world. Recent trends suggest that larger U.S. banks will continue to grow and the U.S. banking industry will continue to consolidate.

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<sup>1</sup> FDIC Statistics at a Glance: As of December 31, 2019.  
<https://www.fdic.gov/bank/statistical/stats/2019dec/industry.pdf>

The typical U.S. commercial bank obtains approximately 70% of its funding from client deposits. Demand deposits (usually checking accounts), savings deposits and small certificates of deposit on average, each account for slightly less than thirty percent of these deposits. Other deposits include "Jumbo CDs", time deposits with denominations greater than \$100,000. Approximately twenty percent of bank funding is obtained through borrowing, though this figure is much higher for certain money center wholesale banks (such as JPMorgan Chase). U.S. banks normally maintain equity capitalization of approximately 5% to 10% of total assets.

Approximately 60-65% of typical commercial bank assets are loans, with commercial, industrial and real estate loans representing the bulk of these loans. Investment securities, in particular, those issued by the U.S. government, comprise approximately twenty percent of bank assets. Fed reserves, cash and demand deposits constitute most of the remaining bank assets. Table 1 provides a listing of the largest banks operating in the United States as of year-end 2017.

<b>Rank</b>	<b>Bank Name</b>	<b>Location</b>	<b>Total Assets in Billions USD</b>
1	JPMorgan Chase & Co	New York, NY	2,727.38
2	Bank of America	Charlotte, NC	2,395.89
3	Citigroup	New York, NY	1,988.23
4	Wells Fargo & Co	San Francisco, CA	1,923.39
5	Goldman Sachs	New York, NY	944.903
6	Morgan Stanley	New York, NY	891.959
7	U.S. Bancorp	Minneapolis, MN	481.719
8	PNC Financial Svcs. Group	Pittsburgh, PA	405.761
9	Toronto-Dominion Group US	Wilmington, DE	387.66
10	Bank of New York Mellon	New York, NY	381.168
11	Capital One Financial Corp.	McLean, VA	373.619
12	HSBC Holdings NA	New York, NY	296.713
13	Charles Schwab Corp.	San Francisco, CA	276.321
14	State Street Corp.	Boston, MA	241.54
15	BB&T Corp.	Winston Salem, NC	230.872
16	Suntrust Banks	Atlanta, GA	222.288
17	American Express Co.	New York, NY	197.603
18	Ally Financial	Detroit, MI	180.448
19	Mitsubishi UFJ Fin. Grp.	New York, NY	172.01
20	Fifth Third Bancorp	Cincinnati, OH	168.802
21	United Services Auto. Asso.	San Antonio, TX	168.532
22	Citizens Financial Group	Providence, RI	162.749
23	BMO Financial Corp.	Wilmington, DE	160.249
24	Barclays US LLC	New York, NY	154.325
25	KeyCorp	Cleveland, OH	144.545

**Table 1: The 25 Largest Banks in the U.S.**

Assets as of 10/20/2019 according to Relbanks.com

### Bank Census Figures

After 50 years with fairly little change, the number of U.S. banks reached a post-WWII peak of 14,483 banks (Still only half as large as prior to WWI) as of the end of 1984. This number had declined to 8,563 by 1999, with 1312 failing and 7,268 being absorbed as a result of

takeovers. By 2008, there were fewer than 7,100 banks, 5,844 as of the end of the third quarter of 2013 and 4,918 as of year-end 2017 (Federal Deposit Insurance Corporation [2018]). The single most important factor leading to this increased takeover activity and consolidation has been the relaxation of regulations limiting their activities. In particular, the demise of the 1930s era Glass-Steagall regulations with the Depository Institutions Deregulation and Monetary Control Act, Garn-St. Germain, the Financial Modernization Act and the easing of the prohibitions on interstate and branch banking have contributed to this substantial takeover activity (All of this legislation will be discussed in a subsequent chapter). For example, in 1984, over half of banks only had a single office (unit branch); by 2015, this figure had declined to fewer than 10%.

## **B. Variations of Depository Institutions and Banks**

Banks are the world's largest non-public financial institutions. Aggregate assets of the largest 1,000 banks reached a record \$123 trillion in 2018 (*The Banker* (2018)). There are many types of banking institutions, including those listed in Tables 3.a, 3.b and 3.c, which frequently overlap and certainly are not mutually exclusive.

*Commercial bank* is a rather generic term to distinguish the depository institution from an investment bank. Commercial banks engage in traditional banking activities such as accepting deposits, making loans and operating payments systems.

*Merchant banks* by tradition engage in trade finance. This means that they facilitate other firms in their efforts to trade, particularly on an international basis. They also tend to take equity positions in ongoing firms, frequently emphasizing equity positions rather than debt positions. Merchant banks evolved from a system where merchants used their business connections to make payments, accepted deposits and extended loans on an international and interregional basis.

*Thrift Institutions* were largely created primarily to provide savings and loan products to all segments of the retail population, including individuals with lower income. The three types of U.S. thrift institutions are *savings and loans institutions* (S&Ls, which specialize in providing savings accounts and long-term loans for housing), *savings banks* (specialize in providing savings accounts) and cooperative *credit unions* (specialize in extension of consumer loans). We will discuss these and their non-U.S. counterparts in more detail shortly.

*Investment banks* aren't actually banks in the conventional sense that they do not accept deposits in the traditional sense. Investment banks engage in a variety of investment-related activities. The traditional function of investment banks is to assist clients in the placement of securities such as shares of stock and bonds to the general public. Investment banks underwrite (guarantee sales of) securities as part of this role. Most investment banks engage in many other activities, such as advising in merger actions, trading securities, making markets, etc.

*Universal banks* have broader arrays of activities, including commercial banking, investment banking, corporate advisory (including M&A) services, insurance, securities brokerage and other financial services. While common in Europe and Japan, U.S. banking regulation prohibited universal banking activity during the last 7 decades of the 20<sup>th</sup> century. Deregulation during the late 1990s and first decade of the 21<sup>st</sup> century has made universal banking, or at least a somewhat

**Table 3.a: Banks by Major Industry Sector**

*Private banks* manage the assets of high net worth individuals. Many commercial banks have private bank units.

*Wholesale banks* provide services to other banks and financial institutions, large and medium-sized corporate clients, real estate institutions, government institutions, etc. Wholesale banking activities generally center around large-scale movements of funds.

*Retail banks* (consumer banks) provide services to individual consumers such as checking and savings accounts, ATMs, mortgages, personal loans, debit cards, and credit cards.

### **Table 3.b: Banks by Client Type**

*Islamic banks* provide financial services adhering to Islamic law. Islamic banks do not borrow or lend with interest but often share in the profits of the firms in which they invest.

*Offshore banks* are branches or subsidiaries of a parent bank operating in country permitting external accounts beyond the normal economic activity of that country. Such banks are normally free from host country regulations affect reserve requirements, disclosure, taxes, etc. The IMF recognizes the Bahamas, Bahrain, the Cayman Islands, the Netherlands Antilles, Panama, Hong Kong and Singapore as major offshore banking centers. Many offshore banks are essentially private banks or exist to remain out of reach of regulators where clients reside.

### **Table 3.c: Banks by Selected Regulatory Climates**

#### The German Three-Pillar System

Variations of the *three-pillar system* (roughly speaking, commercial, public or cooperative ownership) historically maintained by Germany typify or did typify at least until the 1990s national banking sectors in numerous countries. Germany structures its banking sector into three basic pillars as follows:

1. *Commercial banks*: Offer traditional depository banking services to individuals and institutions, including checking and savings accounts, payment processing, lending and bond underwriting. Examples include Deutsche Bank, Commerzbank and Postbank.
2. *Savings banks*: Also known as public banks, savings banks operate commercially but are usually founded to implement credit and savings policy objectives of state and local governments. Proponents of this segment often argue that the savings banks are important because their existence guarantees banking services for everyone, regardless of residence or social status.
  - a. *Sparkassen*: Serving the public good, they traditionally offer savings accounts and are generally local or regional in scope, with a focus on the retail sector, with an effort to be inclusive and provide lower-income households with reliable income-bearing savings opportunities. Sparkassen are organized under “public law,” often with public or government sponsorship or support. Their ownership and control are independent of the municipalities within which they function, while still under "municipal trusteeship,"

signifying their orientation towards the public welfare of their geographic regions.

b. *Landesbanken*: Seven public regional banks, universal banks with specific mandates, organized under public law, with shares held by Germany's Länder (states) and regional savings banks associations. In many respects, the Landesbanken serve as central banks for Sparkassen, though more recently have evolved to compete with larger commercial banks.

c. *Landesbausparkassen*: Regional real estate savings banks

3. *Credit cooperatives*: Are based on the mutual self-help ideas of Friedrich Wilhelm Raiffeisen, who in 1864 created the first farmers' bank in Germany, which expanded in scope to include workers and craftsmen along with farmers. These mutual organizations promote economic advancement of members through the execution of joint business activities, often focusing on consumer deposits and loans within certain geographic localities or interest groups whose members share common affiliations or bonds.<sup>2</sup>

### Variations on the Three-Pillar System

Within each pillar, institutions can be quite heterogeneous, even more so outside of Germany, and in many instances, banks are becoming more difficult to categorize within the three pillars. For example, many larger European savings banks have evolved into full-service banks, or in Germany, into universal banks that have become practically indistinguishable from commercial or universal banks. Nevertheless, this three-pillar system serves as a useful prototype for categorizing depository institutions in many countries.

Variations or at least vestiges of the three-pillar system remain in many other European nations, though less so than in the 20th century. As questions of bank survival have arisen, increasing demands for bank equity capital, competition has intensified and placed increased focus on profits. European banking system trends have been towards privatization and consolidation, often seeking performance enhancement associated with competition and profit-seeking along with scale and scope economies associated with consolidation. However, often such economies are realized at the expense of public and regional mandates, which have sometimes been abandoned. Abandonment of regional mandates has opened regions to more intense competition as banks from other regions expand geographically.

The banking system in Italy reflects privatization and consolidation trends, Numerous Italian savings banks and cooperative banks (*banche popolari*) have been privatized to attract equity capital, and others were merged into larger commercial banks or otherwise consolidated (See Hallerberg and Markgraf [2018] for a more detailed discussion). One impetus for recent privatization is a 2015 reform requiring Italy's 10 largest cooperative banks to convert to joint-stock companies to attract foreign investors, with the further benefit of restricting political appointments to bank boards.

Similar trends have arisen elsewhere, such as in Belgium where savings and cooperative banks have been practically eliminated (Schmidt, Bülbül and Schüwer [2014]). Somewhat similarly, savings banks have become nearly obsolete in the Netherlands and independent cooperative banks have been consolidated into a single major national bank (Rabobank, formerly Coöperatieve Centrale **Raiffeisen-Boerenleenbank** - recall from above Friedrich Wilhelm Raiffeisen). Local savings banks in Sweden were converted into corporations then consolidated into a single national savings bank (Swedbank).

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<sup>2</sup> A fourth category might be justified, perhaps called special purpose banks, and might include Landesbausparkassen, listed as part of the third pillar.

The three-pillar system remains intact in Germany and relatively intact in Spain, though Spanish savings banks (*Cajas*) and cooperative banks are now significantly less important since the 2008-09 banking crisis. On the other hand, three of the five largest banks (e.g., *Crédit Agricole*) in France have cooperative ownership structures and Austria has maintained a strong cooperative presence (Schmidt, Bülbül and Schüwer [2014]).

Early (19th century) Sparkassen in Germany tended to be founded by states (Länder) as private institutions to serve the public good, whereas building societies in the U.K. and their counterparts in France were more likely to organize under clergymen and philanthropists. Historically, U.K. savings banks tended to focus on making banking products available to low-income individuals and were generally required to invest their deposits in government and other bank debt. Other European countries and the U.S. tended to provide more latitude for savings bank investments. As savings banks' clientele drifted towards middle- and higher-income individuals, postal savings banks, housed and managed by national postal systems were created to serve lower-income individuals.

Depository institutions in the U.S. include commercial banks and thrift institutions, the latter of which include savings and loans institutions, savings banks and credit unions. We review these in the following sub-section. Early building societies in the U.K. tended to organize under religious leaders and philanthropists. Sparkassen in Germany tended to be founded by states (Länder) as private institutions to serve the public good. Both are rather analogous to savings and loans institutions in the U.S.

### U.S. Thrift Institutions

While commercial banks make commercial, consumer, and mortgage loans, the thrift industry (excepting the U.S. credit union segment) exists primarily to provide low-cost, fixed interest-rate mortgages specifically for housing. Commercial banks often emphasize wholesale markets whereas thrift institutions are more likely to focus on retail business. The three types of U.S. thrift institutions are Savings and Loans Institutions (S&Ls), Savings Banks and Credit Unions. Credit unions, normally structured as cooperatives (described below), tend to emphasize extension of consumer loans. Many thrift institutions were established as mutual organizations, owned by their depositors rather than shareholders. However, in recent years, many savings and loans associations have re-organized under stock charters. As of year-end 2016, there were 800 FDIC-insured thrift institutions. Non-U.S. counterparts to thrift institutions include building societies in the U.K. and Australia and Sparkassen in Germany.

#### *Savings and Loans Associations*

In the U.S., a *savings association* or *savings and loan association* is a depository institution chartered by the Office of Thrift Supervision (administered by Office of the Comptroller of the Currency) with the business model of accepting deposits and extending mortgage and other loans. The industry dates from the early 19th century in the U.S. and is rooted in the 18th century British building societies and postal savings banks and perhaps earlier French savings banks. In large part, savings and loans institutions are created to provide low-cost, fixed-interest rate mortgages for housing. The Federal Home Loan Bank Board (FHLBB) and the Federal Savings and Loan Deposit Corporation (FSLIC) were created in 1932 and 1934 to regulate and insure the savings and loans industry.

The typical savings and loans association obtains a significant share of its funding (approximately 70%) from savings and time deposits. Thus, the funding of S&Ls tends to be

somewhat more long-term oriented than for commercial banks. This longer-term orientation complements the investment strategy of the typical S&L; approximately 80% of its assets are longer term mortgage loans and mortgage-backed securities. Nevertheless, asset structures are normally longer term than liability structures, which can create risks due to asset/liability mismatches. We will discuss this problem in later chapters.

### *Savings Banks*

A *savings bank* has features similar to those of a commercial bank, but is established primarily to receive deposits of money, maintain and pay interest on said deposits for the benefit of depositors. Savings banks, like S&Ls date from the early 19th century in the U.S. and are rooted in the 18th century British building societies and postal savings banks and perhaps earlier French savings banks. Early institutions were founded to provide for banking services and interest-bearing savings opportunities for lower income individuals and families.

In the U.S., savings banks are chartered as mutual or stock organizations by 16 states (mostly east coast) and the federal government. During their early history, to maintain safety of deposits, they deposited their depositor proceeds into banks rather than extend credit to their client base, though now, most conduct more traditional lending functions.

### *Credit Unions*

A *credit union* is a member-owned, not-for-profit cooperative (mutual) financial institution established to encourage savings, offer competitive interest rates on deposits and use deposits to make loans at low interest rates to its members. The World Council of Credit Unions reported that at the end of 2010, there were 52,945 credit unions in 100 countries serving 188 million members and holding \$1.5 trillion in assets. Over 10,000 credit unions exist in the U.S., accepting deposits from and making consumer loans to their members. Most credit unions limit membership to specific groups of individuals sharing a common bond, such as employees of a given organization or members of a given association, and are prohibited from serving the general public. Membership restriction is mandated by federal statute: “limited to groups having a common bond of occupation or association, or to groups within a well-defined neighborhood, community or rural district.”

Credit unions as mutually owned organizations are controlled by their members who make deposits and/or loans. Deposits in credit unions are often referred to as shares, on which dividends rather than interest are paid. Between half and two-thirds of the typical credit union's assets are small consumer loans; most of the remaining assets are invested in U.S. Treasury securities and in FDIC insured time deposit accounts. The National Credit Union Administration (NCUA) regulates U.S. credit unions and provides for deposit insurance coverage.

## **C. What Makes Banks Special?**

Banks are generally afforded a special status in the modern economy. Most national governments provide for special treatment for banks from regulatory authorities and, in many instances, will make strenuous efforts to protect banks from competition and the risk of failure. What makes banks so special to be singled out for this sort of special treatment? Consider that banks are essential to the real productive sectors of the economy because banks:

- transform maturity and risk structures of capital,
- collect information to resolve risk and to ensure that capital is put to its most productive

- uses,
- maintaining the economy-wide payment system, without which the economy grinds to a halt,
- ensure liquidity and create money for business, governments and individuals to conduct transactions, which is needed for a well-functioning economy.

Government authorities enable bankers to engage in these activities, which aids in economic development, but has the potential to precipitate economic crises. Failure of the banking system surely implies failure or impaired operation of the economic system.

### Bank Charters

We introduced bank charters in earlier chapters as licenses granted by government authorities to engage in banking activities. The bank charter sets forth the obligations and privileges of the bank. Bank obligations might include reserve and supervisory requirements along with restrictions on risk-taking, assets and liabilities. Bank privileges might include rights to accept deposits and make loans, create money and benefit from limited shareholder liability.

Banking activities have the potential to be very profitable, hence bank charters can be very valuable to bankers and profitable to government authorities to issue. Bank charters are even more valuable to bankers when governments issue fewer charters, thereby granting monopoly power to the few bankers fortunate enough to receive them along with their associated rents (excess profits). The option value of the federal safety net (e.g., FDIC insurance and too-big-to-fail protections) can be another important source of charter value (See Keeley [1990] and Furlong and Kwan [2006]). A significant benefit to issuing these valuable charters is that bankers will be reluctant to risk losing them by engaging in excessive risk-taking.

In the United States, the Office of the Comptroller of the Currency (OCC) is the regulatory authority that charters national banks. State banking department or offices can issue state banking charters, which subject the new bank to different regulatory regimes, but may offer reduced filing and supervisory fees.

### Banks and Business Risk Mitigation

Banks are generally afforded a special status in the modern economy. Most national governments provide for special treatment for banks from regulatory authorities and, in many instances, will make strenuous efforts to protect banks from competition and the risk of failure. What makes banks so special to be singled out for this sort of special treatment? Banks are essential to the real productive sectors of the economy, transforming maturity and risk structures of capital, collecting information to ensure that the capital is put to its most productive uses, maintaining the economy-wide payment system, without which the economy grinds to a halt, ensuring liquidity to business, governments and individuals. Failure of the banking system normally implies failure of the economic system.

James [1987] and Fama [1985] discuss the unique role of the bank in provision of capital in an economy subject to uncertainties, costly information retrieval and with a costly reserve requirement imposed on bank deposits. This reserve requirement does mitigate banking risk, but is, in some respects, like a tax. However, James and Fama observe that yields on bank CDs are not significantly different from those on bank commercial paper and bank acceptances. That is, the cost of capital to banks for certificates of deposit subject to reserve requirements is roughly the same as for commercial paper and bank acceptances, which are not subject to reserve



requirements. Furthermore, changes in reserve requirements do not seem to affect bank yields. What makes banks special in that they seem to be able to absorb this "tax" on deposits and seem not have to pass it on to their depositors through lower interest rates.

When companies borrow through bond markets, they subject themselves to monitoring by many bondholders. When a bank lends a company money, the company subjects itself to a single monitor. Why might a single bank serve as a better monitor than the many investors in the corporate bond market? Corporate monitoring by a single lender avoids the significant problems of duplication of monitoring efforts, failure to properly coordinate monitoring activities and the free-rider problem (when prospective monitors choose to allow other prospective monitors assume the cost of monitoring, which can result in none actually conducting monitoring activities) that arise with multiple lenders (Diamond 1984).

Banks, in their roles as delegated monitors, produce and have access to special information, not available to the market as a whole. Mikkelsen and Partch [1986] found that announcements of bank credit lines to publically-traded companies produced positive abnormal stock returns for prospective borrowers. This implies that when banks use their special information to extend credit to their clients, the stock market perceives the credit extension to be a positive signal concerning the company's circumstances. The market seems to believe that banks conduct meaningful research into their clients' ability to produce profits, and signal a summary of this information to the market through decisions to extend credit lines. Similarly, James [1987] documents higher than normal stock returns for firms announcing acceptance of loans from banks. Again, a bank loan seems to signal positive information from a source with special knowledge.

These bank announcement effects seem to differ markedly from those associated with non-bank securities issued in capital markets. Stock reactions are not nearly as significantly positive for corporate bond issues to the general public. Perhaps, the stock market does not perceive bond issues to convey as meaningful information as to bank loans. Thus, such significant and positive bank loan results suggest that financial markets perceive banks to be particularly capable of obtaining useful non-public information about firms in the loan application process, information that does not seem to be obtained in the public securities issuance process.

James [1987, p. 234] concludes that "banks provide some special service not available from other lenders." Numerous papers have supported these results (e.g., Lummer and McConnell [1989] and with loan renewals and Billet, Flannery and Garfinkle [1995]). Thus, banks, through their lending and monitoring behavior, convey useful information to the investing public, and resolve uncertainties with respect to their corporate clients, enabling their clients and the markets to more accurately gauge risks and to function more efficiently.

These signaling and information services are not free to borrowers. Schwert [2020] estimates that banks earn an average of 140-170 basis points (1.4% to 1.7%) on loans to corporations relative to what borrowers might have paid in capital markets for bonds issued to the general public, after adjusting for risk and other observable factors. Why should bank loans command such high interest rate premiums? Relative to issues of bonds, Schwert suggests that banks offer borrowers the opportunity to borrow large amounts on short notice, flexibility in the amounts and terms of a loan and its repayment as well as the signal to the market of the bank's willingness to lend to the corporate borrower.

### Banks Create Informationally Insensitive Debt

We have discussed the adverse selection and moral hazard problems along with the detrimental effects that information asymmetries have on the marketplace. Gorton and Pennacchi [1990] argue that the primary function of banking is to create a special kind of debt that is immune to adverse selection and exploitation by privately informed market participants. In effect, banks conduct costly research to evaluate the creditworthiness and profitability of their prospective borrowers, and extend credit using funds raised by issuing zero- or low-risk demand deposit accounts. In effect, one of the important risk transformation functions of the bank is to resolve risks associated with differential information.

Consider the nature of demand deposits, which are extremely liquid, in part, due to their lack of default risk. Demand deposits are virtually riskless, unaffected by private information and highly liquid when insured by a credible government agency such as FDIC. Even uninsured loans such as repurchase agreements (repos) tend to be "informationally-insensitive" and highly liquid since they are short-term and collateralized with bonds and other securities.<sup>3</sup> Checks associated with demand deposit accounts are extremely liquid thanks to costly bank research and deposit insurance, essentially making them a form of money. Thus, only banks and governments tend to create such informationally-insensitive debt, which enables the mitigation of what would otherwise be severe adverse selection problems in the market. This transformation of risky and informationally sensitive loans issued by banks into virtually riskless demand deposit accounts significantly facilitates transactions in markets for goods and services.

### Banking Relationships

Non-bank firms benefit from banking relationships, largely due to the practice of banks to produce credit-related information about borrowers. This information is not be easily observed by or transferred to outsiders. Slovin, Sushka and Polonchek [1993] consider whether it is the nature of the banking and client relationship that makes bank loans special. They examined borrower share price responses to the 1984 failure of Continental Illinois Bank and Trust Company, the largest in the U.S. to that date. Their study found significantly negative abnormal returns (-4.2%) to borrower shares. That is, clients of the failed bank lost significant share value from the failure of their bank. This finding suggests that the bank's failure led to the destruction of some intangible asset held by its client firms. This lost intangible asset appears to have been important bank- client relationships and the value of information shared by firms with their failed banker.

Recall from our discussion above that banks conduct costly research as to the creditworthiness and potential profitability of their clients. When a bank fails, valuable relationships are lost and this costly research loses value. Thus, borrowers suffer share price reductions when their banking relationships erode due to bank failure.

### What Happens when Banks Fail en Masse?

There does seem to be a consensus in the empirical literature that bank loans are special relative to those made in capital markets (e.g., bonds). For example, Bernanke [1983] argues that the failure of banks to engage in their normal credit intermediation services was a key

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<sup>3</sup> Repurchase agreement (repo) is a marketable security issued by a financial institution acknowledging the sale of assets and a subsequent agreement to repurchase at a higher price in the near term. This agreement is essentially the same as a collateralized short-term loan. Defaulting on a repo agreement is not settled in a bankruptcy process; the holder of the collateralized instruments simply maintains their ownership, simply walking away from the remainder of the transaction, keeping the portfolio of securities.

contributor to the 1930-33 real output crunch. Bernanke argued that the role of the banking system in reducing Depression-era output cannot be fully explained by the much smaller proportional declines in money supply as argued by Friedman and Schwartz (1963). Bank failures to provide credit amplified other factors, that, in turn, led to contracting real output. According to Bernanke, the two major contributors to the financial collapse were the loss of confidence in financial institutions, particularly commercial banks, and the pervasive insolvency of debtors.<sup>4</sup> Bernanke argued that, "because markets for financial claims are incomplete, intermediation between some classes of borrowers and lenders requires nontrivial market-making and information gathering services." When banks failed to provide these information-provision services in the 1930s, lending and capital provision in the economy diminished and the economy faltered. We will discuss this issue and bank failure more generally in much greater detail in a subsequent chapter.

#### **D. Corporate Bank Lending Activities**

The core business of commercial banking is accepting deposits and making loans. Corporate banks accept business deposit accounts for checking and savings purposes and lend money to fund business activities and growth. They pay interest on deposits and receive interest on loans. The difference between the two interest amounts or rates is called the *spread*, which might cover the administrative expenses of bank operations and provide a profit margin. As we will discuss later in the chapter, corporate banks also provide a variety of other services to their clients.

Bank deposits, key sources of funding to banks, are reflected under Liabilities in Table 2, which lists the sum of assets and liabilities for all domestically chartered U.S. commercial banks. Notice that the bulk of liabilities, or bank sources of funding, is listed under Other deposits. These deposits are primarily demand deposits, very short-term by definition, also known as checking accounts, essential to the operations of most businesses. These deposits can be withdrawn at any time, a key source of risk to commercial banks. Other major sources of funding include Large time deposits (including CDs), Borrowings and Residual (shareholder equity). We will discuss bank sources of funds in greater detail in a later chapter.

#### Variations of Corporate Loans

The extensions of loans and other credit products are the major activities and sources of profit and risk for most banks. The assets of the bank reflect uses of banks' funds. On Table 2, we see that primary uses of U.S. bank funding include Loans and leases in bank credit, Securities in bank credit, Cash assets and Other assets, including trading assets. Direct corporate bank lending occurs in a variety of forms, not necessarily mutually exclusive:

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<sup>4</sup> Bernanke estimated short-run output equations using monetary variables, and then evaluated whether adding (non-monetary) proxies for the financial crisis improved the performance of these equations. He found that adding proxies for the financial crisis, such as suspended bank deposits (delaying access to depositor funds), failing business liabilities, differentials between BAA corporate bond yields and yields on U.S. government monetary variables, that these proxies improved the predictive ability of these output equations.

<b>Assets</b>	<b>Oct. 2019</b>
Securities in bank credit <sup>1</sup>	3,517.0
Loans and leases in bank credit <sup>2</sup>	9,183.0
Cash assets <sup>3</sup>	1,096.4
Total federal funds sold and reverse Repo's <sup>4</sup>	361.2
Loans to commercial banks	5.3
Other assets including trading assets <sup>5</sup>	1,354.7
<b>Total assets</b>	<b>15,406.3</b>
<b>Liabilities</b>	
Large time deposits	1,072.3
Other deposits	10,945.2
Borrowings	1,096.6
Net due to related foreign offices	-200.3
Other liabilities including trading liabilities <sup>6</sup>	533.8
<b>Total liabilities</b>	<b>13,447.5</b>
<b>Residual (assets less liabilities)</b>	<b>1,958.8</b>
<i>Memoranda</i>	
Net unrealized gains on available-for-sale securities	18.3
U.S. Treasury and agency securities, MBS	12.5

1. Includes securities in bank credit such as Treasury and agency securities, mortgage-backed securities and other securities.

2. Includes commercial and industrial loans, real estate loans, consumer loans and other loans.

3. Includes vault cash, cash items in process of collection, balances due from depository institutions, and balances due from Federal Reserve Banks.

4. Includes total federal funds sold, and reverse Repo's.

5. Includes other real estate and fixed assets owned; investments in unconsolidated subsidiaries; intangible assets; direct and indirect investments in real estate ventures; accounts receivable; derivative contracts; and other assets. Excludes most securities held in trading accounts.

6. Includes subordinated notes and debentures; net deferred tax liabilities; interest and other expenses accrued and unpaid; accounts payable; liabilities for short positions; derivative contracts with a negative fair value; other trading liabilities; and other liabilities.

October, 2019, Not seasonally adjusted, billions of dollars; Adapted from the Board of Governors of the Federal Reserve System, November, 2012, p.8. Data, methodology, explanations and details are available at <<https://www.federalreserve.gov/releases/h8/current/default.htm#fn1>> Accessed 2019/11/16.

**Table 2: Assets and Liabilities of Domestically Chartered U.S. Commercial Banks**

- *Term loans* provide financing with fixed or variable-rate repayment plans, frequently for equipment, long-term working capital (to fund everyday operations), etc. Loans can be either amortized (repaid in equal periodic installments) or interest only with balloon payment at maturity covering the principal. This distinction will be discussed shortly.
- *Commercial real estate lending* provides financing for commercial land and buildings. Most commercial real estate loans are mortgages secured by liens on property and buildings.
- *Financial leases* provide the lessee the use of assets for extended periods of time, usually for more than one year. While technically not lending products, financial leases are an important alternative source of long-term financing to many firms. For example, a firm

may wish to lease a machine by making regular lease payments to a bank for 20 years rather than borrow a large sum of money to purchase and use the machine for 20 years.

- *Loan syndication* enables lenders to spread their capital commitments and lending risks to other banks. A syndicated loan, usually with a large denomination, is made by a group of banks and perhaps other institutions to a single borrower. Syndicated loans make it easier for banks to participate in large high-profile deals and gain access to markets outside their norms, while enabling the borrower to efficiently work directly with only a single lender. The *lead* (or *arranging*) *bank* manages the syndicate and is responsible to the borrower, the loan might be underwritten by the *underwriting bank* (who takes the credit risks) and all banks in the syndicate are *participating banks*. An *agent* works with the borrower and all participating banks to ensure their rights are honored and their responsibilities are fulfilled and a *trustee* holds or monitors any assets that are pledged by the borrower. Syndicated loans tend to be more flexible than bond issues and have positive reputation effects.
- *Working capital loans* enable their clients to expand their cash, meet daily expenses, and expand inventories and other working capital accounts in order to fulfill their growth objectives. Most firms have irregularities or seasonalities in cash flows, growth occurs with inconsistent spurts and opportunities arise at unpredictable times. There are a variety of types of working capital financing arrangements, typically unsecured, including supply chain finance, which supports the firms production of saleable goods.
- *Lines of credit*, when drawn upon, serve as short-term sources of cash, such as meeting payrolls or paying suppliers. A line of credit reflects funds for which approval has already been made available for borrowing. Borrowing from the credit line is not required, but is available regardless. An overdraft line of credit, enables a firm to spend more money than is deposited in its checking account, resulting in negative balances.

## Fixed- and Variable-Rate Loans

### *Fixed Rate Loans*

A fixed-rate loan provides for the loan interest rate to remain constant throughout the life of the loan. The borrower will know exactly how much interest will be paid and the size of each periodic payment. There are three typical procedures for determining loan payment schedules for fixed-rate loans:

1. *Balloon payment* schedule: Payments towards interest are typically made during the life of such a loan, with a large payment at maturity covering the loan principal plus any unpaid interest.
2. *Sinking-fund amortization*: while somewhat less common, the payments are structured so that the borrower makes regular payments of a predetermined amount of the loan principal as well as interest on the outstanding balance of the loan. Payments on such loans start out larger, but are reduced as the principal balance and payments towards interest are reduced.
3. *Level amortization*: When loan payments follow a level amortization schedule, loan repayments will be made in equal amounts.

Here, we illustrate the payment structure based on level amortization. Each periodic or monthly payment will be identical. A fully amortized loan will have periodic payments

calculated as follows:

$$(4.1) \quad PMT = \left[ PRIN \cdot \frac{i}{m} \right] \div \left[ 1 - \frac{1}{\left(1 + \frac{i}{m}\right)^{mn}} \right]$$

Thus, if the bank loans a sum of money equal to  $PRIN$  for  $n$  years at an annual interest rate of  $i$ , the periodic (or monthly) loan repayment will be  $PMT$ , assuming  $m$  payments per year.

Consider an example where a firm will purchase for \$600,000 a building for housing its offices with a \$100,000 down payment and a \$500,000 mortgage. This commercial real estate mortgage will be amortized over 30 years with equal monthly payments. The annual interest rate on the mortgage will be 8%. Based on this data and Equation 4.1, we calculate the monthly mortgage payment as follows:

$$PMT = \left[ \$500,000 \cdot \frac{0.08}{12} \right] \div \left[ 1 - \frac{1}{\left(1 + \frac{0.08}{12}\right)^{12 \cdot 30}} \right] = \$3,668.84$$

We calculate that the \$500,000 mortgage at a monthly interest rate of 0.00667 is paid down to zero with 360 monthly payments equal to \$3,668.84.

### *Variable-Rate Loans*

A variable-rate loan (also called an adjustable-rate loan) allows for its interest rate to revise at contractually fixed points in time during the life of the loan. Typically, the revised rate is defined by some market or benchmark rate (discussed below). The loan contract defines when the loan interest rate can change and how the revised rate will be determined. Essentially, when the reset date arrives, the lending institution will reset the loan rate as per the benchmark, and payments will revise until the next reset date. Typically, the loan contract will provide that the reset rate will change in the same direction as the contractual benchmark rate.

Banks tend to be largely funded with short-term deposits. This means that their liability interest rates vary with market interest rates, causing profit variability (shareholder risk) to increase more when they extend more with long-term fixed-rate loans. Thus, banks are more likely to be willing to extend variable interest rate loans, especially in volatile interest rate markets. This preference for variable interest rates loans may well be reflected in lower interest rates imposed on variable interest rate borrowers.

Now, we illustrate the payment structure for our example above based on a variable rate, with each period using level amortization. Suppose that the bank resets its mortgage rate after 5 years based on the revised index rate used by the bank. Again, each periodic or monthly payment will be identical within a given term in which the rate is fixed. Suppose, in our example with payment terms similar to the above, the mortgage was for \$500,000, amortized over 30 years with equal monthly payments until the interest rate is reset and an initial interest rate on the mortgage of 8%. As above, the monthly payment for the first 5 years ( $p = 60$  months of payments) will be \$3,670.22. However, suppose that the annual interest rate is reset to 6% after 5 years, and we need to calculate the monthly payments for the remaining 25 years of the loan. Our first step will be to calculate the balance of the loan remaining after 5 years ( $BAL_{60}$ ):

$$(4.2) \quad BAL_p = PRIN \frac{\left(1 + \frac{i}{m}\right)^{mn} - \left(1 + \frac{i}{m}\right)^p}{\left(1 + \frac{i}{m}\right)^{mn} - 1}$$

$$BAL_{60} = \$475,349.46 = \$500,000 \times \frac{\left(1 + \frac{.08}{12}\right)^{12 \times 30} - \left(1 + \frac{.08}{12}\right)^{60}}{\left(1 + \frac{.08}{12}\right)^{12 \times 30} - 1}$$

At the end of 5 years, we have a remaining balance of \$475,349.46. Next, we recalculate the monthly payment for the remaining 25 years of the 6% loan:

$$PMT = \left[ \$475,349.46 \cdot \frac{.06}{12} \right] \div \left[ 1 - \frac{1}{\left(1 + \frac{.06}{12}\right)^{.08 \times 25}} \right] = \$3,062.68$$

Thus, the firm's monthly payment will be \$3,062.68 until the interest rate is reset.

### Benchmark Rates and Interbank Markets

A *benchmark rate* or *reference rate* is a contractually defined market or computed rate, largely to reflect updated market interest rate conditions. Benchmark rates are used to peg interest rates on loans and price debt and derivative instruments. Frequently, the benchmark rate is calculated by some independent body primarily to reflect a particular interest rate prevailing in a current marketplace. The following introduce some of the more commonly used benchmark rates.

As we discussed in Chapter 1, generally speaking, the United States *federal funds rate* is the rate at which the excess reserves of one bank can be loaned on an uncollateralized basis to other banks for satisfaction of borrower reserve requirements. Depository institutions with excess balances in their reserve accounts can lend those balances to institutions with deficit reserve balances. These rates are negotiated, one-on-one by individual banks on individual loans at rates that draw from well-defined benchmark rates. The federal funds rate is the typical starting point for benchmarking in U.S. financial markets.

The *prime rate* is the interest rate that commercial banks charge their most creditworthy non-bank corporate customers. While the prime rate can vary among banks and customers, a consensus prime rate is regularly averaged and reported by *The Wall Street Journal's* bank survey, whose published rate is a frequently used benchmark for setting contractual rates. The prime rate typically exceeds the federal funds rate by roughly 300 basis points (3%).

A presently well-known computed benchmark, the *London Interbank Offer Rate (LIBOR)* is an interest rate benchmark that derives from a daily survey of 18 global banks conducted and compiled by the Intercontinental Exchange, the parent firm of the New York Stock Exchange. The daily survey obtains rates (for one-month, three-month, 6-month, and one-year loans) at which the banks believe they can borrow a “reasonable” number of dollars (and certain other currencies) from one another in the London interbank market. Actually, there are a number of LIBOR figures, for different maturities and currencies. LIBOR has been important because it is widely used as a benchmark for interest rates on which many loans and securities are anchored. However, its future is somewhat uncertain due to benchmark reforms and several 2012 LIBOR-related trading manipulation scandals, and might even be discontinued as early as year-end 2021.

There are a variety of alternative interest rate benchmarks. In the U.S., the *Secured*

*Overnight Financing Rate (SOFR)* has grown in importance. The Federal Reserve Bank of New York works with the U.S. Office of Financial Research to produce and publish reference rates based on overnight repurchase agreement (repo) transactions. As we will discuss in a later chapter, a *repurchase agreement (repo)* is a marketable security issued by a financial institution acknowledging the sale of assets and a subsequent agreement to repurchase at a higher price in the near term. This repurchase agreement is essentially the same as a collateralized short-term loan. The daily SOFR is based on a volume-weighted median rate from transactions in the Treasury repurchase market, and reflects circumstances where credit, liquidity and other risks are minimal. Over the past decade, there has been a widespread migration in contracts and by institutions from use of LIBOR as a benchmark towards the SOFR.

The *Euro Interbank Offered Rate (Euribor)* is a reference one-year (though other rates are collected for other lending terms) interbank rate averaged from a survey of panel major European banks. Its survey and averaging procedures are somewhat similar to those used for LIBOR.

In recent years, there has been a growing use of the *Euro Short-Term Rate (€STR)*, which reflects the wholesale euro unsecured overnight borrowing costs of Euro area banks. The €STR is calculated as the weighted average of individual transactions as reported by 50 credit institutions everyday to the ECB. For many interbank and derivative applications, the €STR replaced the Eonia (the 1-day Euribor rate). In London Interbank markets, the *Sterling Overnight Index Average (SONIA)* has been increasing in usage relative to the LIBOR. Analogous interest rate benchmarks exist throughout the world.

Interbank borrowing and lending is an essential part of bank treasury operations in which banks lend to short-term to each other, often using repurchase agreements and typically overnight. Interest rate benchmarks are frequently set in these markets. These markets were major sources of short-term funding of banks through the Financial Crisis of 2008, but have diminished considerably in the decade following. We will discuss the contributions of these markets to the 2008 financial crisis and how the crisis impacted these markets in a later chapter.

### Wholesale, Warehouse and Specialized Mortgage Lending

Here, we discuss bank and other lending to other financial institutions. Of particular importance in this subsection is the market for real estate mortgages, which involve a number of types of institutions in addition to banks and thrifts. Commercial banks are particularly active in the warehouse and wholesale lending markets.

#### *Warehouse Lenders*

Many corporate banks participate in *warehouse lending*, which provide funding and credit lines for mortgage origination until mortgage originators (institutions issuing mortgages to home buyers) are able to sell the mortgages in secondary markets. Most warehouse lenders also make loans to consumer finance lenders such as Household Finance and the Money Store and other lenders, though these loans were often for mortgage purposes. A warehouse lender, a type of asset-based lender, enables banks and other mortgage originators and lenders to originate mortgages and loans without using their own capital.

The typical first step in this process is that a mortgage lender arranges for a loan extension to a prospective purchaser of a home. Just before the closing of the transaction, the mortgage originator, usually a mortgage bank or credit union, will arrange to obtain the mortgage funding from a warehouse lender to fund the home purchaser's acquisition. The home purchase is



executed and the mortgage is issued. The mortgage originator then sells the mortgage on secondary markets as soon as possible and returns the mortgage capital to the warehouse lender, or, instead, perhaps uses the sale proceeds to fund another mortgage. In many respects, warehouse lending is similar to accounts receivables financing in that the funding is short-term and collateralized with third-party debt. Many banks and mortgage banks maintain lines of credit with warehouse lenders, enabling them to maintain mortgage funding flexibility.

Since most mortgage banks (discussed shortly) have very limited equity capital and do not accept deposits, proceeds from these secondary market mortgage sales are essential to their funding. Many well-known global banks such as Bank of America, JPMorgan Chase and Citibank serve as warehouse lenders as do some larger mortgage banks such as PennyMac Financial Services. In addition, there are a number of specialty warehouse lenders such as GBC Funding and community-based banks engaged in warehouse lending.

### *Wholesale Lenders*

Retail lenders directly interact with their borrowing clients, marketing their services to clients, negotiating loans, etc. Wholesale lenders make loans without actually engaging with their borrowing clients. In the real estate industry, wholesale lenders rely on *mortgage brokers*, agents who serve prospective purchasers of real estate, acting as conduits between mortgage borrowers and mortgage lenders. Essentially, wholesale lenders extend mortgages by using mortgage brokers instead of traditional bank loan officers in the direct employ of the bank to engage borrowing clients. Mortgages extended by wholesale lenders name the wholesale lender on all the loan documents; the mortgage broker merely acts as an agent. The most active wholesale lenders are major commercial banks such as Wells Fargo, JPMorgan Chase and Bank of America that engage in both wholesale and retail lending. Larger mortgage banks such as Quicken Loans and loanDepot are sometimes also active in wholesale lending as are wholesale lending specialists such as United Wholesale Mortgage and American Financial Resources Inc., (AFR). Unlike dedicated warehouse lenders, wholesale lenders sell mortgages in secondary mortgage markets as do mortgage brokers.

### *Mortgage Banks*

Conventional depository institutions such as commercial banks and thrift institutions are certainly major originators of mortgages, and have funding advantages due to their access to federally insured deposits. However, there are other players in the mortgage origination game, including *mortgage banks*, non-depository financial institutions that specialize in mortgage origination.

Mortgage banks, which are state chartered financial institutions and function primarily under state regulations, originate as much as 54% of U.S. 1-4 family residential mortgages (Mortgage Bankers Association (2019)). Mortgage banks have existed in the U.S. since the 1870s and make extensive use of short-term credit facilities provided by a variety of other financial institutions, in this context, often referred to as warehouse lenders. These facilities provide funding for mortgage origination until mortgage bankers are able to sell the mortgages in secondary markets. However, short-term credit crunches can lead to warehouse lenders to withdraw or tighten credit, subjecting mortgage banks to substantial liquidity and solvency risks. Since most mortgage banks have very limited equity capital and do not accept deposits, proceeds from these secondary market mortgage sales are essential to the funding of additional mortgages. This reliance leaves mortgage banks are vulnerable to secondary market mortgage value

reductions arising from interest rate increases.

### *Mortgage Brokers*

Mortgage brokers are licensed by states and/or the Nationwide Multi-State Licensing System and Registry to deliver borrowers to banks on a commission basis, with commissions usually reflected in marked-up interest rates. Mortgage brokers engage clients on behalf of wholesale lenders through their marketing efforts, by taking loan applications from prospective borrowers and by processing loans while wholesale lenders actually provide the capital for mortgage lending. Most mortgage brokers are independent contractors who work with multiple wholesale lenders, and often provide for a wider range of mortgage choices for their clients. Mortgage brokers can be particularly helpful to prospective home buyers who don't have established relationships with banks or who have low credit ratings.

### **E. Other Corporate Banking Activities**

By nature of their business, banks employ individuals with significant financial and legal expertise, and must maintain high levels of integrity to preserve their reputations. In addition, close banking relationships with clients afford banks detailed inside information about their clients, which they can use to provide a variety of services on behalf of clients. These bank qualities enable banks to provide their corporate clients with a variety of other non-lending financial services. For example, such expertise, reputations and close relationships enable banks to facilitate their client relationship-building efforts and enable banks to serve as fiduciaries and custodians for the assets of clients. Payment processing services, such ACH-related services and others that we discussed in Chapter 1 are an integral part of services provided by banks to their corporate clients.

### Trade Finance

Corporations involved in international trade (e.g., importers and exporters) face a variety of risks of less concern to firms operating domestically. Among the special risks assumed with international operations are those associated with exposure to exchange rate and interest rate fluctuations, unanticipated business or operational conditions affecting cash flows, uncertainties in economic, regulatory or political events occur affecting the counterparty in trade, geographical risk such as natural disasters, credit risk, etc.

Other concerns necessitating trade finance services includes extended waits for cash flows associated with exports, deliveries, money tied up in costs of goods sold. These special risks and other concerns require special care on the part of firms doing business internationally. Trade finance is concerned with the financial instruments and processes that are used to facilitate international trade and commerce. Trade finance typically inserts an intermediary or third party to a transaction or relationship, frequently a bank, to facilitate the payment delivery processes and to reduce transaction risk. We will discuss trade finance tools in this and the following subsections.

### *Letters of Credit*

Buyers and sellers regularly have opportunities to execute transactions with unknown counterparties. Such transactions usually impose risks that can often be resolved by banks. By servicing their own business clients, banks are privy to significant private information about client business stability and credit-worthiness. A bank can exploit this private information on

behalf of client by issuing the client a *letter of credit*, which serves as guarantee for payments to be made to a specified entity on a given date under defined conditions. The conditions are set forth by the counterparties (buyer and seller) to the transaction in a sales agreement that is distinct from the letter of credit. With this letter of credit, for example, a buyer of a service can deliver a bank-guarantee of payment to a counterparty, even though the buyer itself might or might not be well-known to the seller. The buyer's bank is likely to be well-known to the seller or to the seller's bank and, the buyer's bank, based on its private information about the buyer along with a fee paid by the buyer, would be willing to accept the credit risk of the buyer's obligation.

Letters are especially useful in the conduct of international transactions in which counterparties to trade may not know one another well. This is particularly true in international settings. As we will discuss later, many international transactions will involve letters of credit issued by two banks, each representing one of the counterparties to the transaction.

A *standby letter of credit* is issued by a bank to serve as a backup guarantee for payments in the event of a third party's failure to make said payments or deliver associated goods or services. Whereas a letter of credit typically provides the payment to be made by the issuing bank once contract conditions are fulfilled, the standby letter of credit provides for the issuing bank to make payments only after its client fails to do so or otherwise fails to fulfill its obligations. Thus, a standby letter of credit is an instrument of last resort, to be acted on if the bank's client fails to fulfill its obligations. *Financial standby letters of credit* ensure that financial or monetary contractual obligations are fulfilled; *performance standby letters of credit* ensure the nonfinancial contractual obligations (including delivery of goods and services) are fulfilled.

Banks that issue letters of credit assume the credit risk associated with loan guarantees. Banks receive fees from their clients for the assumption of this risk, normally as a percentage of the nominal payment to deliver (between 0.5% and 10% is typical), and an increasing function of the credit risk borne by the bank. A *confirmed letter of credit* provides for an additional layer of guarantee; should the buyer's bank fail to fulfill the terms of the letter, the buyer's bank (or, perhaps some other bank as designated by the letter) will do so.

Letters of credit can be rather complicated, particularly when used in international trade. Experienced bank officers should be expected to have the practical and legal expertise to properly specify the terms of the letter and to ensure that the letter can be enforced under relevant legal systems. We will discuss letters of credit further in Chapter 6.

#### *Illustration: The International Bank as the Guarantor*

Consider the following example in which Fred's Blue Jeans, U.S. clothing manufacturer agrees to sell 10,000 pairs of blue jeans for \$100,000 to Sophia Fashions, a Bulgarian clothing distributor. The U.S. and Bulgarian firms have not previously done business, thus there is some concern on the parts of both parties as to whether its counterparty will honor its contractual obligation. However, each of the two firms works with its own bank, and the two counterpart banks are likely to have some familiarity with one another.

In the contract of sale, the two counterparties agreed to arrange for irrevocable letters of credit from their banks to ensure contract fulfillment. Thus, Sophia, the Bulgarian distributor approaches the corporate or international trade departments of its bank, say, United Bulgarian Bank, and arranges for a letter of credit to be delivered to Fred's. This letter of credit, issued by United Bulgarian Bank for a fee from Sophia, is essentially a promise that the bank will pay \$100,000 on behalf of its client, Sophia. United Bulgarian Bank sends the letter of credit to

Fred's bank, Bank of Boston.

Similarly, Fred's approaches the Bank of Boston to arrange for a letter of credit to ensure its delivery of clothing of the agreed upon quality and quantity (or, a comparable amount of cash in the event of a failure to deliver the clothing). As a valued client of Bank of Boston, and upon Fred's agreement to pay a fee, the letter of credit is issued on behalf of Fred's.

After the Bank of Boston has received Sophia's letter of credit from United Bulgarian Bank, Fred's ships the blue jeans to Bulgaria, where, after an inspection of the shipment, a *bill of lading* (proving receipt of shipment) is issued to United Bulgarian Bank. This bill of lading transfers ownership of the shipment to United Bulgarian Bank and a *sight draft* requesting payment is issued by Fred's. Payment is made to Fred's by the Bank of Boston and United Bulgarian Bank transfers the title of the shipment to Sophia. The Bank of Boston collects payment for the shipment from the Bank of Bulgaria, which, in turn, collects from Sophia payment for the shipment and the fee for the letter.

### *Foreign Exchange Services*

*Foreign exchange (FX)* trading refers to trading one country's (or currency area's) money for that of another country (or area). Among the traditional bank services, banks convert foreign currencies to local currencies, make payments in either foreign currencies or bank transfers and trade currencies on behalf of clients. By trade volume, banks are the most significant participants in currency markets. Trading currencies in spot and forward markets through electronic networks and currency derivative contracts in exchange markets, banks execute transactions on their own trading accounts (proprietary trading) as well as on behalf of their clients (agency trading). Futures and derivative contract trading is also used to help manage client exposure to foreign exchange risks. Banks tend to employ well-qualified traders to act on behalf of clients due to the banks' own proprietary trading activities.

### Treasury and Cash Management Services

Banks are a key source of treasury and cash management products and services to their corporate clients. Banks aid corporate treasury departments in the management of their cash and liquidity as well as their risk management, including market risk (market prices), credit risk, operational risk (risks associated with record-keeping, errors and fraud) and liquidity risk (risk of running out of cash). The term treasury management often is used synonymously with cash management; sometimes it is used in a more general context, including all of working capital management, risk management and relationships with financial institutions.

### *Cash Management*

While cash is essential to the operations of any firm, it tends to be a seemingly unproductive asset in terms of direct profitability. The primary cash management goal for most firms is to maintain as low an investment in cash as is possible while maintaining the firm's efficient and effective operations. Collecting, analyzing and forecasting data are key for effective cash management. Banks play important roles in all aspects of the corporate cash management function. For example, cash forecasting is complicated by seasonal, cyclical and random variabilities in cash inflows and outflows, but some banks provide services to assist their clients with cash forecasting functions.

The *float* is the difference between the firm's demand deposit account available balances and its ledger balance (book balances). The two distinct types of float are disbursement

(payments) float, typically checks written but not paid by the firm's bank, and collections (availability) float, checks received by the firm but not yet cleared by the bank. Management of float engages tactics to speed collections float and slow down disbursement float.

Many businesses receive paper checks, credit card documents and other payment forms by mail, providing them with options with respect to where the checks will be mailed and how they will be deposited into bank accounts. *Lockbox* services, often provided and administered by banks, are often located in post offices or mail drops, and can enable firms to establish suitable numbers and strategic locations of collection points (lockboxes) that can reduce collection and deposit times. Banks can record, process, deposit and invest customer payments received in lockboxes, ultimately reducing processing costs and improving near-cash returns.

*Zero balance accounts* are temporary accounts in which subsidiary or “child” accounts are created for specific purposes, but are consolidated daily after transactions have posted, with balances for each subsidiary account adjusted and funds appropriately transferred as per a set of rules to reduce overdrafts, maintain minimum balances, etc. Such structures streamline multiple account management.

### *Bill Collection*

Firms maintain accounts receivables to stimulate sales since many clients prefer to make purchases on credit. Liberal accounts receivable policy tends to result in increased sales levels. That is, firms may stimulate their sales levels by relaxing their terms of credit. However, maintenance of accounts receivable represents an opportunity cost to the firm in terms of forgone returns on other assets. Furthermore, accounts receivable represent potential bad debt losses to the firm. The firm must find the appropriate balance of these costs relative to the benefits associated with accounts receivable. This appropriate or optimal balance occurs when the marginal costs of credit policy exactly offset its marginal benefits.

In the majority of cases, the *credit instrument* evidencing the sale will simply be an *invoice*, usually indicating that the goods have been shipped and signed indicating that they have been received. The invoice will usually specify the terms of payment. For certain larger sales or when collections may be problematic, the credit instrument may be evidenced by a *promissory note*, a more formal IOU. Terms of payment for goods received or to be received can be specified in a *commercial draft*. A *sight draft* calls for immediate payment (like a check) while a *time draft* permits payment at a specified later date (like a post-dated check). When the buyer accepts the time draft, it is called a *trade acceptance* and can either be maintained by the seller or sold, usually to a bank. Banks frequently purchase trade acceptances and re-sell them with payment guarantees. When banks guarantee (accept) and market trade acceptances, they become known as *bankers' acceptances* and are frequently carried in firms' marketable securities accounts.

### *Factoring and Forfeiting*

*Factoring* occurs when an exporter sells a set of unpaid invoices to a *factor* at a discount, which can be referred to as a commission or haircut. The factor, a bank or other financial institution, awaits payment from the buyer or importer. This enables the seller or exporter to accelerate its cash flow from the sales, reinvest the cash into additional saleable products and relieves the seller from the risk of default if the invoices are sold without recourse (with recourse implies that the seller agrees to reimburse the factor in the event of debt nonpayment). The selling firm is further relieved from collection and bookkeeping functions related to the credit

sale. In some instances, in order to raise cash necessary to complete the sale and delivery, the seller or exporter requires the immediate payment; immediate payment from the factor can enable the sale to be executed. In turn, the factor makes a profit from the discount when the buyer or importer pays the invoice, or, in some cases, upon the sale of the account obligations. Factoring is used in both domestic and international trade finance, with costs paid by the seller or exporter.

*Forfaiting* occurs when an exporter surrenders its right to a *forfaiter* to collect on a set of negotiable or securitized instruments evidencing credit sales in exchange for immediate payment. Forfaiting is often guaranteed (*avalled*) by the importer's bank and evidenced by an instrument such as a bill of exchange, promissory note or letter of credit, which can be sold in secondary markets, further enhancing liquidity to the forfaiter, typically a bank or other financial institution. Forfaiting costs are normally paid by the buyer or importer. Forfaiting is used only in international trade finance and typically is used for debts of medium- and long-term maturities (>90 days).

### Fiduciary Services

A *fiduciary* maintains a legal or ethical relationship of trust with another, typically managing or safekeeping assets and acting in the best interests of the client. The regulatory environment and intense scrutiny faced by banks contributes to their ability to provide an array of reliable fiduciary services. Asset management, custodial and trust services are among the more important fiduciary services provided by banks.

The *Prudent Man Rule*, historically rooted in English common law, provides for the proper investment behavior of a trustee. This "prudent man" standard was articulated in an 1830 Massachusetts court opinion, in which Justice Samuel Putnam, declared that a trustee:<sup>5</sup>

"shall conduct himself faithfully and exercise a sound discretion. He is to observe how men of prudence, discretion and intelligence manage their own affairs, not in regard to speculation, but in regard to the permanent disposition of their funds, considering the probable income, as well as the probable safety of the capital to be invested."

This fiduciary standard is more stringent than the *suitability standard*, which holds that the professional make recommendations that are consistent with the needs and preferences of the client. In this scenario, recommendations must be suitable for the client, but the primary loyalty of the recommender is to her employer rather than to the client. The fiduciary standard holds that the professional put the interests of the client ahead of his own. In the U.S., Registered Investment Advisors are required under the Investment Advisors Act of 1940 to follow the fiduciary standard. Regardless, investors should always ask their advisors about the standards their advisors must follow.

### *Asset Management and Advisory Services*

Many banks will offer a variety of asset and investment management and advisory services, including customized consulting investment policy guidance, direct investment management, performance reporting, investment committee guidance and employee education for pension funds, 401(k) plans, alternative investments, etc. For example, some banks can assist corporate clients with the design of 401(k) and other retirement plans, regulatory compliance,

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<sup>5</sup> Harvard College v. Amory (1830): 9 Pick. (Sup. Jud. Ct. Mass. 26 Mass.) 446, p. 461.

investment management, performance evaluation and benchmarking. Many banks employ investment teams with portfolio managers and analysts from various investment sectors for investing on behalf of clients.

### *Custodial Services*

Until a few decades ago, a custodian was a company that maintained physical possession of client assets, in particular, paper certificates evidencing stock ownership or other claims. While central depository institutions hold actual paper certificates when they exist (see Chapter 1), bank custodians play a number of important roles in securities markets. Bank custodians process and settle security transactions on behalf of corporate and financial institution clients, hold and safekeep those securities (evidenced by electronic records), maintain these records, receive dividends, interest and other payments on behalf of clients, withhold tax claims as required by law, and engage in corporate action processing (e.g., tendering shares in a tender offer) and proxy voting services. Assets under custody maintained by the three largest bank custodians in the world were, as of year-end 2018: BNY Mellon \$26.2 trillion, JPMorganChase \$23.2 trillion and State Street Corp \$23.2 trillion (Federal Financial Institutions Examination Council [2018]). Banks are ideal providers of custodial services because of their own involvement in securities transactions, their financial expertise, their reputations for stability and conservative operations and the robust prudential regulation and oversight to which they are subjected.

Custodial services produce fee-based revenues. Custodians make no decisions concerning transactions; they merely act as agents, recording those transactions on behalf of their institutional clients (e.g., mutual funds or brokerage firms). Since many financial institutions engage in repurchase agreements and lend securities for short-selling and other purposes, bank custodians provide services directed towards these lending services. These services include record-keeping for loaned securities and associated collateral. For international transactions, custodians often need to engage in FX trading, and assume certain risks with such transactions.

The primary risk to custodians is operational risk, which is the failure to effectively administer the successful execution of their huge volumes of operational and administrative processes. These operational risks largely stem from record-keeping errors, errors in processing transactions, inadequate internal processes, lapses in regulatory compliance and the loss or corruption of client data (The Clearing House [2016]). With respect to securities lending, custodians face risks with respect to borrower default.

### *Bank Trusts*

Many banks maintain trust departments or own separate trust subsidiaries, often providing them important streams of fee-based income. Trust services are useful to banks, allowing them to diversify away somewhat from interest-based income and draw in high net worth customers to their array of services. While trusts are most often created for individuals and families, they are also useful for businesses, especially smaller and family businesses, for tax reduction and asset and beneficiary protection purposes. Corporate trust services can serve bond issuers with their administration of the bonds, distributing interest payments to bondholders and representing bondholders, ensuring that the issuer adheres to the covenants of the bond indenture.

A *trust* is a contractual agreement whereby a *grantor* (settler or donor) designates an entity known as a *trustee* to accept, hold and manage property as a custodian for the benefit of

one or more beneficiaries. Through their trust departments, banks regularly act as fiduciaries for clients on a fee basis, investing billions of dollars on behalf of trust beneficiaries. Most banks will offer similar services on behalf of estates, typically a legal entity created as the result of a person's death, holding property of the deceased person. An estate can also be that of a bankrupted firm or other bankrupted institution. In addition, as mentioned above, many banks will also manage pension fund assets.

Maintenance of additional safety and control standards is essential to trust departments. For example, trust assets are entirely segregated from bank assets. Assets held in trust cannot be used for collateral or counted towards reserve requirements. Safety of client assets requires that no single employee have the ability to authorize, execute, and review the processing of custody assets, including transactions and transfers. Such dual control procedures ensure that no single person is able to execute all phases of a transaction or to transfer client assets. Bank trust departments segregate and often rotate the duties of their employees who work in trust, custody and investment management operations. Under such control regimes, it is difficult for single employees or even groups of employees to embezzle funds.

## **F. International Banks and Banking Offices**

Historically, providing exchange, letters of credit and other international services have been an important component of merchant and commercial banking since Medieval times. Most corporate banks now accept deposits and lend to clients around the world and provide a variety of essential international services to their clients. Most larger banks compete to provide such international services, and can maintain worldwide operations, acting as international banks.

### International Banks

An international bank might be said to be one that has foreign branches or subsidiaries, accepts/makes foreign currency deposits/loans, has customers from other nationalities or some combination thereof. The world's major global banking centers are New York, Hong Kong, Shanghai, London, Beijing and Singapore (Yeandle and Wardle [2019], Table 15). The primary functions of international banks are to serve firms conducting business on an international scale. Most of the largest banks seek deposits and lend on a national or international basis. Their business is frequently geared towards larger corporate and other institutional clients. Many banks provide investment management services for fiduciary (trust) clients. Bank trust departments represent a substantial fraction of U.S. institutionally managed funds. Among the larger bank trust departments are those at JPMorgan Chase and Deutschebank (which took over Bankers Trust in the U.S.). In addition to the services described above, commercial banks operating internationally serve firms and other institutions that conduct business on an international scale. Services provided by international banks are likely to include the following:

1. Financing of imports and exports for clients, and guaranteeing delivery of goods and services as well as payments.
2. Participation in Eurocurrency and Eurobond markets on behalf of clients needing to raise or lend money
3. Trading foreign exchange and related derivative instruments on behalf of clients
4. Provision of advice, consulting and information to clients in the global setting
5. Participation in international loan syndications
6. Provision of international cash management services for clients



7. Providing loans and accepting deposits
8. Providing factor services by purchasing at a discount the accounts receivable of exporters and collecting the accounts themselves. Such transactions free exporters from bearing the risks and costs associated with collections and enable them to concentrate on their core areas of operation.

As indicated above, among the primary functions of international banks is to facilitate imports and exports. International trade is complicated by the fact that different countries have different currencies, laws, customs and economic systems. Trade is further complicated by the fact that participants in various countries simply do not know each other. Because of these differences and lack of information, it is often convenient to work with a bank when executing transactions with a counterparty in another country. Banks' knowledge regarding their own clients and of other banks has enabled the commercial banking industry to dominate world trade financing. Table 4 lists the world's largest international banks as of October, 2019.

Notice from Table 4 that no U.S. bank was ranked in the top five globally. An important reason for this is that U.S. banks report the net levels of derivative instruments on their balance sheets as per Generally Accepted Accounting Principles (GAAP), while much of the rest of the world reports gross levels of derivative instruments as per International Financial Reporting Standards (IFRS). With consistency of reporting standards, JPMorgan Chase and Bank of America would have ranked first and second on the global list.

<b>Rank</b>	<b>Bank Name</b>	<b>Country</b>	<b>Total Assets (US\$ billions)</b>
1	Industrial & Commercial Bank of China	China	3,912.56
2	China Construction Bank Corp. (CICHIY)	China	3,382.42
3	Agricultural Bank of China (ACGBY)	China	3,293.10
4	Bank of China	China	3,241.97
5	Mitsubishi UFJ Financial Group (MUFG)	Japan	2,846.07
6	JP Morgan Chase & Co (JPM)	USA	2,727.38
7	HSBC Holdings (HSBC)	UK	2,658.98
8	Bank of America (BAC)	USA	2,395.89
9	China Development Bank (CDB)	China	2,356.62
10	BNP Paribas	France	2,332.68
11	Credit Agricole	France	2,221.13
12	Citigroup (C)	USA	1,988.23
13	Wells Fargo & Co (WFC)	USA	1,923.39
14	Sumitomo Mitsui Financial Group (SMFG)	Japan	1,861.61
15	Mizuho Financial Group (MFG)	Japan	1,845.18
16	Banco Santander (SAN)	Spain	1,699.60
17	Deutsche Bank (DB)	Germany	1,614.17
18	Barclays (BCS)	UK	1,585.04
19	Societe Generale	France	1,579.39
20	Groupe BPCE	France	1,521.57

**Table 4: The 20 Largest International Banks:** Total assets as of October 20, 2019 or shortly before according to Relbanks.com.

## Types of Foreign International Banking Offices

International banks can normally choose to maintain a number of types of offices in the countries in which they choose to operate. The types of facilities that banks choose to open may be affected by the size of the institution, competitive conditions, the regulatory environment, the types of services in which they specialize, etc. Among these types of offices are:

1. *Branch banks*: A fully operational branch established in the host country without its own separate charter. Branch banks typically provide a full range of services and often compete on a local level with banks in the host country. The parent bank is subject to branch obligations. Branch banks enable parent's maximum control over their operations. Many countries do not permit branches of foreign banks. Branch banks are subject to regulations of both the home of its parent and the host country of the branch.
2. *Correspondent Bank*: Host country bank providing various services (accepting drafts, honoring standby letters of credit [SLC's], etc.) on behalf of a home bank. Correspondent bank relationships are intended to enable banks to service their multinational clients at a reduced cost.
3. *Representative Office*: Local office established by home bank providing information, advice and contacts for the home bank and facilitating relationships between clients and correspondent banks.
4. *Banking subsidiaries*: Separately incorporated institution controlled owned by the parent. Often subsidiaries are local banks acquired by parent banks. May have greater access to the local community than branch offices.
5. *Affiliates*: Partly owned locally incorporated bank which often forms from a joint venture of consortium. Affiliate banks are not usually fully controlled by their foreign parents.
6. *International Banking Facility*: Set of accounting entities of an American Bank accepting only foreign deposits not subject to reserve requirements, Reg.Q or FDIC premiums or coverage. Intended to compete against the Eurocurrency markets and to compete with offshore banking facilities.
7. *Edge Act and (state chartered) Agreement Corporations*: subsidiaries of U.S. banks that engage in international banking activities. May take equity positions and undertake other activities normally not permitted in U.S. banks. These subsidiaries are often intended to facilitate and finance trade, but have declined in importance as U.S. restrictions on international banking have been eased.
8. *Offshore banking center*: Branch or subsidiary of a parent bank operating in country permitting external accounts beyond the normal economic activity of that country. Such banks are normally free from host country regulations affect reserve requirements, disclosure, taxes, etc. The IMF recognizes the Bahamas, Bahrain, the Cayman Islands, the Netherlands Antilles, Panama, Hong Kong and Singapore as major offshore banking centers.

## Exercises

1. A few studies have suggested that U.S. thrift institutions, with a few notable exceptions such as Washington Mutual and IndyMac Bank, and that European savings banks and cooperative banks, failed at lower rates than did commercial banks during the financial crisis of 2008-09. Why might thrift, savings banks and cooperative institutions maintain policies that render them more vulnerable to the consequences of risk-taking activities?
2. Why are banks such essential institutions to the world economy?
3. A corporation needing to borrow money can turn to a commercial bank to negotiate a "private placement" or loan evidenced by a promissory note. On the other hand, if the borrowing corporation is large enough, it can approach an investment bank to issue a "public placement;" that is, to issue bonds to the general public to raise money.
  - a. What are the advantages of the private placement of a promissory note with a bank relative to the public placement of securities?
  - b. What are the disadvantages of the private placement of a promissory note with a bank relative to the public placement of securities?
4. What is the primary difference between a warehouse lender and a wholesale lender?
5. An annuity is a series of identical cash flows paid at equal intervals. The present value  $PVA$  of an  $n$ -year annuity with periodic cash flows  $CF$  can be valued with the following expression:  $PVA = CF[(1+i)^{-1} + (1+i)^{-2} + \dots + (1+i)^{-n}]$ , where  $i$  is the periodic interest or discount rate.
  - a. When  $n$  is large, the present value annuity expression offered above involves many repetitive calculations. Demonstrate how the following more computationally efficient present value annuity expression is derived using a geometric expansion from the expression above:  $PVA = \frac{CF}{i} \left[ 1 - \frac{1}{(1+i)^n} \right]$ .
  - b. Suppose that the present value annuity expression in part a applies in a scenario with a single annual payment each year. Show how to adapt this expression to 12 monthly payments ( $m = 12$ ) each year.
  - c. Equation 4.1 in the text depicts the monthly ( $m = 12$ ) payment associated with an amortized loan with initial value equal to the loan principal ( $PRIN$ ). Demonstrate how to derive this expression from the derived in part b above.
6. Suppose that a bank were to extend a \$865,895 5-year real estate mortgage to a corporation at an annual fixed interest rate of 5%. The loan will be fully amortized, with payments at the end of each year.
  - a. Calculate the corporation's annual payment on the mortgage.
  - b. Prepare an amortization table for the mortgage, depicting the principal at the start of each year, the total payment for the year, the payment towards interest that year and the loan balance at the end of the year.
  - c. Suppose that the mortgage were a 5-year variable rate mortgage instead of a fixed-rate mortgage. Further suppose that the reset point is the start of the 4th year, and a lower benchmark rate (the SOFR dropped to 0.03) caused the mortgage rate to drop to 4% (the reset rate was defined to be SOFR + 1%). What would be the revised payment on the loan

for years 4 and 5, assuming that the loan will be fully amortized from the start of the fourth year?

- d. Re-calculate last two lines of the amortization table from part b based on the reset interest rate of 4% from part c.

7. Suppose that a borrower will purchase for \$1,200,000 equipment with a \$200,000 down payment and a \$1,000,000 loan. The loan will be amortized over 10 years with equal monthly payments. The annual interest rate on the loan will be 5%.

- a. Calculate the monthly loan payment.
- b. What is the balance of the loan after 5 years?
- c. Suppose instead that the bank will extend a variable rate loan in which it resets its rate after 5 years. Again, each periodic or monthly payment will be identical within a given term in which the rate is fixed. Calculate the loan payment for the 5 remaining years of the loan if the interest rate is reset at 3%.

8. Why might the SOFR be a superior reference rate for variable-rate loans and derivative instruments than the LIBOR?

9. A firm's checking account initially shows a balance of \$22,500. The firm writes a check for \$2,500 and deposits another check for \$11,000 into its account.

- a. What is the firm's initial ledger balance in the checking account before the checks?
- b. What is the firm's ending ledger balance in the checking account after the checks are written and deposited?
- c. What is the firm's availability float?
- d. What is firm's payment float?
- e. What is the firm's net float?

10. What are the key differences between factoring and forfaiting?

11. All of the activities in the following list would be prohibited for a fiduciary acting on behalf of a client. Ignoring ethical considerations that otherwise preclude professionals from engaging in such activities, which of the following might be permitted under the suitability standard?

- a. Buying securities for her account prior to buying them for a client.
- b. Failing to disclose conflicts of interest between the professional and the client.
- c. Selling clients their employers' own products ahead of competing products so as to earn higher commissions.

12. Banks can be useful in the monitoring of businesses in which they have a financial interest. This means that banks can play active roles in corporate governance, monitor managerial performance and ensure that corporations in which they have a stake act in the best interests of investors. In many respects, banks could be ideal corporate monitors, particularly in universal banking environments in which they can take large equity stakes in corporations.

- a. Why might banks have the ability to serve as monitors on behalf of other investors?
- b. Why might banks in the U.S. be unable to serve as effective monitors on behalf of corporate shareholders?

## Solutions

1. Thrift institutions, savings banks with public charters and cooperative banking institutions often act with public mandates or explicit ethical or social responsibility mandates such as with several French cooperative credit institutions, sometimes with government control, pursuing interest of client-members through mutual ownership structures, tend to be less profit-oriented, and have less incentive to take risks and engage in moral hazard activity than do their commercial counterparts.

2. It has been argued that, among all of the types of business institutions that exist in the world economy, banks are special. Banks are essential to the real productive sectors of the economy because banks:

- transform maturity and risk structures of capital,
- collect information to resolve risk and to ensure that capital is put to its most productive uses,
- maintaining the economy-wide payment system, without which the economy grinds to a halt,
- ensure liquidity and create money for business, governments and individuals to conduct transactions, which is needed for a well-functioning economy.

Failure of the banking system surely implies failure or impaired operation of the economic system.

3.a. The major advantages to the borrower of a private placements over a public offering are the potential flexibility of such loans and reduced transactions costs. Individually negotiated loans are often more flexible in that both loan parties have the opportunity to renegotiate terms of the loan if circumstances concerning the economy or either loan party change. Public placements lack this flexibility because the borrowing company's bonds are likely to be held by hundreds or thousands of investors. Furthermore, private placements involve smaller transactions costs because only one lending institution is involved (or, at most, a small syndicate of lending institutions). The borrowing institution need only negotiate with one lender and is exempt from the various Securities Exchange Commission (in the U.S.) or other regulatory requirements associated with public offerings. In addition, a private placement from a bank has a signaling effect in that it can be viewed signaling to the general marketplace that the bank has closely examined the borrowing firm and deemed it to be a sound credit risk.

b. Interest rates on public placements (bond offerings) tend to be lower than on private placements. The tradeoff between lower interest rates and higher issue and transactions costs suggest that bond issues should tend to be larger and for longer maturities than their private placement counterparts.

4. Warehouse lenders lend money to mortgage banks and sometimes other institutions who actually issue mortgages (and sometimes other loans) to customers. Wholesale lenders lend money on their own terms directly to purchasers of real estate (and sometimes other clients) using mortgage brokers to serve as conduits between themselves and their borrowing customers. Since wholesale lenders actually issue mortgages, they sell mortgages in secondary markets. Warehouse lenders do not actually issue mortgages, so that mortgages originating from their capital are sold by brokers who originate them. Thus, the primary difference is in who actually

borrowers the money from warehouse or wholesale lenders.

5.a. In our initial present value series function,  $PVA = CF[(1+i)^{-1} + (1+i)^{-2} + \dots + (1+i)^{-n}]$ , the payment made at the end of the first year is discounted for one year, the payment at the end of the second year is discounted for two years, and so on. The first step of the geometric expansion is to multiply both sides of our initial equation by  $(1+i)$ :  $PVA(1+i) = CF[1 + (1+i)^{-1} + \dots + (1+i)^{-n-1}]$ . Now, subtract our initial equation, both sides, from our second equation:  $PVA(1+i) - PVA = 1 - (1+i)^{-n}$ . Notice how many terms have been eliminated from the right side of the equation. Leaving  $PVA$  on the left, keep the remainder of the equation on the right and simplify to obtain:  $PVA = \frac{CF}{i} \left[ 1 - \frac{1}{(1+i)^n} \right]$ .

b. Simply divide  $i$  by  $m$  to obtain the monthly interest rate from the annual interest rate and multiply the number of years  $n$  by  $m$  or 12 to obtain the number of months before the loan matures:  $PVA = \frac{CF}{i/m} \left[ 1 - \frac{1}{(1+i/m)^{mn}} \right]$ .

c. Redefine  $PVA$  to be the initial principal of the loan  $PRIN$ . Redefine  $CF$  to be the monthly payment  $PMT$  associated with the loan:  $PRIN = \frac{PMT}{i/m} \left[ 1 - \frac{1}{(1+i/m)^{mn}} \right]$ . This expression depicts the value of the series of loan payments to the lending institution. Now, solve the amortization equation for amount of the monthly payment:  $PMT = \left[ PRIN \cdot \frac{i}{m} \right] \div \left[ 1 - \frac{1}{(1+i/m)^{mn}} \right]$

6.a. The corporation's annual payment on the mortgage would be \$200,000, determined by Equation 4.1:

$$PMT = [\$865,895 \cdot .05] \div \left[ 1 - \frac{1}{(1 + .05)^5} \right] = \$200,000$$

b. The following is the relevant amortization table, assuming a 5-year mortgage with an initial balance of \$865,895 and an annual rate of 5%:

Year	Principal	Payment	Interest	Payment to Principal
1	865,895	200,000	43,295	156,705
2	709,189	200,000	35,459	164,541
3	544,649	200,000	27,232	172,768
4	371,881	200,000	18,594	181,406
5	190,476	200,000	9,524	190,476

Note: The loan is fully repaid by the end of the fifth year. The principal represents the balance at the beginning of the given year. The payment is made at the end of the given year, and includes one year of interest accruing on the principal from the beginning of that year. The remaining part of the payment is payment to the principal. This payment to the principal is deducted from the principal or balance as of the beginning of the following year.

Thus, each year, the corporation will pay \$200,000 towards both the loan principal and interest obligations. Notice that as payments are applied toward the principal, the principal declines; correspondingly, the interest payments decline. Further notice that total annual payments are identical until the principal diminishes to zero in the fifth year.

c. With a balance of \$371,881 (see part b) and two years remaining until the mortgage matures, the corporation's revised annual payment for years 4 and 5 on the mortgage would be \$197,169.8, also determined by Equation 4.1:

$$PMT = [\$371,881 \cdot .04] \div \left[ 1 - \frac{1}{(1 + .04)^2} \right] = \$197,169.8$$

d. The following is the relevant amortization table, assuming a 2 years remaining on the mortgage with a current balance of \$371,881 and a revised annual rate of 4%:

Year	Principal	Payment	Interest	Payment to Principal
4	371,881	197,169.8	14,875.24	182,294.6
5	189,586.4	197,169.8	7,583.4	189,586.4

7.a. We calculate the monthly loan payment as follows:

$$PMT = \left[ \$1,000,000 \cdot \frac{0.05}{12} \right] \div \left[ 1 - \frac{1}{\left( 1 + \frac{0.05}{12} \right)^{12 \cdot 10}} \right] = \$10,606.55$$

b. The balance of the loan after 5 years is computed as follows:

$$BAL_{60} = \$562,048.66 = \$1,000,000 \times \frac{\left( 1 + \frac{.05}{12} \right)^{12 \times 10} - \left( 1 + \frac{.05}{12} \right)^{60}}{\left( 1 + \frac{.05}{12} \right)^{12 \times 10} - 1}$$

c. The revised periodic or monthly payment will be calculated as follows:

$$PMT = \left[ \$562,048.66 \cdot \frac{.03}{12} \right] \div \left[ 1 - \frac{1}{\left( 1 + \frac{.03}{12} \right)^{.03 \times 5}} \right] = \$5,427.18$$

8. The SOFR is based on actual transactions in the repo markets whereas the LIBOR is based on a daily survey of opinions of officials in 18 global banks conducted and compiled by the Intercontinental Exchange, the parent firm of the New York Stock Exchange. The number of daily transactions in repo markets is huge relative to the number of banks surveyed for LIBOR. Survey data used in LIBOR calculations is likely to be less meaningful than actual transactions data used for SOFR because banks do not make or lose money based on their LIBOR survey responses; LIBOR survey participants merely express their opinions. Actually, the earlier part of this statement is not entirely true. The trading scandal that cost the LIBOR substantial credibility occurred when traders convinced LIBOR survey participants to alter their survey responses to enable the traders to produce profits on their current trade positions. The transactions-based SONR will not be vulnerable to this sort of trader-induced bias as was the LIBOR. SOFR might be more useful in some respects in that it reflects nearly riskless lending due to the collateralization of repo contracts with treasury instruments. In addition, the new NY Fed data collections cover broader segments of the repo market and SOFR tends to correlate more closely with other money market indexes.

9.a. \$22,500

b. \$22,500 - \$2,500 + \$11,000 = \$31,000

c. \$11,000

d. \$2,500

e. -\$2,500 + \$11,000 = \$8,500

10. Key differences are listed as follows:

- Factoring occurs when an exporter sells a set of unpaid invoices to a factor at a discount. Forfaiting occurs when an exporter sells a set of negotiable or securitized instruments evidencing credit sales to a forfaiter.
- Secondary markets are often available to forfaiters, but not to factors.
- The factor relieves the selling firm is relieved from bookkeeping functions related to the credit sale. Forfaiting does not relieve the seller from bookkeeping functions.
- Factoring is used in both domestic and international trade finance. Forfaiting is used only in international trade finance.
- Forfaiting is often guaranteed (avalled) by the importer's bank and evidenced by an instrument such as a bill of exchange, promissory note or letter of credit, which can be sold in secondary markets, further enhancing liquidity to the forfaiter. Factoring is executed either without recourse or with a guarantee from the seller (with recourse).
- Factoring is usually used for short-term credit sales. Forfaiting is usually used for debt of medium- and long-term maturities.
- Factoring costs are usually paid by the seller or exporter; forfaiting costs are usually paid by the buyer or importer.

11. All three activities would be prohibited under the fiduciary standard; all three might well be permitted under the suitability standard, barring any specific regulations prohibiting them.

12.a. The following lists factors that might enhance a bank's ability to monitor a corporations on behalf of shareholders:

- Banks have financial resources necessary to take large positions in firms and their lending relationships with clients afford them significant levels of important and relevant information that would otherwise not be available to the general public.
- Through lending relationships, banks are able to gather intimate details about their clients that other institutions would be unable to.
- Universal banking in Germany and Japan allows for banks to take large equity stakes, enabling banks in these countries to be more active in corporate governance and to exploit the information they gain in the monitoring process. Bank officers take active board positions with client corporations in Germany, other European countries and Japan.
- Banks are able to vote shares that they hold in trust, which should incentivize and enable them to effectively monitor on behalf of trust beneficiaries.
- Banks are in an ideal position to obtain information from clients concerning financial distress. For example, Japanese banks tend to actively support clients facing financial distress or bankruptcy by providing financial resources and managerial support.

b. The following lists factors that might inhibit the ability or willingness of banks to monitor firms on behalf of shareholders:

- Banks in the U.S. are prohibited from taking large equity stakes in corporations. This inhibits U.S. banks from being able to fully exploit their inside information.
- Lending relationships with clients can skew incentives from maximizing shareholder wealth. Banks may use their control to maximize creditor wealth rather than shareholder wealth.
- Many banks and corporations have overlapping directorships and other business relationships that can skew monitoring incentives. Overlapping directorships exist when



bank officers and directors sit on each others' boards, provide services or perform other functions for companies they invest in, which can swerve to either enhance or diminish their incentives to effectively monitor. In some instances, banks may monitor less aggressively in order to support other business relationships with their clients.

- Banks might not be sufficiently motivated to actively monitor on behalf of their beneficiary-shareholders. In most cases, trusts are irrevocable such that trust beneficiaries have little recourse if returns are low. This means that beneficiaries of trusts lack the means to discipline banks or to motivate them to improve investment performance.
- Compensation to banks and officers acting as trustees typically is not related to their client investment performance. However, most banks derive the bulk of their business from corporations, creating potential conflicts of interest and reduced incentives to monitor.

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