

Chapter 2

The Nature and Variety of Financial Intermediation

"Don't it always seem to go that you don't know what you've got 'til it's gone?"

Joni Mitchell

GLOSSARY OF TERMS

Euro: Common currency adopted by many member countries of the European Union.

Yield curve: Relationship between yield to maturity and maturity on debt instruments identical in all respects except maturities (see Chapter 4).

Duration: A measure of how long an investor must wait to receive payment on a bond. For bonds that repay only principal (zero coupon bonds), duration equals maturity. For coupon-paying bonds, duration is always shorter than maturity.

Spot rate: The current yield to maturity on a bond of a given maturity.

Liquidity premium: The amount by which the yield on a bond must be grossed up to compensate investors for their inability to convert the bond into cash at a moment's notice and without loss relative to the bond's true value.

Consumer loans: Loans made to individuals and families. These are primarily installment loans.

Commercial loans: Loans made to corporations. Often referred to as Commercial and Industrial (C&I) loans.

Contingent claims: Claims that may be made in the future, contingent on the realizations of some states.

Federal funds: Funds in the interbank loan market. When a bank "sells" federal funds, it is lending (usually on an overnight basis) to another bank an amount that covers a part or all of that bank's shortfall in reserves; banks are required to keep a certain fraction of their deposits as liquid reserves.

Surplus: Proceeds from the sale of equity and securities in excess of their par value, plus retained earnings.

Cash and due: Coin and currency in the bank's vaults, reserves on deposit with the Federal Reserve and with other banks, and checks deposited by customers on which funds have not yet been collected from the paying bank.

Allowance for loan losses: An allowance made to absorb anticipated (expected) future loan losses. An allowance for loan losses is a charge against current income and it increases the bank's *loan loss reserve*. Writeoffs of existing loans reduce the bank's loan loss reserve.

Undivided profits and reserves: Part of the bank's net worth.

Gramm–Leach–Bliley Act: The 1999 act that dismantled the Glass–Steagall Act restrictions separating commercial and investment banking.

INTRODUCTION

This chapter focuses on the variety of services provided by financial intermediaries (FIs). Banks are members of an expansive industry that provides a dazzling variety of financial services. The broader financial services industry includes institutions as different as commercial banks, savings institutions, and credit unions, all of which finance their assets with deposits, and government agencies, credit-rating agencies, pension funds, loan sharks, pawnbrokers, lotteries, insurance companies, mutual funds, hedge funds, and private-equity pools. To this list we could add organized exchanges for trading stocks, futures, options, bonds and commodities, parimutuel betting institutions, credit-rating agencies, and the list can be extended almost effortlessly. Broadly speaking, these institutions can be classified into two groups: depository financial institutions and nondepository financial institutions. The former include institutions that finance themselves largely with deposits, whereas the latter fund themselves in the capital market. A subset of these nondepository institutions have come to be known as the "shadow banking system."

What all these *financial institutions* have in common is the processing of risk and its subtle complement, information. FIs produce information for two kinds of applications: (i) to match transactors like a marriage broker would, and (ii) to manage risks and transform the nature of claims as when a bank produces credit information to control a borrower's credit risk. In producing information for application (i), the intermediary acts as a *broker*, whereas in producing information for application (ii), it acts as a *qualitative asset transformer*.

Our plan in the rest of this chapter is as follows. First we define FIs and discuss brokerage and asset-transformation services. We also provide a list of the different types of services that intermediaries provide in each of these two basic groups. Next, we provide some key statistics about FIs. Then we discuss the main types of depository intermediaries: commercial banks, thrifts (savings and loan associations (S&Ls) and mutual savings banks (MSBs)), and credit unions. The next section discusses nondepository FIs: venture capitalists, private-equity firms, finance companies, insurance companies, pension funds, mutual funds, and investment banks. We cover the role of the government next and then turn to “peripheral” FIs, including pawnbrokers and loan sharks.

WHAT ARE FINANCIAL INTERMEDIARIES?

Definition: As the name suggests, FIs are entities that intermediate between providers and users of financial capital. FIs are typically multifaceted, and their activities therefore can be understood from a variety of vantage points. For example, in contrast to nonfinancial firms, FIs hold relatively large quantities of financial claims as assets. Thus, whereas the manufacturing firm holds inventories, machines, and patents as assets, the FI holds contracts of the indebtedness of their clients as assets. Both finance their assets by selling their own debt and equity; there is no compelling distinction between FIs and others on the right-hand side of the balance sheet, except that FIs tend to be more leveraged. Here we have a balance sheet perspective on the uniqueness of financial intermediation. Whereas both FIs and other types of business finance assets with debt and equity, FIs tend to hold financial claims as assets whereas others are more committed to physical assets. In Appendix 2.1, we provide a further discussion of the balance sheets of FIs.

Why Do We Have FIs?: This is tantamount to asking: What do FIs do that could not be done without them? The answer to this for *any* firm, financial or nonfinancial, is found in the flow of goods and/or services produced by the firm. After all, a firm not only selects its assets and liabilities but also manages them so as to assure the realization of the potential cash flows. That is, the (nonhuman) assets appearing on the balance sheet are combined with various kinds of labor inputs to produce the cash flows conventionally attributed to the assets. The manufacturer reshapes, transforms, and transports various raw materials and semifinished goods into more highly refined and more advantageously located goods. The services of machines and processes recorded on the balance sheet are combined with labor services to produce an inventory of more highly refined goods.

What is the analog for the FI? How does it combine its resources to produce financial services? A facile answer is that FIs borrow on the one hand and lend on the other. But this answer is incomplete because it does not explain why we need FIs to bring borrowers and lenders together. That is, if I wanted to borrow some money, why do I simply not put an ad in the newspaper and invite people to lend to me at interest rates that I could negotiate with them? While this may seem to some like a foolish thing to do, the key is to understand why it is not (normally) done, rather than to dismiss it outright. After all, is it that different from a homeowner putting up his house “for sale by owner,” rather than through a real-estate agent? Why is the selling of a house different from the selling of one’s indebtedness (borrowing money)? Even in countries where there is no (explicit) deposit insurance, people deposit money in banks, which in turn lend this money to people like you and me. So, why are not those depositors willing to transact directly with prospective borrowers?

The key to understanding this issue is that we live in a world of imperfect information. People would rather deposit their money in a bank than lend it directly to a stranger because they feel they “know” the bank better. It is this line of reasoning that we wish to explore further, with emphasis on the information-based financial services produced by an FI. In borrowing and lending, the FI is joining unfamiliar, but well-suited and complementary transactors, much like the marriage broker would. The FI is also allocating credit presumably to its highest and best uses while reconfiguring the attributes of the financial claims held by its clientele.¹ These activities are so fundamental to financial intermediation that they are accorded special labels, the former being referred to as “brokerage” whereas the latter is called “qualitative asset transformation” (QAT). Let us explain each in turn.

The Brokerage Function of FIs: Brokerage activities of FIs involve the bringing together of transactors in financial claims with complementary needs. The broker is usually compensated with a fee for performing this service. The broker’s stock-in-trade is information, and its special edge in performing this service derives from special skills in interpreting subtle (i.e., not readily observable) signals, and also from the reusability of information. That is, a broker has two advantages as an information processor. First, it possesses/develops special skills in interpreting subtle (not readily observable) signals. Second, it takes advantage of cross-sectional (across customers) and intertemporal (through time) information reusability. For example, a real-estate broker typically has better information than the average home buyer or seller about supply and demand conditions in a given market and is able to reuse this information on many transactions.

1. FIs also engage in clearing and storage activities that are still more closely analogous to manufacturing. These asset “servicing” activities include collecting, tracking, and remitting payments on mortgages, consumer credit, and other claims, as well as traditional safekeeping.

For the broker, the matching of buyers and sellers does not involve the broker as a principal in the purchase (sale). Thus the used-car dealership typically goes beyond the broker's role in that it will *purchase* used autos for resale. If it merely identified potential buyers (sellers) for counterparties, it would then be a broker. Likewise, the marriage broker fits our description of a broker, but the typical stockbroker does not. Once a broker serves as a principal and buys (sells) the asset for eventual resale (repurchase), it accepts the risk that the market may reprice the asset, and it therefore transcends the more limited role of the matchmaker.

The broker helps resolve informational problems that exist before the two sides to the transaction enter into a contract, that is, the broker helps resolve *precontract informational asymmetry*. Moreover, the broker also helps resolve informational problems that may arise after the contract is entered into, that is, the broker helps resolve *postcontract informational asymmetry*.

Precontract Informational Asymmetry and Brokerage: Precontract information asymmetry involves two kinds of information problems: adverse selection and duplicated screening. We will discuss each in turn.

Adverse Selection and Brokerage: In transactions involving FIs, adverse selection problems abound. For example, a borrower will wish to overstate his credit worthiness to potential lenders in order to make himself look like a low-credit-risk borrower. And if the lender raises the loan interest rate in order to be compensated for the higher credit risk associated with borrowers, who misrepresent their creditworthiness, the borrowers most likely to drop out are the *low-credit-risk* borrowers who may either have better credit alternatives or be simply unwilling to borrow at the higher interest rate. Consequently, the lender is left with only the high-credit-risk borrowers.

An FI such as a bank can help deal with this adverse selection problem by performing the brokerage function of credit analysis to sort out borrowers of different credit risks. That is, in this case, the broker specializes in credit analysis or develops the skills to process/interpret various types of credit information. This allows it to intermediate between borrowers and lenders and minimize adverse selection problems.

Duplicated Screening, Information Reusability, and Brokerage: Duplicated screening refers to situations in which individuals can resolve adverse selection at a cost, but there is wasteful expenditure of costly screening resources because multiple individuals end up doing the same screening. An FI can help avoid such duplication by exploiting the power of information reusability. This can be illustrated through the example given below.

Consider 100 men and 100 women searching for the "perfect" marriage partner. In order to become fully informed, each woman will need to evaluate each of the 100 men, and likewise for each of the men. Now suppose that each such evaluation (sampling) results in a fixed cost of say, \$25. Then the total cost for all participants to become fully informed would be \$500,000 (i.e., $2(100 \times 100 \times 25)$). Or, if we let x represent the size of the side of a square grid (100 people in this example), and c the fixed sampling cost per unit (\$25 in this example), we have the result that the total cost equals $2cx^2$.

Now enter the broker! To establish a level playing field and suppress consideration of the broker's special skills, we assume the evaluation cost per unit remains unchanged at \$25. However, the broker will need to examine each of the participants only once and hence its total cost of becoming informed is $2cx$, or \$5000. Assuming the information is distributed at negligible cost, the saving due to the introduction of the broker is approximated by

$$S = 2cx(x - 1),$$

or \$495,000 in the example. To be sure, the broker will expect to earn a profit, but this cost is redistributive rather than dissipative (resource consuming), and potential competition can be expected to limit the profit in any case. Thus, the saving associated with having a broker increases exponentially (the square) with the size of the grid, and linearly with the sampling cost per unit. At the margin ($dS/dx = 2c[2x - 1]$), the saving increases as the size of the grid expands.

The savings, due to the broker, derive from a peculiarity of information: its use does not result in its consumption. Most goods and services are transformed into waste as a result of being used. This is not true with information, and this idiosyncrasy is the key to understanding the broker's role. If the marriage broker composes a report on a particular candidate, I can use the information without in any way compromising your ability to use the same information. The same is true for a report written by a security analyst, or for a telephone book. This extraordinary reusability of information is what makes it compelling to have a broker, and the larger the grid, the greater the potential saving associated with reusing information.

In this discussion, we did not assign the broker any special advantage or skill relative to the lay person in information evaluation. If such a relative advantage exists, then let C_b = broker's evaluation cost and C_o = others' evaluation cost, with $C_o > C_b$. Then the saving due to the broker is $S = 2x[C_o x - C_b]$, with $C_o > C_b$, and the saving attendant to using the broker grows with the gap, $C_o - C_b$. That is, higher information processing skill accentuates the broker's relative advantage.

Some Further Thoughts on the Power of Information Reusability and the Value of Brokerage: To cement our understanding of the power of information reusability, consider one more example. Think of a very large geographic grid in

which each intersection represents a potential oil well. Now suppose there are many oil-drilling entrepreneurs, and further suppose that after drilling a dry hole the law requires that the landscape be restored to its initial condition. Thus, there is no way to know if a particular location has been drilled unless there is an operating well at a particular location. If a broker simply collects and disseminates information about the drilling activities of each explorer, the cost of redrilling dry holes can be eliminated. Without the broker, society will bear the unnecessary cost of searching for oil in locations known to be unproductive. This aspect of information is called *cross-sectional reusability*; the same information can be utilized across a number of different users. Information reusability also has an *intertemporal* aspect; it can be reused through time. For example, a bank that learns something about a borrower while processing its first loan application can use at least some of that information in processing future credit requests from the *same* borrower.

A second aspect of brokerage relates to the *observability* of objects of search. When the object of search is trivially observable, as in the case of a person's telephone number or the address of a dry hole, the skills of the broker are of little importance. But let us be a little more precise in explaining what we mean by "trivially observable." Think of the problem of retaining an expert to assist you in the purchase of thoroughbred horses. Suppose that you are particularly interested in three traits of candidate horses – their racing records, conformation, and blood lines. Now imagine there are numerous experts available and suppose we ask each to report on the three traits of a sample horse. We then create a frequency distribution for each trait. What would we expect to observe among these frequency distributions? Because the racing records are well-defined and a matter of public record, deviations around the mean should be negligible. Observers will not dispute how many times a particular race horse has come in first, second, and so on, no more than they would dispute its age, weight, or height.

However, breeding and conformation are a very different kettle of fish. With regard to these attributes, we would expect each agent to report a different description of the subject horse. Since the ideal against which conformation is judged is multidimensional and somewhat loosely defined, each observer's characterization will be distinctive and the consequent frequency distribution will have considerable variance. Likewise for bloodlines. The facts relating to forebears may be indisputable, but the value of particular forebears is judgmental; the choice among observers thus becomes important.

It is the subtlety, vagueness, or cost of observing the objects of search that elevates the importance of broker skills. To the extent that the objects of search are trivially observable, we should wish to employ less astute observers. If all observers produce the same description, clearly we should reserve the most astute brokers for those searches where judgments matter.

The observability issue helps us to understand the striking hierarchy of brokers in society, ranging from phone books at one extreme to marriage brokers and investment bankers at the other. Indeed, investment bankers and marriage brokers have a good deal in common in that they both address the pairing of transactors on the basis of subtle attributes. If the investment banker were limited to *pro forma* financial statements and projecting cash flows, its role and compensation would both be diminished. But presumably the investment banker addresses more complicated issues of compatibility based on corporate cultures, strategic intent, succession, operating synergies, and similar nuances. Even the placing of securities requires a knowledge of buyers and sellers and how they view counterparties as well as the many details of securities' attributes, such as sinking fund provisions, collateral, and stochastic duration considerations. This explains why the reputation of the investment banker is critically important, whereas the publisher of the Yellow Pages is virtually anonymous.

To summarize, for a given attribute, the larger the grid, the more compelling the need for the broker. For a given size grid, the less readily observable the object of search, the more important the skills and reputation of the broker.

An important aspect of brokerage is that it can be performed without processing substantial risk. Information can be purchased for resale without exposing the broker in the way QAT does. To be sure, if the broker produces information before it is sold, demand uncertainty can result in losses. But information can be presold, at least in principle. The broker also exposes its reputation whenever falsifiable representations are made in connection with its sale of information. But the risk is material only to the extent that objects of search are observable with difficulty. In principle then, brokerage services can be produced risklessly, and in any case the processing of risk is not central to the production of brokerage services. This is not the case with QAT.

Postcontract Informational Asymmetry and Brokerage: In many transactions, one party to the transaction can take actions during the course of the contractual interaction that damage the interest of the other party. The reason why such behavior is possible is that these actions are "hidden" from the injured party and cannot be directly controlled or prevented. Such informational asymmetry is associated with moral hazard, discussed in Chapter 1.

Moral hazard is quite prevalent. It is encountered in insurance, where the insured may underinvest in costly efforts to prevent adverse outcomes because the insurer absorbs the resulting loss. It is encountered in banking, where borrowers may choose excessively risky projects because the bank bears a disproportionate share of the downside risk.

The FI's special skills in monitoring attenuate moral hazard. For example, banks monitor their borrowers by periodically examining the borrower's business and its financial condition and intervening in operating strategy when necessary. Insurance companies design insurance contracts and use *ex post* pricing adjustments to deter moral hazard. Venture capitalists

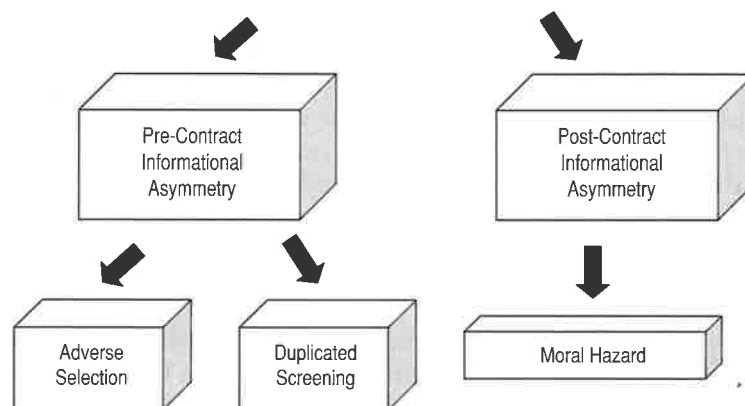


FIGURE 2.1 Key Information Problems Addressed by FIs.

use the threat of transfer of control to ensure that the entrepreneur's incentives do not stray too far from investors' desires. Thus, moral hazard provides a powerful source of economic value for the FI to emerge as a broker that can help diminish the losses due to moral hazard.

Figure 2.1 summarizes the different informational problems that create a role for the broker.

Qualitative Asset Transformation: Think of a world without intermediaries, as we did at the beginning of this discussion about the role of intermediaries. Suppose some individual wishes to borrow for the purpose of purchasing a house. The borrower must find a counterparty willing to hold a mortgage, which is a claim with a number of less desirable attributes. For example, there is no active secondary market in individual mortgages, with resultant illiquidity, and wide bid-ask spreads. The mortgage typically comes in large and irregular unit sizes. It typically has a long and uncertain duration, which is to say it may remain unredeemed for 30 years, but it can be repaid at virtually any time at the borrower's discretion and typically without prepayment penalty. Moreover, the mortgage carries with it default risk, and in the event of default, managing the collateral can be expensive. In all, the mortgage is a homely claim.

Enter the FI. It purchases the mortgage and finances the purchase with the issuance of a liability called a deposit. The deposit, in contrast to the mortgage, is almost infinitely divisible, highly liquid, and has little default risk. The FI effectively swaps deposits for mortgages, thereby modifying the claims held by its clientele. The FI is rewarded for this service with interest rate spread between deposits and mortgages.

Among the asset attributes most commonly transformed by FIs are duration (or term-to-maturity), divisibility (or unit size), liquidity, credit risk, and sometimes numeraire (currency identity). Typically, the intermediary will shorten the duration of the claims of its clients by holding assets of longer duration than its own liabilities; it will reduce the unit size of the claims of its clients by holding assets of larger unit size than its liabilities; it will enhance the liquidity of the claims of its clients by holding assets that are more illiquid than its liabilities; and it will reduce credit risk by holding assets that are more likely to default than its liabilities. By holding assets denominated in a currency other than its liabilities, it alters the numeraire of the assets of its clients.

QAT and Risk: Notice that every such asset transformation performed by the FI requires a *mismatch* with regard to that attribute on the FI's balance sheet. For example, if the duration of the FI's assets and liabilities are perfectly matched, it cannot have altered the duration of the assets of its clients. Only by absorbing the longer duration assets in exchange for shorter term liabilities can the FI reduce the duration of claims held by its customers. This is important because the mismatch on the FI's balance sheet reflects an acceptance of some type of risk, at least initially, by the FI.

If the FI holds Euro-denominated assets and US dollar-denominated liabilities, it will be exposed to variations in the dollar/Euro exchange rate. If it holds long-term assets financed with short-term liabilities, it will be exposed to interest rate risk, whereby changes in the shape and position of the yield curve will affect the FI's cash flows. Even changing the unit size of claims cannot be done without a mismatch and a consequent acceptance of risk. If the unit size of assets is larger than that of liabilities, the purchase and sale of corresponding claims cannot be perfectly synchronized and hence the FI accepts a form of inventory risk.

The case of duration transformation is particularly instructive. The yield curve is thought to be a "biased predictor" of future spot interest rates owing to a (liquidity) premium attached to long-duration claims. That is, borrowers typically prefer to borrow long term and lenders typically prefer to lend short term. This theory of the term structure of interest rates is usually associated with Sir John Hicks, a British Nobel Laureate economist. But if we introduce FIs into such a world and

assume that they are indifferent to the duration of a claim, they would be able to finance the purchase of long-term assets with short-term liabilities and profit from doing so. Indeed, absent other impediments, intermediaries would continue to perform this transformation until the liquidity premium is bid down to the marginal cost of intermediating. The existence of this form of asset transformation supports the Hicksian view of the yield curve. Without a liquidity premium at the outset, there would be no incentive for the FI to perform duration transformation. If the yield curve was an unbiased predictor of future spot interest rates, there would be no profit in performing duration transformation.

Whatever the form of the QAT, a mismatched balance sheet is implied, and this in turn implies the acceptance of some form of exposure. This is the sense in which risk is integral to QAT. In managing this risk, there are basically three alternatives available to the FI. It can diversify the risk, it can shift the risk to others, or it can passively accept the exposure. The shifting of risk to others involves the use of claims such as swaps, forward contracts, futures, and options, and in principle, but rarely in practice, all of the exposure associated with the QAT can be transferred to others with the appropriate risk-shifting instruments. However, in this case the QAT reverts to brokerage. The FI has merely transferred risk among its clients, no matter how convoluted the transactions. In the case where the risk is diversifiable, presumably the FI performs this diversification on behalf of clients whose wealth is too small relative to the unit size of claims to diversify on their own. It is widely believed that this is a major rationale for mutual funds.

Although we distinguish between brokerage and asset transformation as distinct types of intermediation services, the truth is that both are performed by the same intermediaries and sometimes in combination. Take for example a duration-transforming FI that finds it is too mismatched for comfort and consequently proceeds to lengthen the duration of liabilities while simultaneously shortening the duration of its assets. In fact, it is changing the mix of its activities from more to less QAT and from less to more brokerage. In the limit, if the FI achieves a perfect duration match of its assets and liabilities, it will have become a pure broker.

Or consider an investment banker with two types of underwriting contracts, the “firm commitment” contract and the “best efforts” contract. The firm involves the banker purchasing a firm’s securities for resale. This is clearly a QAT contract. The banker provides the issuing firm with a *prix fixé* before the public has committed to purchase the securities. By contrast, the best efforts contract merely commits the bankers to make an honest effort to sell the securities for the best realizable price, without any further assurances. The best efforts contract commits the banker to provide brokerage services, and the banker will typically receive a fee without accepting any exposure relating to the price of the securities. Figure 2.2 lists the various services provided by FIs under brokerage and QAT. This list is suggestive, not exhaustive.

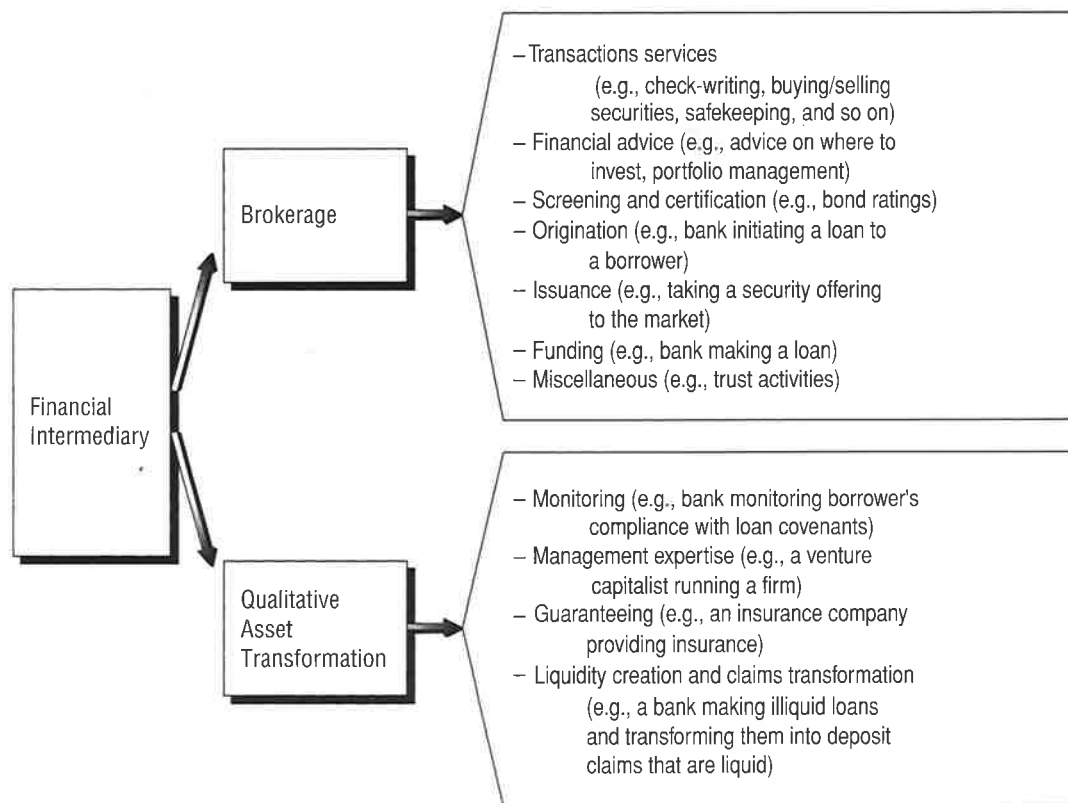


FIGURE 2.2 Services Provided by Financial Intermediaries.

THE VARIETY OF FINANCIAL INTERMEDIARIES

There are many ways to classify the many different types of FIs. In the previous section, we classified them based on the nature of the services they provide. We can also classify them based on whether or not they finance their activities with deposits.

FIs that finance (at least partly) with deposits are called deposit-type or depository FIs, whereas those that do not finance with deposits are called nondepository FIs. Jointly, depository and nondepository FIs have at their command an enormous volume of assets. Table 2.1 lists the assets of the various types of FIs, and also depicts their growth during 1980–2010. It is noteworthy that the assets of *all* types of FIs, except savings institutions, have exhibited striking growth.

The distinctions between depository and nondepository institutions have become blurred as the latter have increasingly offered products and services that compete with those of commercial banks. Consequently, individuals are increasingly turning to mutual funds rather than bank deposits for transactions and investment purposes. These developments can be seen in the data provided in Tables 2.2 and 2.3.

The shifting market shares of various institutions in the consumer loan market are reflected in the data provided in Table 2.4. Commercial banks are still the biggest players in the consumer loan market. The 10 largest commercial banks in consumer lending are shown in Table 2.5. The share of different financial institutions in total credit is shown in Figure 2.3. Having provided you with a glimpse of the market shares and sizes of the various types of institutions, we

TABLE 2.1 Total Assets of Financial Intermediaries at Year-End

| Panel A: Total Assets Expressed in Billions of Dollars | | | | | | | | |
|-----------------------------------------------------------------------------------------|----------------|----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Financial Intermediary | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2008 | 2010 |
| Commercial Banks | \$1,704 | \$2,484 | \$3,338 | \$4,499 | \$6,709 | \$9,844 | \$14,056 | \$14,402 |
| Savings Institutions | \$792 | \$1,287 | \$1,323 | \$1,013 | \$1,218 | \$1,789 | \$1,524 | \$1,244 |
| Life Insurance Companies | \$479 | \$826 | \$1,351 | \$2,064 | \$3,136 | \$4,351 | \$4,515 | \$5,177 |
| Private Pension Funds | \$470 | \$848 | \$1,629 | \$2,899 | \$4,468 | \$5,389 | \$4,553 | \$6,080 |
| State and Local Pension Funds | \$198 | \$405 | \$730 | \$1,327 | \$2,293 | \$2,721 | \$2,325 | \$2,928 |
| Finance Companies | \$202 | \$352 | \$596 | \$705 | \$1,213 | \$1,857 | \$1,852 | \$1,595 |
| Money Market Funds | \$76 | \$244 | \$493 | \$741 | \$1,812 | \$2,007 | \$3,757 | \$2,755 |
| Mutual Funds | \$58 | \$252 | \$608 | \$1,853 | \$4,433 | \$6,049 | \$5,435 | \$7,963 |
| Credit Unions | \$69 | \$137 | \$217 | \$311 | \$441 | \$686 | \$812 | \$911 |
| Financial Intermediaries' Total Assets | \$4,048 | \$6,835 | \$10,285 | \$15,412 | \$25,723 | \$34,693 | \$38,829 | \$43,055 |
| Panel B: Total Assets Expressed as a Fraction of Financial Intermediaries' Total Assets | | | | | | | | |
| Financial Intermediary | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2008 | 2010 |
| Commercial Banks | 0.42 | 0.36 | 0.32 | 0.29 | 0.26 | 0.28 | 0.36 | 0.33 |
| Savings Institutions | 0.20 | 0.19 | 0.13 | 0.07 | 0.05 | 0.05 | 0.04 | 0.03 |
| Life Insurance Companies | 0.12 | 0.12 | 0.13 | 0.13 | 0.12 | 0.13 | 0.12 | 0.12 |
| Private Pension Funds | 0.12 | 0.12 | 0.16 | 0.19 | 0.17 | 0.16 | 0.12 | 0.14 |
| State and Local Pension Funds | 0.05 | 0.06 | 0.07 | 0.09 | 0.09 | 0.08 | 0.06 | 0.07 |
| Finance Companies | 0.05 | 0.05 | 0.06 | 0.05 | 0.05 | 0.05 | 0.05 | 0.04 |
| Money Market Funds | 0.02 | 0.04 | 0.05 | 0.05 | 0.07 | 0.06 | 0.10 | 0.06 |
| Mutual Funds | 0.01 | 0.04 | 0.06 | 0.12 | 0.17 | 0.17 | 0.14 | 0.18 |
| Credit Unions | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 | 0.02 |
| Financial Intermediaries' Total Assets | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

Source: U.S. Census Bureau, Statistical Abstract of the United States: 2012.

TABLE 2.2 Various Mutual Fund Statistics (in Billions of Dollars or in Percentage)

| | 1980 ¹ | 1990 | 2000 | 2005 | 2010 | 2011 | 2012 |
|---------------------------------------------------|-------------------|-----------|-----------|-----------|------------|------------|------------|
| Dollars invested in mutual funds | \$134.8 | \$1,065.2 | \$6,964.7 | \$8,891.2 | \$11,831.9 | \$11,627.7 | \$13,045.3 |
| Mutual funds share of I.R.A. market ¹ | 14.0% | 21.8% | 48.0% | 46.1% | 46.1% | 45.2% | 45.8% |
| Penetration of mutual funds among U.S. households | 5.7% | 25.1% | 45.7% | 44.4% | 45.3% | 44.1% | 44.4% |

¹Mutual funds share is from the mid-1980s.

Source: Investment Company Institute 2013 Fact Book.

TABLE 2.3 U.S. Mutual Fund Industry Total Net Assets (in Billions of Dollars)

| | 1980 ¹ | 1990 | 2000 | 2005 | 2010 | 2011 | 2012 |
|--------------------|-------------------|-----------|-----------|-----------|------------|------------|------------|
| Long-term funds | | | | | | | |
| Equity funds | \$44.4 | \$239.5 | \$3,938.9 | \$4,886.9 | \$5,596.8 | \$5,215.3 | \$5,934.3 |
| Hybrid funds | | \$36.2 | \$363.9 | \$609.8 | \$807.8 | \$842.8 | \$991.0 |
| Bond funds | \$14.0 | \$291.3 | \$816.79 | \$1,367.7 | \$2,624.1 | \$2,877.9 | \$3,426.4 |
| Money-market funds | \$76.4 | \$498.4 | \$1,845.3 | \$2,026.9 | \$2,804.0 | \$2,691.5 | \$2,693.6 |
| Total net assets | \$134.8 | \$1,065.2 | \$6,964.7 | \$8,891.2 | \$11,831.9 | \$11,627.4 | \$13,045.3 |
| Number of funds | 564 | 3,079 | 8,155 | 7,974 | 7.5 | 7,591 | 7,596 |

¹All funds were reclassified in 1984 and a separate category was created for hybrid funds.

Source: Investment Company Institute 2013 Fact Book.

TABLE 2.4 Market Share of Consumer Loans (in Percentage)

| | 1-4 Family Mortgages | | | | | | Consumer Credit | | | | | |
|----------------------------------------|----------------------|------|------|------|------|------|-----------------|------|------|------|------|------|
| | 1990 | 2000 | 2005 | 2010 | 2011 | 2012 | 1990 | 2000 | 2005 | 2010 | 2011 | 2012 |
| U.S. chartered depository institutions | 42.4 | 34.8 | 33.6 | 30.5 | 30.2 | 30.4 | 52.3 | 35.7 | 35.2 | 46.6 | 45.4 | 44.1 |
| Life insurance companies | 7.1 | 3.5 | 2.4 | 2.3 | 2.5 | 2.6 | - | - | - | - | - | - |
| Finance companies | 3.02 | 3.6 | 4.5 | 1.8 | 1.6 | 1.4 | 16.8 | 12.7 | 22.3 | 27.9 | 26.3 | 24.6 |

Source: Federal Reserve Statistical Release: Flow of Funds Accounts of the U.S. 1985-1994, 1995-2004, 2005-2011, and 2012.

TABLE 2.5 Top Ten U.S. Banks Based on Total Assets in March 2013

| Name | City, State | Total Assets (Billions of Dollars) | Total Deposit (Billions of Dollars) |
|--------------------------------------|--------------------|---------------------------------------|----------------------------------------|
| 1. JP Morgan Chase & Co. | New York (NY) | 2359.2 | 1193.6 |
| 2. Bank of America Corp. | Charlotte (NC) | 2210.0 | 1105.3 |
| 3. Citigroup Inc. | New York (NY) | 1864.7 | 930.6 |
| 4. Wells Fargo & Co. | San Francisco (CA) | 1423.0 | 1002.9 |
| 5. Bank of New York Mellon Corp. | New York (NY) | 359.0 | 246.1 |
| 6. U.S. Bancorp | Minneapolis (MN) | 353.9 | 249.2 |
| 7. HSBC North America Holdings Inc. | New York (NY) | 318.8 | 114.8 |
| 8. Capital One Financial Corp. | McLean (VA) | 313.0 | 212.5 |
| 9. PNC Financial Services Group Inc. | Pittsburgh (PA) | 305.2 | 213.2 |
| 10. State Street Corp. | Boston (MA) | 222.6 | 164.2 |

Source: SNL Financial.

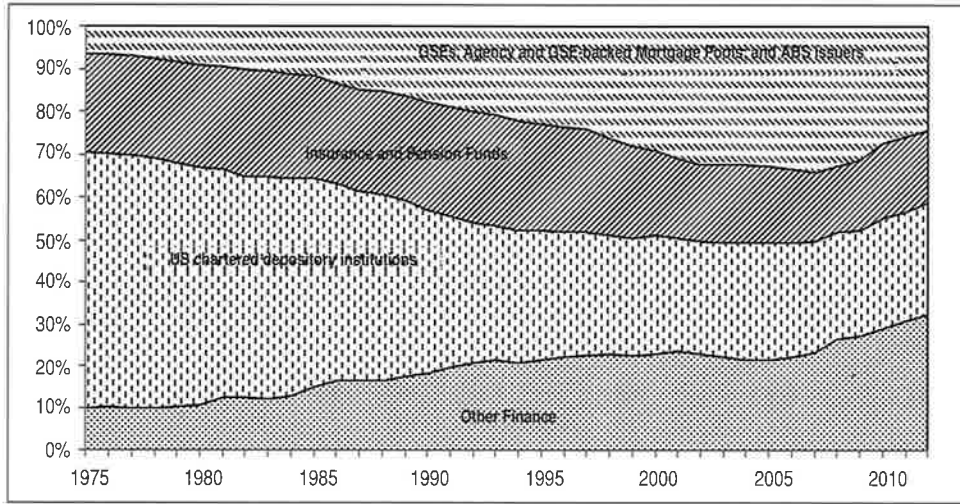


FIGURE 2.3 Share of Financial Institutions in Total Credit. (Source: Federal Reserve Statistical Release: Flow of Funds Accounts of the U.S. 1985–1994, 1995–2004, 2005–2011, and 2012).

now move on to a description of each of these institutions in the next section. We will also provide some international (non-US) data.

DEPOSITORY FINANCIAL INTERMEDIARIES

Depository institutions operate with high leverage, so that even a small return on total assets translates into a high return of equity. Figure 2.4 graphs the behavior through time of bank equity capital as a percentage of total assets. The figure illustrates the post-World War II upward drift in the net-worth-to-total-assets ratio through the 1960s then the long-run decline in the net-worth-to-total-asset ratio of banks until about 1980, followed by an increase in this ratio thereafter. But note these are book values and may not provide as comfortable a cushion as their levels would suggest. In Figure 2.5, we provide information on the return on assets and the return on equity at commercial banks. This figure highlights the effects

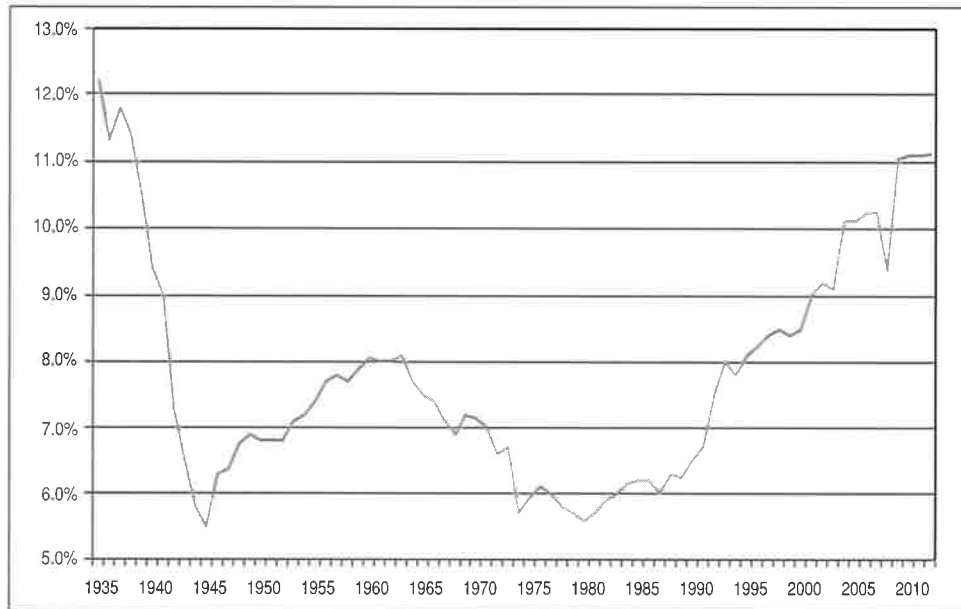


FIGURE 2.4 Bank Equity Capital as a Percent of Total Assets. (Source: FDIC Quarterly Banking Profile).