had cleared. This, too, would take several days. The substantial delay made mail order relatively unattractive in comparison to buying from a local merchant.[1]

Today, with payment by credit card, the merchant is guaranteed payment the moment you place the order, and the goods can be shipped immediately. By eliminating the delay, the credit card reduces the trading cost of using mail order. It makes mail order more competitive with buying from local merchants.[2] Because local merchants face this competition, their prices are lower and consumers are better off.

The payments system is also of great importance to financial institutions. For many, the provision of payments services is a substantial source of income. A recent estimate suggests that for the 25 largest bank holding companies between 30% and 40% of their operating revenue came from payments-related services.[3] You cannot understand banking without an understanding of this aspect of the business.

Payments mechanisms are a key element in the structure of financial markets. You cannot make sense of overnight lending or the government securities market, for example, without understanding how payments are executed. Furthermore, the increasing globalization of financial markets has transformed the trading of foreign exchange—one part of the payments system—into a growth industry. Worldwide trading volume in foreign exchange reached $1.5 trillion *a day* in 1999.

We begin our study of the payments system by examining the different types of money in our economy. Next, we look at the different ways of making payments. We then compare the use of different methods of payment in different countries and examine the reasons for the differences. Next, we look at foreign exchange. We conclude by examining the efficiency and stability of the payments system.

THE DIFFERENT TYPES OF MONEY

Payment means the transfer of money. So we begin with money. There are two different types of money—government money and bank money. The branch of government that produces government money is usually the central bank—in the United States, the Federal Reserve. So we will call the two types of money Fed dollars and bank dollars.

Fed Dollars

The most basic type of money in the U.S. economy is the dollar bill. The dollar bill is a Federal Reserve note, created by one of the 12 Federal Reserve Banks (you can see which one by looking at the seal to the left of the picture of George Washington on the front of the bill). In form, Federal Reserve notes resemble the banknotes that commercial banks once issued.[4]

[1] Local merchants are more willing to accept checks because it is easier for them to pursue payment if the check bounces.

[2] Of course, the mail order business has also been helped by 800 numbers and overnight delivery.

[3] Radecki (1999).

[4] The first banknote was issued in Europe by the Bank of Stockholm (later the Bank of Sweden) in 1661. We discussed the issue of banknotes by commercial banks in Chapter 6.

In addition to Federal Reserve notes the Fed also creates money in the form of deposits. The Fed is a bank. It accepts deposits from ordinary banks, from the federal government, and from some other institutions (it does not accept deposits from ordinary firms and households). The Fed's depositors can make withdrawals and deposits in the form of Federal Reserve notes, and they can transfer ownership of their deposits by check or electronically. We shall call money that is created by the Fed—Federal Reserve notes and deposits at the Fed—**Fed dollars**.

Fed dollars Money created by the Fed—Federal Reserve notes and deposits at the Fed.

Fed dollars were once convertible into gold. Today, that is no longer true. You cannot take your dollar bill to the Fed and demand payment in "real money." All you will receive in exchange for your dollar bill is another dollar bill, perhaps less tattered and worn.[5]

Money that is not convertible into anything else—that therefore defines what we mean by "real money"—is called **definitive money**. This role was once played by gold. Today, it is played by Fed dollars. You can think of Fed dollars as a sort of "artificial gold," created by the government. The provision of definitive money is today a normal function of most central banks. Money of this type, which exists by government order or fiat alone, is called **fiat money**.[6]

definitive money Money that is not convertible into any other form of money.

fiat money Money that exists by government order or fiat.

In addition to Fed dollars, our definitive money includes some currency issued by the U.S. Treasury, mostly in the form of coins. These coins are token money: their value as metal is well below their face value (the last silver coin was minted for general circulation in 1971). There have been two recent attempts to replace the one-dollar bill with a coin. The Susan B. Anthony dollar was introduced in 1979, and the gold-colored Sacagawea dollar in 1999. However, neither new coin has been a success with the public, which seems to prefer paper.[7]

In May 2001, Federal Reserve notes issued amounted to $565 billion. Deposits at the Federal Reserve Banks amounted to $39 billion. Treasury currency amounted to $27 billion. The total amount of definitive money was the total of these three amounts—$631 billion.

If our definitive money, unlike gold, has no intrinsic value and is not convertible, then why do people accept it in payment? The main reason is that they know they can pass it on to others in payment. Their ability to do this is reinforced by the status of definitive money as **legal tender**. This means that if you pay a debt in Fed dollars, the debt is legally settled. Your creditor cannot demand payment in some other form—say in gold. The general acceptability of definitive money is also reinforced by the federal government's willingness to accept it in payment of taxes.

legal tender Money that must be accepted in payment of a debt.

Without the constraint of convertibility, what stops a government from creating as much fiat money as it wishes? Nothing at all. This unrestricted power to create money can be both a blessing and a curse. On the one hand, it allows the government to ensure that the quantity of money grows to meet the needs of a growing economy: this could be a

[5] Convertibility of Fed dollars into gold coin for private individuals ended in 1933. From then until 1971 foreign governments could convert dollars into gold bullion. Today the dollar is no longer convertible into gold, or into anything else.

[6] We discussed central banks in Chapter 3 and we shall learn more about their functions in Chapters 19 and 20.

[7] The reason for the attempt was a desire to save some of the approximately $400 million a year spent on maintaining notes in circulation. Dollar bills wear out and must be replaced after a year or two; coins last for decades.

problem in the days when definitive money was gold or silver. On the other hand, there is nothing to prevent a government from creating money to pay its own bills. The unrestrained creation of money for this reason is the main cause of inflation around the world.

Bank Dollars

bank dollars Money created by various depository institutions—transactions deposits at these institutions.

The second type of money in our economy is **bank dollars**—transactions deposits at various types of financial institution. These deposits are convertible on demand into definitive money. They may also be used directly in payment, with ownership being transferred by check or by other means. Bank dollars did once exist in the form of banknotes, but today the issue of banknotes is in most countries a monopoly of the state. We shall discuss the desirability of this monopoly later in the chapter.

In the United States, transactions deposits are offered by commercial banks, by thrifts, and by credit unions. In many other countries, they are also offered by the post office. The total amount of transactions deposits in the United States in April 2001 was $806 billion.

As we saw in Chapter 2, a bank dollar is simply a bank's IOU: it is a bank's promise to pay one dollar of definitive money on demand. Payment in bank dollars developed as an alternative to payment in definitive money on the one hand and to private promises of payment on the other. Payment in bank dollars often involves lower transactions costs than payment in definitive money. And promises of payment by banks are often more credible than promises of payment by individuals or firms.

Payment with dollar bills (with hand-to-hand currency) is straightforward: you just hand them over. Payment with deposits is more complicated. You need some way to transfer ownership of the deposit to the recipient. There are a number of ways to do this.

CHECKS

The most familiar way to transfer ownership of deposits is by check. For example, suppose you have a deposit with First National, and you wish to pay Videomax $700 for a new TV. That is, you need to transfer ownership of 700 of your bank dollars to Videomax. You do this by writing Videomax a check for $700. Note that the check itself is not money: it is merely an order to pay money. It is an order from you to First National to transfer $700 of your deposit at the bank to Videomax.

If Videomax has a deposit at First National, it can present your check to the bank, and $700 dollars will be transferred from your deposit to Videomax's. First National will now owe you $700 less and Videomax $700 more. Payment has been completed. You have made payment in bank dollars of First National Bank and Videomax has received payment in the same.

Suppose, though, that Videomax has its deposit at a different bank, Metrobank. Videomax will then have no use for the bank dollars of First National Bank. It will need to convert the $700 into bank dollars of Metrobank.

One way Videomax can do this is to send a messenger to First National to present your check for immediate payment in cash. The cash can then be taken to Metrobank for deposit (conversion into Metrobank dollars). This method is quick and simple but inconvenient, and it is worthwhile only for large sums of money.[8]

The more usual procedure is for Videomax to delegate collection of the check to its own bank. Videomax signs over the check (endorses it) to Metrobank, converting it into an order to pay Metrobank. Metrobank collects payment from First National and credits Videomax's deposit with $700. In this way, Videomax gets the Metrobank dollars it wants. In exchange Metrobank gets $700 in First National dollars. If Metrobank finds it useful to maintain a deposit at First National, it may keep the $700 in this form. Or Metrobank may demand conversion of the First National dollars into definitive money.

The Check-Clearing System

Metrobank will present your check to First National for payment through the check-clearing system. We saw the basic principles of check clearing in Chapter 2. Actual practice in the United States is somewhat more complicated.

Most small banks do not process checks themselves. Instead, they send them either to a correspondent bank, with which they have an arrangement, or to the Fed, which also provides this service. The checks are sorted and those drawn on local banks are cleared through the local clearinghouse.[9]

At each meeting of the clearing house, representatives of each bank present checks to the banks on which they are drawn and receive in exchange the checks drawn on their own banks. During this process the banks keep track of how much they owe each other bank and how much they are owed by them. At the end of the meeting, the claims of the banks on each other are netted. Banks with a net credit receive payment and those with a net debit make payment of the appropriate amount in "clearing-house funds" (a claim on the clearing house). These are settled in Fed funds (deposits at the Fed) on the following day.

If a check is drawn on a bank outside the area of the local clearinghouse, the procedure is more involved. For example, if First National is in Los Angeles and Metrobank is in New York, Metrobank will deposit your check at the New York Fed. The New York Fed will credit Metrobank's deposit with it for $700. The New York Fed will then send the check to the San Francisco Fed. The San Francisco Fed will send it on to its Los Angeles branch, which will take it to the local clearinghouse to present it to First National. Once the check has cleared, First National's deposit with the San Francisco Fed will be debited $700.[10]

The physical transportation of paper checks is costly, both in the process of presentment and in the return of canceled checks to the depositor (banks in many countries do not

[8] With large sums, the Fed dollars are not usually transferred physically in the form of Federal Reserve notes. Rather Fed dollars in the form of deposits at the Fed are transferred by one bank to the other over Fedwire, which we discuss later in the chapter.

[9] Before 1980 banks that were not members of the Federal Reserve System did not generally have direct access to the Fed's check-clearing services or to Fedwire, but had to go through another bank that was a member. With the passage of the DIDMCA of 1980, as partial compensation for the imposition of reserve requirements, the Fed's services became available to all depository institutions—some 44,000 vs the 5,500 member banks. Although the Fed was now required to charge explicitly for its services, it found itself in direct competition for check-clearing business with the large banks. The latter were not pleased.

[10] Generally, Metrobank will have to wait some time before it is credited.

do this). Attempts have been made, therefore, to use an image of the check, which can be transmitted electronically, rather the physical check itself. The Fed has introduced an experimental program and a group of large banks has set up its own system, Small Value Payments Corporation, to create an electronic check exchange network.

Check Enhancements

Before it accepts your check, Videomax will want to see some form of identification and perhaps some evidence of creditworthiness, like a credit card. The reason for its caution is that it has no way of knowing whether the check is good. If, when the check finally arrives at First National, it turns out that you have less than $700 in your deposit, the check will "bounce." It will be returned unpaid to Videomax, reversing all the steps of the clearing process. Videomax will then have to do the best it can to collect the money from you in some other way. The possibility that a check may bounce reduces the acceptability of checks as a method of payment.

check guarantee card A card that, if presented when a check is written, obliges the bank to honor the check.

Various ways have been devised to deal with this problem. One is the **check guarantee card**. A bank issues its customers a special card that must be presented whenever a check is written. The bank guarantees to honor checks written in this way up to some limit—say $200. If the check bounces, the bank takes the loss. Check guarantee cards are relatively rare in the United States, but they are quite popular in Europe. In France, banks must honor checks for amounts of 100 francs or less: no check card is required. Presumably this makes French banks more careful about handing out checkbooks.

Another way to reduce the problem of bad checks is the *overdraft*. This is a line of credit that is automatically drawn upon if there are insufficient funds in the customer's deposit to cover a check. Overdraft facilities, too, are more common overseas than they are in the United States. As an alternative to an overdraft, many U.S. banks offer the following arrangement: if there are insufficient funds to cover a check, the bank automatically transfers money from another account, say a savings account, charging the customer a transfer fee.

In some countries, the problem of bounced checks is addressed through criminal penalties. In Japan, for example, if you bounce two checks in a 6-month period you are liable to 2 years of probation. In Taiwan, the penalties are sufficiently severe that postdated checks are used as loan contracts. There is, in Taiwan, an informal or "curb" market for loans outside the highly regulated official financial system. In this curb market, a lender will hand over a sum of money in exchange for a check that is dated on the day the loan comes due (say a year later). The amount of the check includes principal plus interest.

Special Checks

certified check A check written by a bank on itself.

money order An order of payment from a nonbank issuer.

Because of the bad check problem, personal checks may be unacceptable in some transactions. For example, if you buy a car the dealer may insist on a **certified check**. This is a promise to pay from the bank itself. The U.S. Postal Service and some private issuers offer similar instruments in the form of **money orders**.[11]

[11] There seem to be no restrictions on who may offer money orders.

traveler's check
A form of guaranteed check or insured private banknote.

The **traveler's check** is a related form of payment. Like a certified check, a traveler's check is a promise to pay on the part of the issuer, not the payer. Traveler's checks are issued in small denominations and insured against loss or theft. (They can be seen as a kind of insured private banknote.) Traveler's checks are issued by banks and by other financial institutions. The largest issuer is American Express, which is not a bank.

To obtain a certified check, money order, or traveler's check, it is usually necessary to pay the issuer in advance. Since such payment may be made in cash, these payment instruments are available to those who do not own bank deposits. Certified checks, money orders, and traveler's checks clear through the check-clearing system much like ordinary checks.

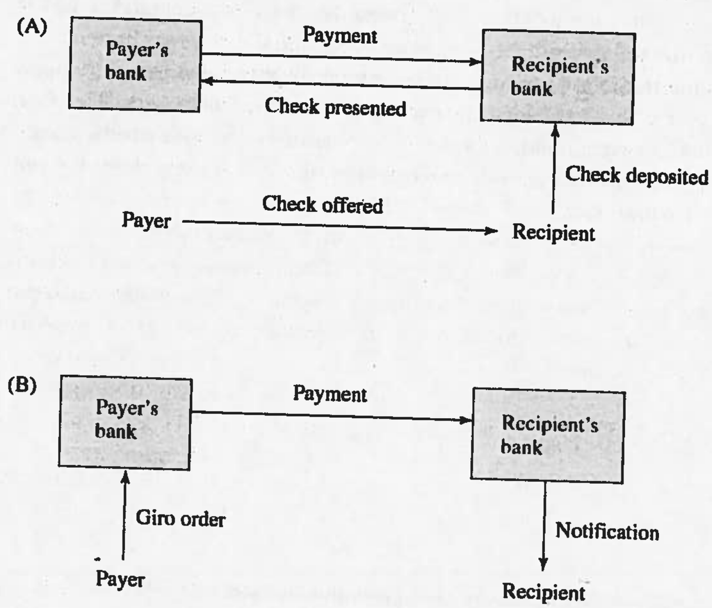
Giro Payments

giro payment
An order to pay, presented to the payer's bank by the payer.

The problem of bad checks can be avoided entirely by using a completely different method of transferring ownership of bank deposits—the **giro payment**. The difference between a giro payment and a check is illustrated in Exhibit 8.1.

Like a check, a giro payment is an order from the payer to his bank to pay the recipient. There is, however, an important difference. With a check, the payer gives the payment order to the recipient. The recipient then presents it to the payer's bank, or has it presented by his own bank. With a giro payment, on the other hand, the payer hands the payment order *directly* to his own bank. The payer's bank then makes payment to the recipient's bank, for the account of the recipient. The recipient then receives notification that payment has been made.

EXHIBIT 8.1 Comparison of Payment by (A) Check and (B) Giro.



A giro payment cannot bounce. The payer's bank will simply not accept the order to pay unless there are sufficient funds—in a deposit or in cash—to cover it. Because of the way it works, however, the giro payment is not a useful way to pay for unplanned purchases in a store or restaurant. Its principal use is for regular periodic payments like tax or utility bills (or tuition).

Giro payments may be made using a paper form much like a check or they may be made electronically. Paper giro payments are very popular in many countries, often more popular than checks, but they are unknown in the United States.

Electronic giro payments are common in the United States and are executed via *automated clearinghouses* (about which more later). Many U.S. banks also offer telephone bill-paying and home-banking services. With telephone bill paying, customers can instruct their banks over the telephone to make payments on their behalf. The bank does so either with a bank check or electronically. Home banking offers essentially the same service, but using a proprietary terminal or personal computer connected to the bank by telephone.

CREDIT CARDS

The bank credit or debit card is a relatively recent method of payment that offers an alternative to the check or giro payment. The credit card has its origins in store credit.

The Store Credit Card

Historically, it was a common practice for retailers to extend credit to their better customers, allowing them to charge their purchases and to settle up at the end of the month with a single payment. This arrangement made it easier for such customers to spend on impulse; they were not constrained by the amount of cash they were carrying or even by the need to carry a checkbook. Of course the retailer accepted the risk of default, but store credit generated enough extra business to make the risk worthwhile.

As the number of people buying on credit increased, retailers began to issue cards so that sales clerks could identify these creditworthy customers. The identity cards evolved into "charga-plates" and eventually into the modern **store credit card**. With these, stores began to offer cardholders a revolving line of credit, giving them the option of paying over time rather than settling at the end of each month.

store credit card
A credit card that activates a line of credit from a retailer.

In providing these services, large retailers had a considerable advantage. The scale of their business could support a specialized credit department to check credit and to process payments. The extension of credit to a large enough population also gave the big retailers the benefits of pooling. Small retailers, without the benefits of scale, found the extension of credit too expensive.

The Third-Party Card

third-party credit card
A credit card that activates a line of credit from a third-party lender.

The financial system offered small retailers a solution—the **third-party credit card**. The first such cards were travel and entertainment (T&E) cards.[12] They worked as follows.

[12] The oil companies were also early issuers of third-party credit cards that could be used at any affiliated gas station.