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Sources of Short-Term Financing

LEARNING OBJECTIVES

- LO 8-1** Trade credit from suppliers is normally the most available form of short-term financing.
- LO 8-2** Bank loans are usually short term and should be paid off from funds from the normal operations of the firm.
- LO 8-3** Commercial paper represents a short-term, unsecured promissory note issued by the firm.
- LO 8-4** By using accounts receivable and inventory as collateral for a loan, the firm may be able to borrow larger amounts.
- LO 8-5** Hedging may be used to offset the risk of interest rates rising.

In this chapter we examine the cost and availability of the various sources of short-term funds, with primary attention to trade credit from suppliers, bank loans, corporate promissory notes, foreign borrowing, and loans against receivables and inventory. It is sometimes said the only way to be sure a bank loan will be approved is to convince the banker that you don't really need the money. The learning objective of this chapter is the opposite—namely, to demonstrate how badly needed funds can be made available on a short-term basis from the various credit suppliers.

For example, Yum! Brands, the company that owns KFC, Pizza Hut, and Taco Bell, entered a credit agreement in 2012 with a consortium of banks. The \$1.3 billion agreement was syndicated by 24 banks, was unsecured, and matured in 2017. In June 2017 Yum! was able to extend the maturity date of its credit agreement to June 2022. It ended up with \$1 billion on one agreement and \$500 million on a second credit facility while reducing the interest rate. These loans usually are renewed unless the economy nose-dives as it did in late 2008 and 2009. During this most recent credit crisis, bank lending dried up, but if a firm had a credit agreement, banks were obligated to meet the terms of the agreement. However, banks were not obligated to renew credit agreements that had matured.

Yum! Brands had agreements with 24 banks because this reduces its dependence on any one bank. From the banks' point of view, this spreads out their risk. The commitments from the banks ranged from \$23 million to \$115 million. The interest rate for borrowings under this new credit agreement ranged from 1.25 percent to 1.75 percent over the London Interbank Offered Rate (LIBOR). The interest rate is contingent on Yum! Brands meeting certain financial targets for financial leverage and fixed charge coverage, and it limits additional indebtedness, liens, and other transactions specified in the agreement. In tight credit markets, the lenders have the upper hand in restricting the behavior of the borrower.

We now look at various forms of credit.

Trade Credit

The largest provider of short-term credit is usually at the firm's doorstep—the manufacturer or seller of goods and services. Approximately 40 percent of short-term financing is in the form of accounts payable or trade credit. Accounts payable are a **spontaneous source of funds**, growing as the business expands on a seasonal or long-term basis and contracting in a like fashion when business declines.

Payment Period

Trade credit is usually extended for 30 to 60 days. Many firms attempt to "stretch the payment period" to receive additional short-term financing. This is an acceptable form of financing as long as it is not carried to an abusive extent. Going from a 30- to a 35-day average payment period may be tolerated within the trade, while stretching payments to 65 days might alienate suppliers and

cause a diminishing credit rating with Dun & Bradstreet and local credit bureaus. A major variable in determining the payment period is the possible existence of a cash discount.

Cash Discount Policy

A **cash discount** allows a reduction in price if payment is made within a specified time period. A 2/10, net 30 cash discount means we can deduct 2 percent if we remit our funds 10 days after billing, but failing this, we must pay the full amount by the 30th day.

On a \$100 billing, we could pay \$98 up to the 10th day or \$100 at the end of 30 days. If we fail to take the cash discount, we will get to use \$98 for 20 more days at a \$2 fee or 2 percent of the \$100 transaction. The cost is a high 36.72 percent. Note that we first consider the interest cost and then convert this to an annual basis. Here's the standard formula for this example:

$$\begin{aligned} \text{Cost of failing to} &= \frac{\text{Discount percent}}{100 \text{ percent} - \text{Discount percent}} \times \frac{360}{\text{Final due date} - \text{Discount period}} \quad (8-1) \\ \text{take a cash discount} &= \frac{2\%}{100\% - 2\%} \times \frac{360}{(30 - 10)} = 2.04\% \times 18 = 36.72\% \end{aligned}$$

Cash discount terms may vary. For example, on a 2/10, net 90 basis, it would cost us only 9.18 percent not to take the discount and to pay the full amount after 90 days.

$$\frac{2\%}{100\% - 2\%} \times \frac{360}{(90 - 10)} = 2.04\% \times 4.5 = 9.18\%$$

In each case, we must ask ourselves whether bypassing the discount and using the money for a longer period is the cheapest means of financing. In the first example, with an annualized cost of 36.72 percent, it probably is not. We would be better off borrowing \$98 for 20 days at some lower rate. For example, at 10 percent interest we would pay 54 cents¹ in interest, as opposed to \$2 under the cash discount policy. With the 2/10, net 90 arrangement, the cost of missing the discount is only 9.18 percent and we may choose to let our suppliers carry us for an extra 80 days.

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Net Credit Position

In Chapter 2, "Review of Accounting," we defined accounts receivable as a use of funds and accounts payable as a source of funds. The firm should closely watch the relationship between the two to determine its **net trade credit** position. Net trade credit is positive when accounts receivable are greater than accounts payable and negative when the opposite is true. If a firm has average daily sales of \$5,000 and collects in 30 days, the accounts receivable balance will be \$150,000. If this is associated with average daily purchases of \$4,000 and a 25-day average payment period, the average accounts payable balance is \$100,000—indicating \$50,000 more in credit is extended than received. Changing this situation to an average payment period of 40 days increases the accounts payable to \$160,000 (\$4,000 × 40). Accounts payable now exceed accounts receivable by \$10,000, thus leaving these funds for other needs. Larger firms tend to be net providers of trade credit (relatively high receivables), with smaller firms in the user position (relatively high payables).

Bank Credit

Banks may provide funds for the financing of seasonal needs, product line expansion, and long-term growth. The typical banker prefers a **self-liquidating loan** in which the use of funds will ensure a built-in or automatic repayment scheme. Actually, two-thirds of bank loans are short term. Nevertheless, through the process of renewing old loans, many of these 90- or 180-day agreements take on the characteristics of longer-term financing.

Major changes occurring in banking today are centered on the concept of "full-service banking." The modern banker's function is much broader than merely accepting deposits, making loans, and processing checks. A banking institution may provide trust and investment services, a credit card operation, real estate lending, data processing services, cash management services both domestically and internationally, pension fund management, and many other services for large and small businesses.

The banking scene has become more international to accommodate increased world trade and the rise of international corporations. The largest international banks are expanding into the United States through bank acquisitions and branch offices. Every major financial center from New York to San Francisco has experienced an increase in the number of foreign banks.

However, the recession of 2007–2009, which was the most severe since the Great Depression of the 1930s, caused hundreds of bank failures. The Federal Reserve and the Federal Deposit Insurance Corporation forced many large banks on the verge of

collapse, like Wachovia and National City Bank, to be taken over by healthy banks, like Wells Fargo and PNC Bank. With the enactment of the Gramm–Leach–Bliley Act in 1999, commercial banks and investment banks were allowed to merge. Many economists and politicians think that these combinations were responsible for banks taking on more risk than they could manage, and that this excess risk taking led to the credit problems that started to show up in 2007. In 2011, Congress passed the Dodd–Frank Act, which created more stringent regulations for financial institutions. (For more coverage of Dodd–Frank, see Chapter 1.)

We will look at a number of terms generally associated with banking (and other types of lending activity) and consider the significance of each. Attention is directed to the prime interest rate, LIBOR, compensating balances, the term loan arrangement, and methods of computing interest.

Prime Rate and LIBOR

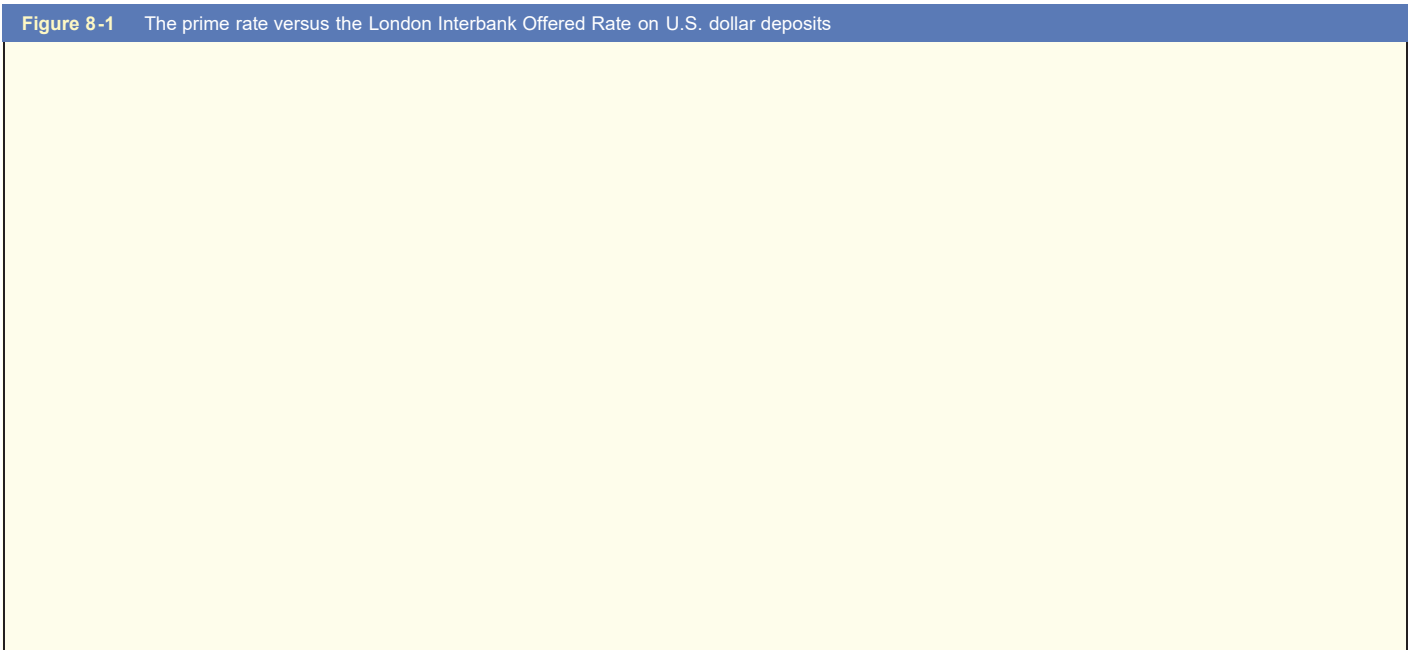
The **prime rate** is the rate a bank charges its most creditworthy customers, and a premium is added as a customer’s credit risk gets higher. At certain slack loan periods in the economy, or because of international competition, banks may actually charge top customers less than the published prime rate; however, such activities are difficult to track. The average customer can expect to pay one or two percentage points above prime, while in tight money periods a builder in a speculative construction project might have to pay five or more percentage points over prime.

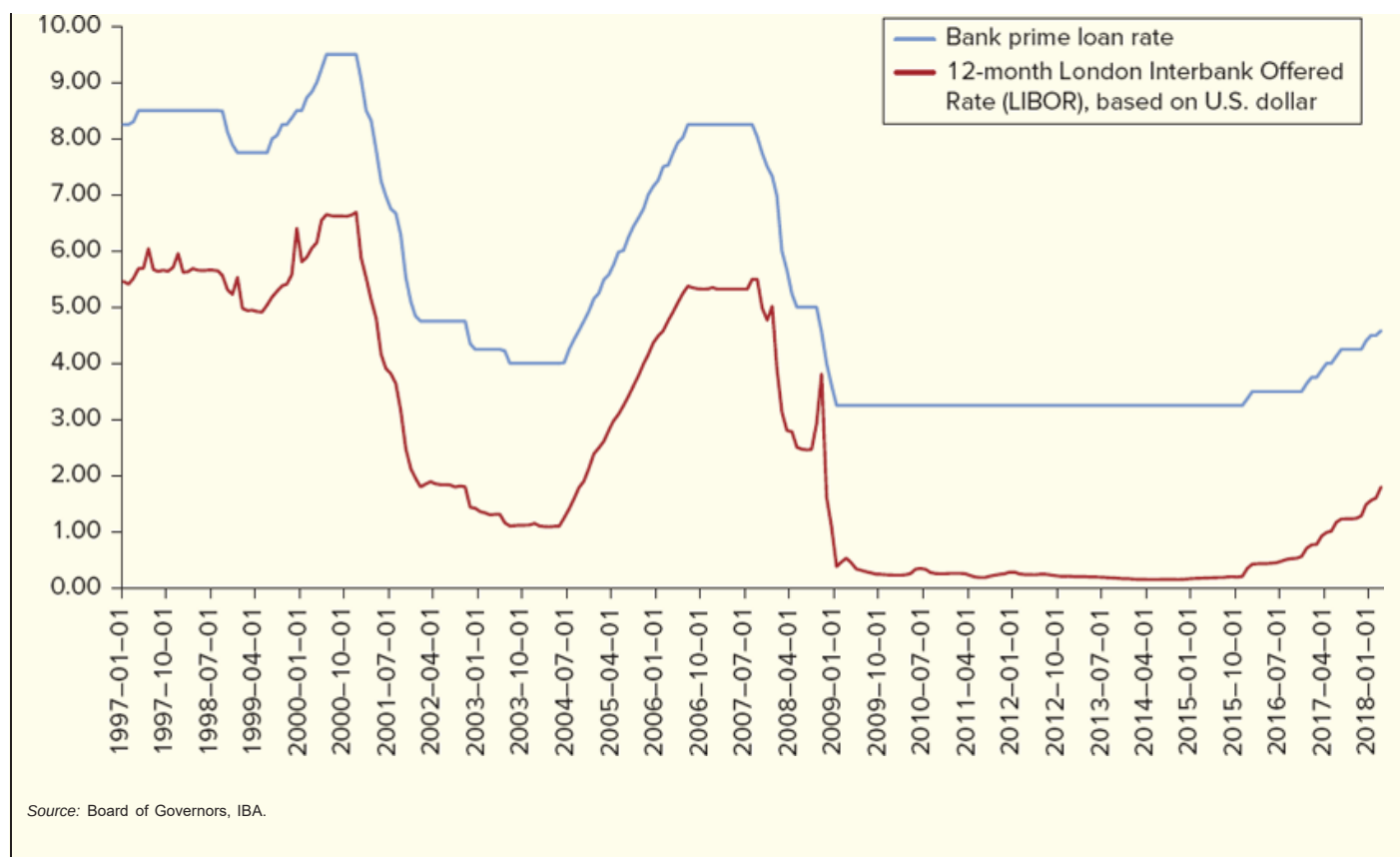
Since the U.S. dollar is the world’s international currency, and because the United States has run up huge foreign trade deficits over the last several decades, there are several trillion dollars floating around the world’s money markets. London is the center of Eurodollar deposits, and a majority of these U.S. dollars can be found there. Because U.S. companies can borrow dollars from London banks quite easily, large borrowers shop for the lowest interest rate in London, New York, or any other major money market center. This means that the U.S. prime rate competes with the **London Interbank Offered Rate (LIBOR)** for companies with an international presence or those sophisticated enough to use the London Eurodollar market for loans. For example, in March 2018, LIBOR one-month loans were at 1.80 percent versus a U.S. prime rate of 4.75 percent. A loan at 1.0 or 2.0 percent above LIBOR would still be less than the U.S. prime rate.

Figure 8-1 shows the relationship between LIBOR and the prime rate between December 1997 and March 1, 2018. Notice that during this period the prime rate was always higher than LIBOR.

Compensating Balances

In providing loans and other services, a bank may require that *business* customers either pay a fee for the service or maintain a minimum average account balance, referred to as a **compensating balance**. In some cases, both fees and compensating balances are required. When interest rates are in the 8.5 percent range, large commercial banks may require compensating balances of over \$20,000 to offset \$100 in service fees. As interest rates go down, this compensating balance rises; so under the 2007 prime rate of 7.75 percent, the compensating balances could be over \$40,000 per \$100 in service fees. Because the funds do not generate as much revenue at lower interest rates, the compensating balance amount is higher. It was even greater in 2015 with the 3.25 percent prime rate.





When compensating balances are required to obtain a loan, the required amount is usually computed as a percentage of customer loans outstanding, or as a percentage of bank commitments toward future loans to a given account. A common ratio is 20 percent against outstanding loans or 10 percent against total future commitments, though market conditions tend to influence the percentages.

Some view the compensating balance requirement as an unusual arrangement. Where else would you walk into a business establishment, buy a shipment of goods, and then be told you could not take 20 percent of the purchase home with you? If you borrow \$100,000, paying 8 percent interest on the full amount with a 20 percent compensating balance requirement, you will be paying \$8,000 for the use of \$80,000 in funds, or an effective rate of 10 percent.

The amount that must be borrowed to end up with the desired sum of money is simply figured by taking the needed funds and dividing by $(1 - c)$, where c is the compensating balance expressed as a decimal. For example, if you need \$100,000 in funds, you must borrow \$125,000 to ensure the intended amount will be available. This would be calculated as follows:

$$\begin{aligned}
 \text{Amount to be borrowed} &= \frac{\text{Amount needed}}{(1 - c)} \\
 &= \frac{\$100,000}{(1 - 0.2)} \\
 &= \$125,000
 \end{aligned}$$

LIBOR Price-Fixing Scandal

Ethics

During the summer of 2012, it was discovered by British regulators that the LIBOR (London Interbank Offered Rate) was being manipulated. LIBOR is the rate that banks are willing to lend to each other; it is the rate that a bank estimates it would pay to borrow from another bank. It is an estimate, not the actual amount that the bank paid. Every day, the London banks participating in the rate setting process send their estimated LIBOR rate to Thomson Reuters (an international financial data company). Thomson Reuters throws out the top and bottom 25 percent and uses the middle 50 percent of the rate quotes to list the current day LIBOR rate. There are over 100 different LIBOR rates for many existing maturities.

LIBOR is an important rate because it is the most widely used base rate in the world. It is the base rate used for home equity loans, adjustable rate loans, commercial loans, derivative swaps, and other financial transactions. When we say base rate, it is because the rate is adjusted for risk, so a high-quality borrower might pay LIBOR plus 2 percent and a low-quality borrower might pay LIBOR plus 5 or 6 percent. The amount of face value contracts that may be pegged to the LIBOR rate has been estimated to be between \$300 trillion and \$800 trillion, and the actual number could be even higher.

It turns out that in the summer of 2012 a group of traders and bankers conspired to fix these rates. There were numerous e-mail quotes with traders, brokers, and bankers promising to "scratch your back if you scratch mine." Barclays and UBS of Switzerland were at the heart of this process, but as many as 16 banks were investigated. Barclays and UBS paid fines of about \$6.0 billion, making it one of the largest scandals in banking history. As a result, UBS fired 18 traders and the respected CEO of Barclays, Bob Diamond, resigned. Morgan Stanley estimates that 11 banks could pay total fines up to \$14 billion by the time the investigation is done. For example, Deutsche Bank agreed to pay a \$2.5 billion fine for its participation in the rate rigging scheme.

Evidently, the U.S. Federal Reserve suspected this bad behavior as early as 2007 and notified the British regulator, Financial Services Authority, but they didn't deal with the warning in a timely fashion. We end this discussion with a telling quote from Doug Dachille, the former head of proprietary trading at JPMorgan:

"I have always viewed collusion and market manipulation as financial crimes deserving of prosecution of the appropriate individuals and harsh consequences for senior management for a failure to supervise. I would be pleased to see more of this by financial regulators. Unfortunately, the regulators are the equivalent of a JV team competing against varsity players. They simply lack the financial and industry know-how to uncover these insider 'tricks' of the trade."

Source: Doug Dachille, "The LIBOR Scandal: Not That Big a Deal?" *The Business Desk*, PBS Newshour, January 9, 2013.

A check on this calculation can be done to see if you actually end up with the use of \$100,000:

\$125,000	Loan
– 25,000	20% compensating balance requirement
\$100,000	Available funds

The intent here is not to suggest that the compensating balance requirement represents an unfair or hidden cost. If it were not for compensating balances, quoted interest rates would be higher or gratuitous services now offered by banks would carry a price tag.

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In practice, some corporate clients pay a fee for cash management or similar services, while others eliminate the direct fee with compensating balances. Fees and compensating balances vary widely among banks. As the competition heats up among the providers of financial services, corporations can be expected to selectively shop for high-quality, low-cost institutions.

Maturity Provisions

As previously indicated, bank loans have been traditionally short term and usually renewable. In the last decade there has been an increase in the use of the **term loan**, in which credit is extended for one to seven years. The loan is usually repaid in monthly or quarterly installments over its life rather than in one payment. Only superior credit applicants, as measured by working capital strength, potential profitability, and competitive position, can qualify for term loan financing. Here the banker and the business firm are said to be stuck together at the hip because of the length of the loan.

Bankers are hesitant to fix a single interest rate to a term loan. The more common practice is to allow the interest rate to change with market conditions. Thus the interest rate on a term loan may be tied to the prime rate or LIBOR. Often loans will be priced at a premium over one of these two rates reflecting the risk of the borrower. For example, a loan may be priced at 1.5 percentage points above LIBOR, as in the Yum! example at the beginning of the chapter, and the rate will move up and down with changes in the base rate.

Cost of Commercial Bank Financing

The effective interest rate on a loan is based on the loan amount, the dollar interest paid, the length of the loan, and the method of repayment. It is easy enough to observe that \$60 interest on a \$1,000 loan for one year would carry a 6 percent interest rate, but what if the same loan were for 120 days? We use this formula:

(8-2)

$$\begin{aligned}\text{Effective rate} &= \frac{\text{Interest}}{\text{Principal}} \times \frac{\text{Days in the year (360)}}{\text{Days loan is outstanding}} \\ &= \frac{\$60}{\$1,000} \times \frac{360}{120} = 6\% \times 3 = 18\%\end{aligned}$$

Since we have use of the funds for only 120 days, the effective rate is 18 percent. To highlight the impact of time, if you borrowed \$20 for only 10 days and paid back \$21, the effective interest rate would be 180 percent—a violation of almost every usury law.

$$\frac{\$1}{\$20} \times \frac{360}{10} = 5\% \times 36 = 180\%$$

In addition to the time dimension of a loan, the way interest is charged is also important. We have assumed that interest would be paid when the loan came due. If the bank uses a **discounted loan** and deducts the interest in advance, the effective rate of interest increases. For example, a \$1,000 one-year loan with \$60 of interest deducted in advance represents the payment of interest on only \$940, or an effective rate of 6.38 percent.

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$$\begin{aligned}\text{Effective rate on discounted loan} &= \frac{\text{Interest}}{\text{Principal} - \text{Interest}} \times \frac{\text{Days in the year (360)}}{\text{Days loan is outstanding}} & (8-3) \\ &= \frac{\$60}{\$1,000 - \$60} \times \frac{360}{360} = \frac{\$60}{\$940} = 6.38\%\end{aligned}$$

Interest Costs with Compensating Balances

When a loan is made with compensating balances, the effective interest rate is the stated interest rate divided by $(1 - c)$, where c is the compensating balance expressed as a decimal. Assume that 6 percent is the stated annual rate and that a 20 percent compensating balance is required.

$$\begin{aligned}\text{Effective rate with compensating balances} &= \frac{\text{Interest}}{(1 - c)} & (8-4) \\ &= \frac{6\%}{(1 - 0.2)} \\ &= 7.5\%\end{aligned}$$

In the prior examples, if dollar amounts are used and the stated rate is unknown, Formula 8-5 can be used. The assumption is that we are paying \$60 interest on a \$1,000 loan but are able to use only \$800 of the funds. The loan is for a year.

$$\begin{aligned}\text{Effective rate with compensating balances} &= \frac{\text{Interest}}{\text{Principal} - \text{Compensating balance in dollars}} \times \frac{\text{Days in the year (360)}}{\text{Days loan is outstanding}} & (8-5) \\ &= \frac{60}{\$1,000 - \$200} \times \frac{360}{360} = \frac{\$60}{\$800} = 7.5\%\end{aligned}$$

Only when a firm has idle cash balances that could be used to cover compensating balance requirements would the firm not use the higher effective-cost formulas (Formulas 8-4 and 8-5).

Rate on Installment Loans

The most confusing borrowing arrangement to the average bank customer or a consumer is the installment loan. An **installment loan** calls for a series of equal payments over the life of the loan. Though federal legislation prohibits a misrepresentation of interest rates on loans to customers, a loan officer or an overanxious salesperson may quote a rate on an installment loan that is approximately half the true rate.

Assume that you borrow \$1,000 on a 12-month installment basis, with regular monthly payments to apply to interest and principal, and the interest requirement is \$60. While it might be suggested that the rate on the loan is 6 percent, this is clearly not

the case. Though you are paying a total of \$60 in interest, you do not have the use of \$1,000 for one year—rather, you are paying back the \$1,000 on a monthly basis, with an average outstanding loan balance for the year of approximately \$500. The effective rate of interest is 11.08 percent.

$$\begin{aligned}\text{Effective rate on installment loan} &= \frac{2 \times \text{Annual no. of payments} \times \text{Interest}}{(\text{Total no. of payments} + 1) \times \text{Principal}} && (8-6) \\ &= \frac{2 \times 12 \times \$60}{13 \times \$1,000} = \frac{\$1,440}{\$13,000} = 11.08\%\end{aligned}$$

Annual Percentage Rate

Because the way interest is calculated often makes the effective rate different from the stated rate, Congress passed the Truth in Lending Act in 1968. This act required that the actual **annual percentage rate (APR)** be given to the borrower. The APR is really a measure of the effective rate we have presented. Congress was primarily trying to protect the unwary consumer from paying more than the stated rate without his or her knowledge. For example, the stated rate on an installment loan might be 6 percent but the APR might be 11.08 percent. It has always been assumed that businesses should be well versed in business practices and financial matters; therefore, the Truth in Lending Act was intended to protect individual borrowers but not business borrowers.

The annual percentage rate requires the use of the actuarial method of compounded interest when calculating the APR. This requires knowledge of the time-value-of-money techniques presented in Chapter 9. For our purposes in this chapter, it is enough to know that the lender must calculate interest for the period on the outstanding loan balance at the beginning of the period. Any payments are first credited against interest due, and any amount left is used to reduce the principal or loan balance. Because there are so many ways to structure loan repayment schedules, no one formula is applicable for computing the APR. For example, loans do not all have a full year—some have only 10 or 15 days or other portions of a year.

Since most consumer loans are installment types, the APR is usually based on the assumption of amortization. Amortization means an equal dollar amount is paid each period to retire principal and interest. According to the law, a loan amortization schedule is the final authority in the calculation of the APR. The amortization schedule always has an annual percentage rate that diminishes the principal to zero over the loan period. You will learn how to develop an amortization schedule in Chapter 9.

The Credit Crunch Phenomenon

In 1969–1970, 1973–1974, 1979–1981, and 2007–2009, the economy went through periods of extreme credit shortages. We seem to find ourselves in the midst of a tight money situation every few years. The anatomy of a credit crunch is as follows. The Federal Reserve tightens the growth in the money supply in its battle against inflation, causing a decrease in lendable funds and an increase in interest rates. To compound the difficulty, business requirements for funds may be increasing to carry inflation-laden inventory and receivables. A third problem is the massive withdrawal of savings deposits at banking and thrift institutions, all in search of higher returns. There simply are not enough lendable funds.

Recent history has taught us that the way *not* to deal with credit shortages is to impose artificial limits on interest rates in the form of restrictive usury laws or extreme governmental pressure. In 1969–1970, the prime rate went to 8.5 percent in a tight money period—a level not high enough to bring the forces of demand and supply together, and little credit was available. In 1974, the prime rose to 12 percent, a rate truly reflecting market conditions, and funds were available. The same was true in 1980 and 1981 as the prime went to 20 percent and higher, but lendable funds were available.

In the late 1980s and early 1990s, the financial system suffered from bad loans made to real estate investors, Third World countries, and high-risk corporations. These bad loans resulted in the partial collapse of the savings and loan industry, and it created problems for many banks and insurance companies. Credit conditions can change dramatically and suddenly because of unexpected defaults, causing changes in monetary policy, economic recessions, and other shocks to economies around the world. Available funds can simply dry up as lenders become more risk-averse and refuse to lend to high-risk borrowers or even borrowers of moderate risk.

Not all credit crunches are caused by high interest rates. In the summer of 2007, a credit crunch of a different kind hit the United States and eventually infected the major international financial markets in Europe and Asia. The cause was subprime lending. As the mortgage market grew by leaps and bounds in the early 2000s, many high-risk loans were made (thus the term *subprime*—less than good quality). To compound the problem, many of these loans were made with adjustable rate mortgages; as interest rates moved up, some borrowers were unable to make their higher monthly payments, and defaults grew. As the mortgage market collapsed, the Federal Reserve added tens of billions of dollars to keep the markets liquid, and also cut interest rates. Commercial banks, investment banks, and hedge funds reported losses in the billions, and Countrywide Financial, the largest mortgage banker in the United States, couldn't sell commercial paper. It was forced to rely on an \$11 billion credit from a consortium of banks and a \$2 billion equity infusion by Bank of America, which eventually bought Countrywide. Loans were

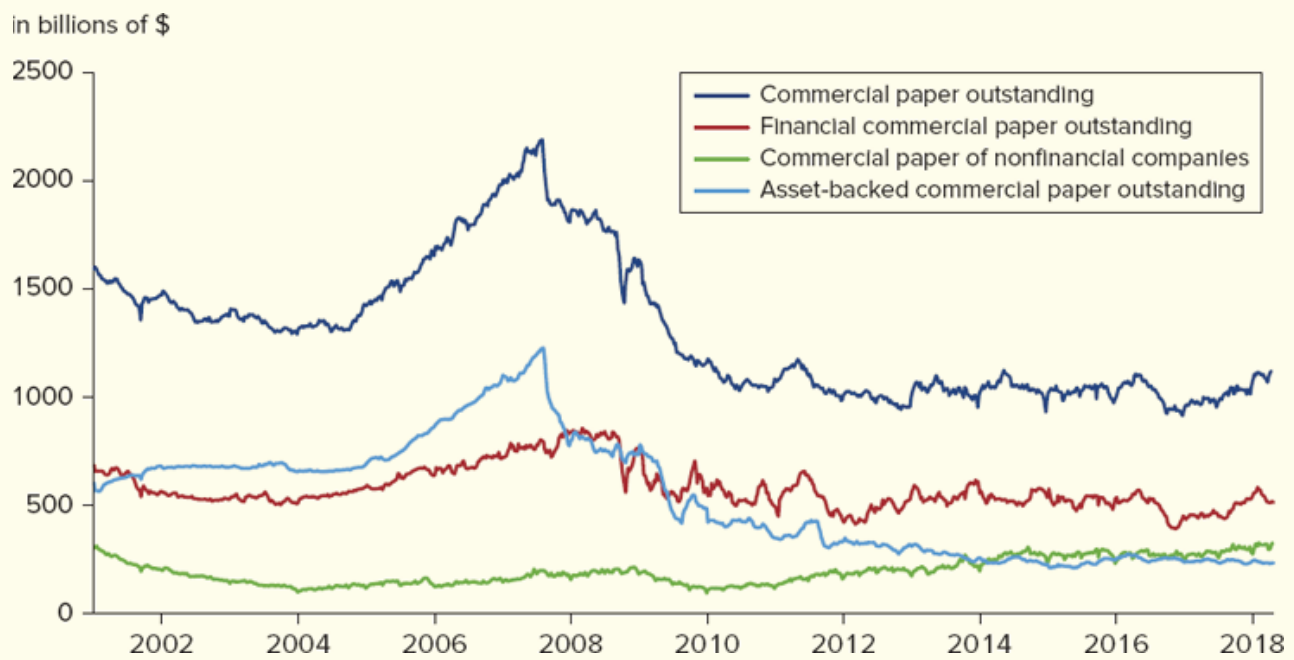
difficult to get for most firms, and the problems persisted into 2012 as banks repaired their capital structures in response to the recession and the Dodd–Frank Act, which requires a higher percentage of equity capital in banks’ balance sheets. Banks also became more risk-averse and restricted loans to high-quality borrowers.

Financing through Commercial Paper

For large and prestigious firms, commercial paper may provide an outlet for raising funds. **Commercial paper** represents a short-term, unsecured promissory note issued to the public in minimum units of \$25,000.² As Figure 8-2 indicates, the total amount of commercial paper outstanding (top line) has fluctuated dramatically. The overall amount of commercial paper outstanding reflects the willingness of qualified companies to borrow at the lowest rate available. The size of the market has made it easier for corporations to raise short-term funds.

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Figure 8-2 Total commercial paper outstanding



Source: Board of Governors of the Federal Reserve System (US).

Commercial paper falls into three categories. First, there are finance companies, such as General Motors Acceptance Corporation (GMAC) and General Electric Capital Corporation, that issue paper primarily to institutional investors such as pension funds, insurance companies, and money market mutual funds. The growth of money market mutual funds has increased the ability of companies to sell commercial paper. Paper sold by financial firms such as GMAC is referred to as **finance paper**, and because it is usually sold directly to the lender by the finance company, it is also referred to as **direct paper**. The second type of commercial paper is sold by industrial companies, utility firms, and financial companies too small to have their own selling network. These firms use an intermediate dealer network to distribute their paper, and so this type of paper is referred to as **dealer paper** or nonfinancial paper.

A third type of commercial paper and a relative newcomer on the block is **asset-backed commercial paper**. An inspection of Figure 8-2 shows a dramatic increase in the amount in this category from approximately \$610 billion in 2001 to \$1,210 billion at its peak in 2007. Notice the huge drop in asset-backed commercial paper in the third quarter of 2007 and its continued decline to the end of 2017.

The huge increase in the amount of asset-backed securities between 2005 and 2007 was primarily the result of mortgage-backed securities being bundled up and sold in the markets. During this time, asset-backed securities ballooned by more than \$500 billion, but when the banking crisis hit full speed, many of these mortgage-backed securities had to be written off the investing bank's books. The drop in value between 2007 and 2017 was \$975 billion. At the same time, the commercial paper markets froze, and you can see that both financial and nonfinancial commercial paper funds fell by hundreds of billions of dollars. A pickup in nonfinancial commercial paper could be seen as the economy went into the fourth quarter of 2009, and by the end of 2017 it had

increased by \$110 billion. However, financial paper has been in a fairly tight range during the 2013–2017 period.

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Traditionally, commercial paper is just that. A paper certificate is issued to the lender to signify the lender's claim to be repaid. This certificate could be lost, stolen, misplaced, or damaged, and, in rare cases, someone could fail to cash it in at maturity. It is common among companies that sell commercial paper directly to computerize the handling of commercial paper with what are called **book-entry transactions**, in which no actual certificate is created. All transactions simply occur on the books. The use of computer-based electronic issuing methods lowers cost and simplifies administration, as well as linking the lender and the issuing company. As the market becomes more accustomed to this electronic method, large users (\$500 million or more) will likely find it profitable to switch from physical paper to the book-entry system, where all transfers of money are done by wiring cash between lenders and commercial paper issuers.

Advantages of Commercial Paper

The growing popularity of commercial paper can be attributed to other factors besides the rapid growth of money market mutual funds and their need to find short-term securities for investment. For example, commercial paper may be issued at below the prime interest rate. As indicated in the last column of Table 8-1, this rate differential is normally 2 to 3 percent.

A second advantage of commercial paper is that no compensating balance requirements are associated with its issuance, though the firm is generally required to maintain commercial bank lines of approved credit equal to the amount of the paper outstanding (a procedure somewhat less costly than compensating balances). Finally, a number of firms enjoy the prestige associated with being able to float their commercial paper in what is considered a "snobbish market" for funds.

Limitations on the Issuance of Commercial Paper

The commercial paper market is not without its problems. Recessions, a series of corporate bankruptcies, major corporate fraud, and other events cause lenders in the commercial paper market to become risk-averse. Because only high-quality companies with good credit ratings can access this market, many firms that have had their credit quality downgraded by credit rating agencies can no longer sell their commercial paper. These companies are then forced to draw down more expensive lines of credit at their banks to replace the commercial paper they couldn't roll over with new paper. This is why companies like Yum! Brands, mentioned at the beginning of this chapter, get a revolving line of credit. The credit lines become funds available in case of need.

Although the funds provided through the issuance of commercial paper are cheaper than bank loans, they are also less predictable. While a firm may pay a higher rate for a bank loan, it is also buying a degree of loyalty and commitment that is unavailable in the commercial paper market. Table 8-1 demonstrates that the difference between the cost of commercial paper and the prime rate is fairly consistent over time. Also note that the prime rate remained low and constant from 2008 to 2014. Toward the end of 2015, the prime went to 3.5 percent, and by 2018 it was 4.5 percent.

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Table 8-1 Comparison of commercial paper rate to prime rate (annual rate*)

	Finance Co. Paper (directly placed) 3 Months	Average Bank Prime Rate	Prime Rate Minus Finance Paper
1997	5.72	8.5	2.78
1998	4.94	7.75	2.81
1999	5.73	8.5	2.77
2000	6.34	9.5	3.16
2001	1.81	4.75	2.94
2002	1.31	4.25	2.94
2003	1.07	4.00	2.93
2004	2.48	5.25	2.77
2005	4.46	7.25	2.79
2006	5.31	8.25	2.94
2007	4.82	7.25	2.43
2008	1.54	3.25	1.71
2009	0.24	3.25	3.01
2010	0.37	3.25	2.88
2011	0.58	3.25	2.67
2012	0.35	3.25	2.9
2013	0.20	3.25	3.05

2014	0.23	3.25	3.02
2015	0.23	3.26	3.03
2016	0.64	3.51	2.87
2017	1.15	4.10	2.95
Average	2.36	5.18	2.83

*Averages for the year.

Source: St. Louis Federal Reserve Bank (FRED).

Foreign Borrowing

An increasing source of funds for U.S. firms has been overseas banks. This trend started several decades ago with the Eurodollar market centered in London. A **Eurodollar loan** is a loan denominated in dollars and made by a foreign bank holding dollar deposits. Such loans are usually short term to intermediate term in maturity. LIBOR is the base interest rate paid on such loans for companies of the highest quality. Loans are often priced at LIBOR plus X percent, as opposed to prime plus X percent. As Figure 8-1 on page 231 shows, Eurodollar loans at LIBOR (rather than the prime interest rate) can be cheaper than U.S. domestic loans. International companies are always looking at foreign markets for cheaper ways of borrowing.

One approach to borrowing has been to borrow from international banks in foreign currencies either directly or through foreign subsidiaries. In using a subsidiary to borrow, the companies may convert the borrowed currencies to dollars, which are then sent to the United States to be used by the parent company. While international borrowing can often be done at lower interest rates than domestic loans, the borrowing firm may suffer from currency risk. That is, the value of the foreign funds borrowed may rise against the dollar so that the loan will take more dollars to repay. Companies generating foreign revenue streams may borrow in those same currencies and thereby reduce or avoid any currency risk. Currency risk will be given greater coverage later in the chapter.

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McDonald's, with its widespread international operations, borrows money in many currencies. McDonald's states in its SEC 10-Q quarterly report ending September 30, 2017, that "a significant part of the Company's operating income is generated outside the U.S., and about 35 percent of its total debt is denominated in foreign currencies. Accordingly, earnings are affected by changes in foreign currency exchange rates, particularly the Euro, British Pound, Australian Dollar, and Canadian Dollar. Collectively, these currencies represent approximately 70 percent of the Company's operating income outside the U.S. If all four of these currencies moved by 10 percent in the same direction, the Company's annual diluted earnings per share would change by about 25 cents." This example illustrates that the financial markets have become more international and so must financial managers.

Use of Collateral in Short-Term Financing

Almost any firm would prefer to borrow on an unsecured (no-collateral) basis; but if the borrower's credit rating is too low or its need for funds too great, the lending institution will require that certain assets be pledged. A secured credit arrangement might help the borrower obtain funds that would otherwise be unavailable.

In any loan, the lender's primary concern, however, is whether the borrower's capacity to generate cash flow is sufficient to liquidate the loan as it comes due. Few lenders would make a loan strictly on the basis of collateral. Collateral is merely a stopgap device to protect the lender when all else fails. The bank or finance company is in business to collect interest, not to repossess and resell assets.

Though a number of different types of assets may be pledged, our attention will be directed to accounts receivable and inventory. All states have now adopted the Uniform Commercial Code, which standardizes and simplifies the procedures for establishing security on a loan.

Accounts Receivable Financing

Accounts receivable financing may include **pledging accounts receivable** as collateral for a loan or an outright sale (**factoring**) of receivables. Receivables financing is popular because it permits borrowing to be tied directly to the level of asset expansion at any point in time. As the level of accounts receivable goes up, a firm is able to borrow more.

A drawback is that this is a relatively expensive method of acquiring funds, so it must be carefully compared to other forms of credit. Accounts receivable represent one of the firm's most valuable short-term assets, and they should be committed only where the appropriate circumstances exist. An ill-advised accounts receivable financing plan may exclude the firm from a less expensive bank term loan.

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Pledging Accounts Receivable

The lending institution will generally stipulate which of the accounts receivable is of sufficient quality to serve as collateral for a loan. On this basis, we may borrow 60 to 90 percent of the value of the acceptable collateral. The loan percentage will depend on the financial strength of the borrowing firm and on the creditworthiness of its accounts. The lender will have full recourse against the borrower if any of the accounts go bad. The interest rate in a receivables borrowing arrangement is generally well in excess of the prime rate.

The interest is computed against the loan balance outstanding, a figure that may change quite frequently, as indicated in Table 8-2. In the illustration, interest is assumed to be 12 percent annually, or 1 percent per month. In month 1, we are able to borrow \$8,000 against \$10,000 in acceptable receivables and we must pay \$80 in interest. Similar values are developed for succeeding months.

Table 8-2 Receivables loan balance				
	Month 1	Month 2	Month 3	Month 4
Total accounts receivable	\$11,000	\$15,100	\$19,400	\$16,300
Acceptable accounts receivable (to finance company)	10,000	14,000	18,000	15,000
Loan balance (80%)	8,000	11,200	14,400	12,000
Interest 12% annual—1% per month	80	112	144	120

Factoring Receivables

When we factor receivables, they are sold outright to a finance company. Our customers may be instructed to remit the proceeds directly to the purchaser of the account. The factoring firm generally does not have recourse against the seller of the receivables. As a matter of practice, the finance company may do part or all of the credit analysis directly to ensure the quality of the accounts. As a potential sale is being made, the factoring firm may give immediate feedback to the seller on whether the account will be purchased.

When the factoring firm accepts an account, it may forward funds immediately to the seller, in anticipation of receiving payment 30 days later as part of the normal billing process. The factoring firm is not only absorbing risk but also actually advancing funds to the seller a month earlier than the seller would normally receive them.

For taking the risk, the factoring firm is generally paid on a fee or commission equal to 1 to 3 percent of the invoices accepted. In addition, it is paid a lending rate for advancing the funds early. If \$100,000 a *month* is processed at a 1 percent commission and a 12 percent annual borrowing rate, the total effective cost will be 24 percent on an *annual* basis.

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1% Commission

1% Interest for one month (12% annual/12)

2% Total fee monthly

2% Monthly $\times$ 12 = 24% annual rate

If one considers that the firm selling the accounts is transferring risk as well as receiving funds early, which may allow it to take cash discounts, the rate may not be considered exorbitant. Also, the firm is able to pass on much of the credit-checking cost to the factor.

Asset-Backed Public Offerings of Receivables

While factoring has long been one way of selling receivables, public offerings of securities backed by receivables as collateral gained respectability when General Motors Acceptance Corporation (GMAC) made a public offering of \$500 million of asset-backed securities in December 1985. However, you can see by referring back to Figure 8-2 on page 237 that asset-backed securities have fallen out of favor since the financial crisis.

These **asset-backed securities** are nothing more than the sale of receivables. In former years, companies that sold receivables were viewed as short of cash, financially shaky, or in some financial trouble. This negative perception has been diminished by new issues of receivables-backed securities by large, creditworthy companies like IBM.

These asset-backed public offerings of receivables have continued to be marketable, and IBM added a new wrinkle by selling a public offering of receivables due from state and municipal governments. The interest paid to the owners of these securities is not taxable by the federal government. This allows IBM to raise cash at below-market rates. This strategy may be available only to large companies having significant business with state and local government units. Investment bankers continue to develop new types of asset-backed securities, and they are optimistic that the use of all asset-backed securities will continue to grow.

One of the benefits to the issuer is that they trade future cash flows for immediate cash. The asset-backed security is likely to carry a high credit rating of AA or better, even when the issuing firm may have a low credit rating. This allows the issuing firm to acquire lower-cost funds than it could with a bank loan or a bond offering. While this short-term market is still relatively small by money market standards, it can provide an important avenue for corporate liquidity and short-term financing.

However, several problems face the public sale of receivables. One consideration for the buyer of these securities is the probability that the receivables will actually be paid. Even though the loss rate on loans was about one-half of 1 percent in the past, bad debts can be much more than that in times of recession. For example, a serious recession might cause many car owners to default on their car payments to GMAC, thus leaving the owners of the asset-backed security without the promised cash flows. This happened quite often in 2007–2009. To counteract these fears, many issuers set up a loan-loss reserve fund to partially insure against the possibility of a loss.

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Inventory Financing

We may also borrow against inventory to acquire funds. The extent to which inventory financing may be employed is based on the marketability of the pledged goods, their associated price stability, and the perishability of the product. Another significant factor is the degree of physical control that can be exercised over the product by the lender. We can relate some of these factors to the stages of inventory production and the nature of lender control.

Stages of Production

Raw materials and finished goods are likely to provide the best collateral, while goods in process may qualify for only a small percentage loan. To the extent that a firm is holding such widely traded raw materials as lumber, metals, grain, cotton, and wool, a loan of 70 to 80 percent or higher is possible. The lender may have to place only a few quick phone calls to dispose of the goods at market value if the borrower fails to repay the loan. For standardized finished goods, such as tires, canned goods, and building products, the same principle would apply. Goods in process, representing altered but unfinished raw materials, may qualify for a loan of only one-fourth of their value or less.

Nature of Lender Control

The methods for controlling pledged inventory go from the simple to the complex, providing ever greater assurances to the lender but progressively higher administrative costs. Typical arrangements are as follows.

Blanket Inventory Liens The simplest method is for the lender to have a general claim against the inventory of the borrower through **blanket inventory liens**. Specific items are not identified or tagged, and there is no physical control.

Trust Receipts A **trust receipt** is an instrument acknowledging that the borrower holds the inventory and proceeds from sales in trust for the lender. Each item is carefully marked and specified by serial number. When the items are sold, the proceeds are transferred to the lender and the trust receipt is canceled. Also known as *floor planning*, this financing device is popular among auto and industrial equipment dealers and in the television and home appliance industries. Although it provides tighter control than does the blanket inventory lien, it still does not give the lender direct physical control over inventory—only a better and more legally enforceable system of tracing the goods.

Warehousing Under this arrangement, goods are physically identified, segregated, and stored under the direction of an independent warehousing company. The firm issues a warehouse receipt to the lender, and goods can be moved only with the lender's approval.

The goods may be stored on the premises of the warehousing firm, an arrangement known as **public warehousing**, or on the *borrower's premises*—under a **field warehousing** agreement. When field warehousing is utilized, it is still an independent warehousing company that exercises control over inventory.

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How About Going to the Internet to Borrow Money?

Finance in
ACTION

Technology

www.prosper.com

www.lendingclub.com

For small borrowers tired of paying exorbitant interest rates to traditional lenders, here's a new idea for that college loan or automobile loan. Try www.prosper.com, an eBaytype online lender-borrower setup for the Internet age. If you don't want to borrow, you might decide to become a minibanker (lender) online.

Here's how it all works. People who want to borrow go to the prosper.com site and list their borrowing needs. They indicate the amount they want to borrow and the maximum interest rate they are willing to pay. This might be \$1,000 to pay off credit card debt at a maximum rate of 10 percent. To help lenders decide whether to forward the funds, the borrower must have his or her credit record checked and receive a credit grade. The borrowers can remain anonymous to everyone but the central facilitator, prosper.com. In most cases, the borrower is not likely to be an AAA individual on the upside or a deadbeat on the downside, but rather an average person in need of funds who is looking for the best possible deal. In this day and time, people look to the Internet to trade in used clothing, so why not money?

The good news for potential lenders is that they do not have to provide the full amount of the loan. They merely submit a small amount of the funds the borrower wishes to acquire. In the prior \$1,000 example, a lender may indicate he or she will provide \$50 at a rate of 9 percent. There could be 20 to 25 other potential lenders willing to lend anywhere from \$25 to \$100 each with interest rates varying from 6 to 10 percent.

The borrower then chooses the lenders with the lowest rates to provide funds up to \$1,000. It's possible that the loan request will not get fully funded and the borrower will accept 60 to 70 percent of the funds needed on the consolidated loan. On the website, there is a constant update of how much of the loan has been funded, much as on eBay, where there is a constant update on the number of bids on an item and the current high bid.

Once the loan arrangement is completed, Prosper.com facilitates the repayment from the borrower's bank account to the various lenders. This may take place over many months or years depending on the terms of the loan. For doing its part, Prosper.com charges the borrower 1 percent of the loan amount for arranging the loan and the seller 0.5 percent for servicing the loan (transferring the funds, etc.). The total charge is normally less than that involved in hidden fees to a credit card provider.

Some critics of online borrowing say it's too risky to lend money to people you do not know or have never met. But keep in mind people buy \$5,000 autographed baseballs on the Internet or accept dates with people they have never met through online arrangements. Could the risk here be much greater?

Perhaps online lending came of age in December 2014 as one of Prosper's competitors, LendingClub, raised over \$850 million in an initial public offering. This firm's stock is listed on the New York Stock Exchange under the ticker symbol LC. The stock hit a high of \$25.74 and was trading at \$4.02 in January 2018. You can follow LendingClub on Yahoo! Finance.

Appraisal of Inventory Control Devices

While the more structured methods of inventory financing appear somewhat restrictive, they are well accepted in certain industries. For example, field warehousing is popular in grain storage and food canning. Well-maintained control measures involve substantial administrative expenses, and they raise the overall costs of borrowing. The costs of inventory financing may run 15 percent or higher. However, as is true of accounts receivable financing, the extension of funds is well synchronized with the need.

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Hedging to Reduce Borrowing Risk

Those who are in continual need of borrowed funds to operate their firms are exposed to the risk of interest rate changes. One way to partially reduce that risk is through interest rate hedging activities in the financial futures market. **Hedging** means to engage in a transaction that partially or fully reduces a prior risk exposure.

The **financial futures market** is set up to allow for the trading of a financial instrument at a future point in time. For example, in January 2019 one might sell a Treasury bond contract that is to be closed out in June 2019. The sales price of the June 2019 contract is established by the initial January transaction. However, a subsequent purchase of a June 2019 contract at a currently unknown price will be necessary to close out the transaction. In the financial futures market, you do not physically deliver the goods; you merely execute a later transaction that reverses your initial position. Thus if you initially sell a futures contract, you later buy a contract that covers your initial sale. If you initially buy a futures contract, the opposite is true and you later sell a contract that covers your initial purchase position.

In the case of selling a Treasury bond futures contract, the subsequent pattern of interest rates will determine whether it is profitable or not. If interest rates go up, Treasury bond prices will go down, and you will be able to buy a subsequent contract at a lower price than the sales value you initially established. This will result in a profitable transaction. Note the following example:

Sales price, June 2019 Treasury bond contract* (sale occurs in January 2019)	\$100,000
Purchase price, June 2019 Treasury bond contract (purchase occurs in June 2019)	95,000
Profit on futures contract	\$ 5,000

*Only a small percentage of the actual dollars involved must be invested to initiate the contract. This is known as margin.

The reason Treasury bond prices went down is that interest rates and bond prices move in opposite directions, and interest rates went up. The lesson to be learned from this example is that rising interest rates can mean profits in the financial futures market if you initially sell a contract and later buy it back.

The financial manager who continually needs to borrow money and fears changes in interest rates can partially hedge his or her position by engaging in the type of futures contract just described. If interest rates rise, the extra cost of borrowing money to actually finance the business can be offset by the profit on a futures contract. If interest rates go down, there will be a loss on the futures contract as bond prices go up, but this will be offset by the more desirable lower borrowing costs of financing the firm.

The financial futures market can be used to partially or fully hedge against almost any financial event. In addition to Treasury bonds, trades may be initiated in Treasury bills, certificates of deposit, GNMA certificates,³ and many other instruments. The trades may be executed on such exchanges as the Chicago Mercantile Exchange or the New York Futures Exchange.

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Large, international firms such as Procter & Gamble or ExxonMobil may also need to hedge against foreign exchange risk. For example, if a company borrows money in Japanese yen and intends to repay the loan using U.S. dollars, it has some concern that the exchange rate between the Japanese yen and the U.S. dollar may change in a way that would make the loan more expensive. If the value of the Japanese yen increases against the U.S. dollar, more dollars will be needed to repay the loan. This movement in the exchange rate increases the total cost of the loan by making the principal repayment more expensive than the original amount of the loan.

The company could hedge against a rise in the Japanese yen by using the Chicago Mercantile Exchange's International Monetary Market where Japanese yen futures contracts are traded, as well as those in euros, Canadian dollars, Mexican pesos, and other currencies. If a ¥100-million Japanese loan were due in six months, the company could buy a Japanese yen futures contract that could be closed out six months in the future. The purchase price on the futures contract is established at the time of the initial purchase transaction. The eventual sales price for the contract will be determined later. If the value of the Japanese yen increases against the dollar, profit will be made on the futures contract. The money made on the futures contract can offset the higher cost of the company's loan payment. The currency exposure has thus been effectively hedged.⁴

SUMMARY

A firm in search of short-term financing must be aware of all the institutional arrangements that are available. Trade credit from suppliers is normally the most available form of short-term financing and is a natural outgrowth of the buying and reselling of goods. Larger firms tend to be net providers of trade credit, while smaller firms are net users.

Bank loans are usually short term and self-liquidating, being paid back from funds from the normal operations of the firm. A financially strong customer will be offered the lowest rate, with the rates to other customers scaled up to reflect their risk category. Bankers use either the prime rate or LIBOR as their base rate and add to that depending on the creditworthiness of the customer. Banks also use compensating balances as well as fees to increase the effective yield to the bank.

An alternative to bank credit for the large, prestigious firm is the use of commercial paper, which represents a short-term, unsecured promissory note issued by the firm. Though generally issued at a rate below prime, it is an impersonal means of financing that may "dry up" during difficult financing periods.

Firms are increasingly turning to foreign markets for lower-cost sources of funds. They may borrow in the Eurodollar market (foreign dollar loans) or borrow foreign currency directly from banks in an attempt to lower their borrowing costs.

By using accounts receivable and inventory as collateral for a loan, the firm may be able to turn these current assets into cash more quickly than by waiting for the normal cash flow cycle. By using a secured form of financing, the firm ties its borrowing requirements directly to its asset buildup. The firm may also sell its accounts receivable to a factor. These secured forms of borrowing may be expensive but may fit the credit needs of the firm, particularly the needs of a small firm that cannot qualify for lower-cost bank financing or the commercial paper market.

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Finally, the financial manager may wish to consider the use of hedging through the financial futures market. The consequences of rapid interest rate or currency changes can be reduced through participation in the futures market.

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DISCUSSION QUESTIONS

1. Under what circumstances would it be advisable to borrow money to take a cash discount? (LO8-1)
2. Discuss the relative use of credit between large and small firms. Which group is generally in the net creditor position, and why? (LO8-1)
3. How have new banking laws influenced competition? (LO8-2)
4. What is the prime interest rate? How does the average bank customer fare in regard to the prime interest rate? (LO8-2)
5. What does LIBOR mean? Is LIBOR normally higher or lower than the U.S. prime interest rate? (LO8-2)
6. What advantages do compensating balances have for banks? Are the advantages to banks necessarily disadvantages to corporate borrowers? (LO8-2)
7. Commercial paper may show up on corporate balance sheets as either a current asset or a current liability. Explain this statement. (LO8-3)
8. What are the advantages of commercial paper in comparison with bank borrowing at the prime rate? What is a disadvantage? (LO8-3)
9. What is the difference between pledging accounts receivable and factoring accounts receivable? (LO8-4)
10. What is an asset-backed public offering? (LO8-4)
11. Briefly discuss three types of lender control used in inventory financing. (LO8-4)
12. What is meant by hedging in the financial futures market to offset interest rate risks? (LO8-5)

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PRACTICE PROBLEMS AND SOLUTIONS

Cash discount decision

(LO8-1)

1. Automatic Machinery is being offered a 2/10, net 50 cash discount. The firm will have to borrow the funds at 12 percent to take the discount. Should it proceed with the discount?

Computation of rates

(LO8-2)

2. A company plans to borrow \$2 million for a year. The stated interest rate is 12 percent. Compute the effective interest rate under each of these assumptions. Each part stands alone.
 - a. The interest is discounted.
 - b. There is a 20 percent compensating balance requirement.
 - c. It is a 12-month installment loan.
 - d. Assume the interest is only \$45,000 and the loan is for 90 days.

Solutions

1. First compute the cost of not taking the cash discount.

$$\begin{aligned}
 \text{Cost of failing to take a cash discount} &= \frac{\text{Discount \%}}{100\% - \text{Discount \%}} \\
 &\quad \times \frac{360}{\text{Final due date} - \text{Discount period}} \\
 &= \frac{2\%}{100\% - 2\%} \times \frac{360}{50 - 10} \\
 &= 2.04\% \times 9 = 18.36\%
 \end{aligned}$$

Since money can be borrowed at 12 percent, the firm should borrow the funds and take the discount.

2. a. Effective rate on discounted loan = $\frac{\text{Interest}}{\text{Principal} - \text{Interest}} \times \frac{\text{Days in the year (360)}}{\text{Days loan is outstanding}}$
- $$\begin{aligned}
 &= \frac{\$240,000}{\$2,000,000 - 240,000} \times \frac{360}{360} \\
 &= \frac{\$240,000}{1,760,000} \times 1 = 13.64\%
 \end{aligned}$$
- b. Effective rate with compensating balances
- $$= \frac{\text{Interest}}{\text{Principal} - \text{Compensating balance in dollars}} \times \frac{\text{Days in the year (360)}}{\text{Days loan is outstanding}}$$
- Compensating balance = $20\% \times \$2,000,000 = \$400,000$
- $$\text{Effective rate} = \frac{\$240,000}{1,600,000} \times 1 = 15\%$$
- c. Effective rate on installment loan
- $$\begin{aligned}
 &= \frac{2 \times \text{Annual number of payments} \times \text{Interest}}{(\text{Total number of payments} + 1) \times \text{Principal}} \\
 &= \frac{2 \times 12 \times \$240,000}{(12 + 1) \times \$2,000,000} \times \frac{\$576,000}{2,600,000} = 22.15\%
 \end{aligned}$$
- d. Effective rate = $\frac{\text{Interest}}{\text{Principal}} \times \frac{\text{Days in the year (360)}}{\text{Days loan is outstanding}}$
- $$= \frac{\$45,000}{\$2,000,000} \times \frac{360}{90} = 2.25\% \times 4 = 9\%$$

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PROBLEMS

 Selected problems are available with Connect. Please see the preface for more information.

Basic Problems

Cash discount decision

(LO8-1)

- Compute the cost of not taking the following cash discounts:
 - 2/10, net 40
 - 2/15, net 30
 - 2/10, net 45
 - 3/10, net 90

Cash discount decision

(LO8-1)

- Regis Clothiers can borrow from its bank at 17 percent to take a cash discount. The terms of the cash discount are 3/19, net 45. Should the firm borrow the funds?

Cash discount decision

(LO8-1)

3. Simmons Corp. can borrow from its bank at 17 percent to take a cash discount. The terms of the cash discount are 1.5/10, net 45. Should the firm borrow the funds?

Effective rate of interest

(LO8-2)

4. Your bank will lend you \$4,000 for 45 days at a cost of \$50 interest. What is your effective rate of interest?

Effective rate of interest

(LO8-2)

5. A pawnshop will lend \$2,500 for 45 days at a cost of \$35 interest. What is the effective rate of interest?

Effective rate on discounted loan

(LO8-2)

6. Sol Pine borrows \$5,000 for one year at 13 percent interest. What is the effective rate of interest if the loan is discounted?

Effective rate on discounted loan

(LO8-2)

7. Mary Ott is going to borrow \$10,400 for 120 days and pay \$150 interest. What is the effective rate of interest if the loan is discounted?

Prime vs. LIBOR

(LO8-2)

8. Dr. Ruth is going to borrow \$5,000 to help write a book. The loan is for one year and the money can be borrowed at either the prime rate or the LIBOR rate. Assume the prime rate is 11 percent and LIBOR 1.5 percent less. Also assume there will be a \$45 transaction fee with LIBOR (this amount must be added to the interest cost with LIBOR). Which loan has the lower effective interest cost?

Foreign borrowing

(LO8-2)

9. Gulliver Travel Agency thinks interest rates in Europe are low. The firm borrows euros at 9 percent for one year. During this time period, the dollar falls 14 percent against the euro. What is the effective interest rate on the loan for one year? (Consider the 14 percent fall in the value of the dollar as well as the interest payment.)

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Dollar cost of a loan

(LO8-2)

10. Talmud Book Company borrows \$24,900 for 60 days at 12 percent interest. What is the dollar cost of the loan?

$$\text{Dollar cost of loan} = \frac{\text{Amount borrowed} \times \text{Interest rate} \times \text{Days loan is outstanding}}{\text{Days in the year (360)}}$$

Net credit position

(LO8-1)

11. McGriff Dog Food Company normally takes 27 days to pay for average daily credit purchases of \$9,530. Its average daily sales are \$10,680, and it collects accounts in 32 days.
- a. What is its net credit position? That is, compute its accounts receivable and accounts payable and subtract the latter from the former.

$$\text{Accounts receivable} = \frac{\text{Average daily credit sales} \times \text{Average collection period}}{\text{Average collection period}}$$

$$\text{Accounts payable} = \frac{\text{Average daily credit purchases} \times \text{Average payment period}}{\text{Average payment period}}$$

- b. If the firm extends its average payment period from 27 days to 37 days (and all else remains the same), what is the firm's new net credit position? Has it improved its cash flow?



Compensating balances

(LO8-2)

12. Maxim Air Filters Inc. plans to borrow \$300,000 for one year. Northeast National Bank will lend the money at 10 percent interest and requires a compensating balance of 20 percent. What is the effective rate of interest?

Compensating balances

(LO8-2)

13. Digital Access Inc. needs \$400,000 in funds for a project.
- With a compensating balance requirement of 20 percent, how much will the firm need to borrow?
 - Given your answer to part *a* and a stated interest rate of 9 percent on the *total* amount borrowed, what is the effective rate on the \$400,000 actually being used?

Intermediate Problems

Compensating balances and installment loans

(LO8-2)

14. Carey Company is borrowing \$200,000 for one year at 12 percent from Second Intrastate Bank. The bank requires a 20 percent compensating balance. What is the effective rate of interest? What would the effective rate be if Carey were required to make 12 equal monthly payments to retire the loan? The principal, as used in Formula 8-6, refers to funds the firm can utilize effectively (Amount borrowed – Compensating balance).

Compensating balances with idle cash balances

(LO8-2)

15. Randall Corporation plans to borrow \$233,000 for one year at 20 percent from the Waco State Bank. There is a 21 percent compensating balance requirement. Randall Corporation keeps minimum transaction balances of \$17,500 in the normal course of business. This idle cash counts toward meeting the compensating balance requirement. What is the effective rate of interest?

Compensating balances with idle cash balances

(LO8-2)

16. The treasurer for the Macon Blue Sox baseball team is seeking a \$23,600 loan for one year from the 4th National Bank of Macon. The stated interest rate is 10 percent, and there is a 15 percent compensating balance requirement. The treasurer always keeps a minimum of \$2,280 in the baseball team's checking accounts. These funds count toward meeting any compensating balance requirements. What will be the effective rate of interest on this loan?

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Effective rate under different terms

(LO8-2)

17. Your company plans to borrow \$13 million for 12 months, and your banker gives you a stated rate of 24 percent interest. You would like to know the effective rate of interest for the following types of loans. (Each of the following parts stands alone.)
- Simple 24 percent interest with a 10 percent compensating balance.
 - Discounted interest.
 - An installment loan (12 payments).
 - Discounted interest with a 5 percent compensating balance.

Effective rate under different terms

(LO8-2)

18. If you borrow \$5,300 at \$400 interest for one year, what is your effective interest rate for the following payment plans?
- Annual payment
 - Semiannual payments
 - Quarterly payments
 - Monthly payments

Advanced Problems

Effective rate under different terms

(LO8-2)

19. Zerox Copying Company plans to borrow \$172,000. New Jersey National Bank will lend the money at one-half percentage point over the prime rate at the time of 17½ percent (18 percent total) and requires a compensating balance of 21 percent. The principal in this case will be funds that the firm can effectively use in the business. This loan is for one year. What is the effective rate of interest? What would the effective rate be if Zerox were required to make four quarterly payments to retire the loan?

Installment loan for multiyears

(LO8-2)

20. Lewis and Clark Camping Supplies Inc. is borrowing \$51,000 from Western State Bank. The total interest is \$15,700. The loan will be paid by making equal monthly payments for the next three years. What is the effective rate of interest on this installment loan?

Cash discount under special circumstance

(LO8-2)

21. Mr. Hugh Warner is a very cautious businessman. His supplier offers trade credit terms of 3/15, net 85. Mr. Warner never takes the discount offered, but he pays his suppliers in 75 days rather than the 85 days allowed so that he is sure the payments are never late. What is Mr. Warner's cost of not taking the cash discount?

Bank loan to take cash discount

(LO8-1 & 8-2)

22. The Reynolds Corporation buys from its suppliers on terms of 3/17, net 45. Reynolds has not been utilizing the discounts offered and has been taking 45 days to pay its bills.
Ms. Duke, Reynolds Corporation vice president, has suggested that the company begin to take the discounts offered. Duke proposes that the company borrow from its bank at a stated rate of 16 percent. The bank requires a 27 percent compensating balance on these loans. Current account balances would not be available to meet any of this compensating balance requirement.

Do you agree with Duke's proposal?

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Bank loan to take cash discount

(LO8-1 & 8-2)

23. In Problem 22, if the compensating balance were 20 percent instead of 27 percent, would your answer change? Do the appropriate calculation.

Bank loan to take cash discount

(LO8-1 & 8-2)

24. Neveready Flashlights Inc. needs \$340,000 to take a cash discount of 3/17, net 72. A banker will lend the money for 55 days at an interest cost of \$10,400.
- What is the effective rate on the bank loan?
 - How much would it cost (in percentage terms) if the firm did not take the cash discount but paid the bill in 72 days instead of 17 days?
 - Should the firm borrow the money to take the discount?
 - If the banker requires a 20 percent compensating balance, how much must the firm borrow to end up with the \$340,000?
 - What would be the effective interest rate in part *d* if the interest charge for 55 days were \$13,000? Should the firm borrow with the 20 percent compensating balance? (The firm has no funds to count against the compensating balance requirement.)

Bank loan to take cash discount

(LO8-1 & 8-2)

25. Harper Engine Company needs \$631,000 to take a cash discount of 2.5/20, net 75. A banker will lend the money for 55 days at an interest cost of \$13,300.
- What is the effective rate on the bank loan?
 - How much would it cost (in percentage terms) if Harper did not take the cash discount but paid the bill in 75 days instead of 20 days?
 - Should Harper borrow the money to take the discount?
 - If another banker requires a 10 percent compensating balance, how much must Harper borrow to end up with \$631,000?
 - What would be the effective interest rate in part *d* if the interest charge for 55 days were \$10,100? Should Harper borrow with the 10 percent compensating balance? (There are no funds to count against the compensating balance requirement.)

Competing terms from banks

(LO8-2)

26. Summit Record Company is negotiating with two banks for a \$151,000 loan. Fidelity Bank requires a 28 percent compensating balance, discounts the loan, and wants to be paid back in four quarterly payments. Southwest Bank requires a 14 percent compensating balance, does not discount the loan, but wants to be paid back in 12 monthly installments. The stated rate for both banks is 10 percent. Compensating balances will be subtracted from the \$151,000 in determining the available funds in part *a*.
- Calculate the effective interest rate for Fidelity Bank and Southwest Bank. Which loan should Summit accept?
 - Recompute the effective cost of interest, assuming that Summit ordinarily maintains \$42,280 at each bank in deposits that will serve as compensating balances.

- c. Does your choice of banks change if the assumption in part *b* is correct?



Accounts receivable financing
(LO8-1)

27. Charming Paper Company sells to the 12 accounts listed here:

Account	Receivable Balance Outstanding	Average Age of the Account over the Last Year
	\$	
A	60,800	22
B	168,000	43
C	78,300	19
D	24,300	55
E	58,900	42
F	238,000	39
G	30,400	16
H	374,000	72
I	41,400	32
J	96,500	58
K	292,000	17
L	67,700	37

Capital Financial Corporation will lend 90 percent against account balances that have averaged 30 days or less, 80 percent for account balances between 31 and 40 days, and 70 percent for account balances between 41 and 45 days. Customers that take over 45 days to pay their bills are not considered acceptable accounts for a loan.

The current prime rate is 15.5 percent, and Capital charges 4.5 percent over prime to Charming as its annual loan rate.

- Determine the maximum loan for which Charming Paper Company could qualify.
- Determine how much one month's interest expense would be on the loan balance determined in part *a*.

Hedging to offset risk
(LO8-5)

28. The treasurer for Pittsburgh Iron Works wishes to use financial futures to hedge her interest rate exposure. She will sell five Treasury futures contracts at \$138,000 per contract. It is July, and the contracts must be closed out in December of this year. Long-term interest rates are currently 13.3 percent. If they increase to 14.5 percent, assume the value of the contracts will go down by 5 percent. Also, if interest rates do increase by 1.2 percent, assume the firm will have additional interest expense on its business loans and other commitments of \$53,000. This expense, of course, will be separate from the futures contracts.
- What will be the profit or loss on the futures contract if interest rates increase to 14.5 percent by December when the contract is closed out?
 - Explain why a profit or loss took place on the futures contracts.
 - After considering the hedging in part *a*, what is the net cost to the firm of the increased interest expense of \$53,000? What percentage of this \$53,000 cost did the treasurer effectively hedge away?
 - Indicate whether there would be a profit or loss on the futures contracts if interest rates dropped.



WEB EXERCISE

- This chapter explores the various sources of financing working capital needs. It also mentions General Electric Capital as a competitor to the banking community. This exercise examines General Electric Capital's various services. Go to General Electric's website at www.ge.com.

Go to “GE Capital” on the home page. Click on “GE Businesses.”

2. Scroll down and list three types of services GE Capital provides.
3. Explain the benefits of GE Capital’s Aviation Finance.
4. Based on the information you have seen, does it appear that GE Capital competes with more traditional financial institutions?

Note: Occasionally a topic we have listed may have been deleted, updated, or moved into a different location on a website. If you click on the site map or site index, you will be introduced to a table of contents that should aid you in finding the topic you are looking for.

$$^1 \frac{20}{360} \times 10\% \times \$98 = 0.54$$

²An exception to this definition is asset-backed commercial paper, which is covered later in this discussion.

³GNMA stands for Government National Mortgage Association, also known as Ginnie Mae.

⁴For a more complete discussion of corporate hedging in the futures market, see “Commodities and Financial Futures” in Chapter 15 of Geoffrey Hirt and Stanley Block, *Fundamentals of Investment Management*, 10th ed. (New York: McGraw-Hill, 2012).