Chapter 15: Interest Rate Derivative Markets

Many firms have inflow and outflow payments that are not equally sensitive to interest rate patterns. Consequently, they are exposed to interest rate risk. Interest rate swap contracts have been established to reduce these risks. Interest rate swap markets facilitate the trading of interest rate swap contracts.

The specific objectives of this chapter are to:
- describe the types of interest rate swaps that are available,
- explain the risks of interest rate swaps,
- identify other interest rate derivative instruments that are commonly used, and
- describe how the interest rate swap markets have become globalized.

Background

An interest rate swap is an arrangement whereby one party exchanges one set of interest payments for another. In the most common arrangement, fixed-rate interest payments are exchanged for floating-rate interest payments over time. The provisions of an interest rate swap include the following:

- The notional principal value to which the interest rates are applied to determine the interest payments involved.
- The fixed interest rate.
- The formula and type of index used to determine the floating rate.
- The frequency of payments, such as every six months or every year.
- The lifetime of the swap.

For example, a swap arrangement may involve an exchange of 11 percent fixed-rate payments for floating payments at the prevailing one-year Treasury bill rate plus 1 percent, based on $30 million of notional principal, at the end of each of the next seven years. Other money market rates are sometimes used instead of the T-bill rate to index the interest rate.

Although each participant in the swap agreement owes the other participant at each payment date, the amounts owed are typically netted out so that only the net payment is made. If a firm owes 11 percent of $30 million (the notional principal) but is supposed to receive 10 percent of $30 million on a given payment date, it will send a net payment of 1 percent of the $30 million, or $300,000.

The market for swaps is facilitated by over-the-counter trading rather than trading on an organized exchange. Given the uniqueness of the provisions in each swap arrangement, swaps are less standardized than other derivative instruments such as...
futures or options. Thus, a telecommunications network is more appropriate than an exchange to work out specific provisions of swaps.

Interest rate swaps became more popular in the early 1980s when corporations were experiencing the effects of large fluctuations in interest rates. Although some manufacturing companies were exposed to interest rate movements, financial institutions were exposed to a greater degree and became the primary users of interest rate swaps. By the mid-1980s, the volume of interest rate swaps amounted to hundreds of billions of dollars. Initially, only those institutions wishing to swap payments on amounts of $10 million or more engaged in interest rate swaps. In recent years, however, swaps have been conducted on smaller amounts as well.

**Use of Swaps for Hedging**

Financial institutions such as savings institutions and commercial banks in the United States traditionally had more interest rate–sensitive liabilities than assets and therefore were adversely affected by increasing interest rates. Conversely, some financial institutions in other countries (such as some commercial banks in Europe) had access to long-term fixed-rate funding but used funds primarily for floating-rate loans. These institutions were adversely affected by declining interest rates.

By engaging in an interest rate swap, both types of financial institutions could reduce their exposure to interest rate risk. Specifically, a U.S. financial institution could send fixed-rate interest payments to a European financial institution in exchange for floating-rate payments. This type of arrangement is illustrated in Exhibit 15.1. In the event of rising interest rates, the U.S. financial institution receives higher interest payments from the floating-rate portion of the swap agreement, which helps to offset the rising cost of obtaining deposits. In the event of declining interest rates, the European financial institution provides lower interest payments in the swap arrangement, which helps to offset the lower interest payments received on its floating-rate loans.

In our example, the U.S. financial institution forgoes the potential benefits from a decline in interest rates, while the European financial institution forgoes the

---

**Exhibit 15.1 Illustration of an Interest Rate Swap**

![Image of Interest Rate Swap Diagram](image-url)
potential benefits from an increase in interest rates. The interest rate swap enables each institution to offset any gains or losses that result specifically from interest rate movements. Consequently, as interest rate swaps reduce interest rate risk, they can also reduce potential returns. Most financial institutions that anticipate that interest rates will move in a favorable direction do not hedge their positions. Interest rate swaps are primarily used by financial institutions that would be adversely affected by the expected movement in interest rates.

A primary reason for the popularity of interest rate swaps is the existence of market imperfections. If the parties involved in a swap could easily access funds from various markets without having to pay a premium, they would not need to engage in swaps. Using our previous example, a U.S. financial institution could access long-term funds directly from the European market, while the European institution could access short-term funds directly from the U.S. depositors. However, a lack of information about foreign institutions and convenience encourages individual depositors to place deposits locally. Consequently, swaps are necessary for some financial institutions to obtain the maturities or rate sensitivities on funds that they desire.

Use of Swaps for Speculating

Interest rate swaps are sometimes used by financial institutions and other firms for speculative purposes. For example, a firm may engage in a swap to benefit from its expectations that interest rates will rise, even if its other operations are not exposed to interest rate movements. When the swap is used for speculating rather than for hedging, any loss on the swap positions will not be offset by gains from other operations.

Gibson Greetings, Inc. incurred a loss of almost $17 million in 1994 as a result of positions in interest rate swaps. Procter & Gamble incurred a loss of about $157 million in 1994 as a result of positions in interest rate swaps. Procter & Gamble then claimed that Bankers Trust (a commercial bank that served as an intermediary and an adviser on interest rate swaps) did not properly advise it about the risk of its swap positions.

In the same year, Orange County, California, lost more than $2 billion as a result of positions in interest rate swaps and other derivative securities. It was positioned to generate large gains if interest rates declined. Interest rates increased instead, however, and the treasurer of the county took more positions to make up for those losses. He continued to take positions in anticipation that interest rates would decline, but the rates kept on rising throughout 1994. By December 1994, the treasurer resigned, and Orange County announced that it would be filing for bankruptcy.

The substantial losses incurred in these cases encouraged firms to more closely monitor the actions of their managers who take derivative positions to ensure that those positions are aligned with the firm’s goals.

Participation by Financial Institutions

Financial institutions participate in the swap markets in various ways, as summarized in Exhibit 15.2. Financial institutions such as commercial banks, savings institutions, insurance companies, and pension funds that are exposed to interest rate movements commonly engage in swaps to reduce interest rate risk.

A second way to participate in the swap market is by acting as an intermediary. Some commercial banks and securities firms serve in this capacity by matching up firms and facilitating the swap arrangement. Financial institutions that serve as intermediaries for swaps charge fees for their services. They may even provide credit guarantees (for a fee) to each party in the event that the counterparty does not fulfill its obligation. Under these circumstances, the parties engaged in swap agreements assess the credit-
worthiness of the intermediary that is backing the swap obligations. For this reason, participants in the swap market prefer intermediaries that have a high credit rating.

A third way to participate is by acting as a dealer in swaps. The financial institution takes the counterparty position in order to serve a client. In such a case, the financial institution may be exposing itself to interest rate risk unless it has recently taken the opposite position as a counterparty for another swap agreement.

### Types of Interest Rate Swaps

In response to firms’ diverse needs, a variety of interest rate swaps have been created. The following are some of the more commonly used swaps:

- Plain vanilla swaps
- Forward swaps
- Callable swaps
- Putable swaps
- Extendable swaps
- Zero-coupon-for-floating swaps
- Rate-capped swaps
- Equity swaps

Some types of interest rate swaps are more effective than others at offsetting any unfavorable effects of interest rate movements on the U.S. institution. However, those swaps also offset any favorable effects to a greater degree. Other types of interest rate swaps do not provide as effective a hedge but allow the institution more flexibility to benefit from favorable interest rate movements.

### Plain Vanilla Swaps

In a **plain vanilla swap**, sometimes referred to as a fixed-for-floating swap, fixed-rate payments are periodically exchanged for floating-rate payments. The earlier example of the U.S. and European institutions involved this type of swap.

Consider the exchange of payments under different interest rate scenarios in Exhibit 15.3 when using a plain vanilla swap. Although infinite possible interest rate scenarios exist, only two scenarios are considered: (1) a consistent rise in market interest rates and (2) a consistent decline in market interest rates.
The Bank of Orlando has negotiated a plain vanilla swap in which it will exchange fixed payments of 9 percent for floating payments equal to LIBOR plus 1 percent at the end of each of the next five years. LIBOR is the London Interbank Offer Rate, or the interest rate charged on loans between European banks. The LIBOR varies among currencies; for swap examples involving U.S. firms, the LIBOR on U.S. dollars would normally be used. Assume the notional principal is $100 million.

Two scenarios for LIBOR are shown in Exhibit 15.4. The first scenario (in the top panel of Exhibit 15.4) reflects rising U.S. interest rates, which cause LIBOR to in-

<table>
<thead>
<tr>
<th>Scenario I</th>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBOR</td>
<td></td>
<td>7.0%</td>
<td>7.5%</td>
<td>8.5%</td>
<td>9.5%</td>
<td>10.0%</td>
</tr>
<tr>
<td>Floating rate received</td>
<td></td>
<td>8.0%</td>
<td>8.5%</td>
<td>9.5%</td>
<td>10.5%</td>
<td>11.0%</td>
</tr>
<tr>
<td>Fixed rate paid</td>
<td></td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Swap differential</td>
<td></td>
<td>−1.0%</td>
<td>−0.5%</td>
<td>+0.5%</td>
<td>+1.5%</td>
<td>+2.0%</td>
</tr>
<tr>
<td>Net dollar amount received based on notional value of $100 million</td>
<td></td>
<td>−$1,000,000</td>
<td>−$500,000</td>
<td>+$500,000</td>
<td>+$1,500,000</td>
<td>+$2,000,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Scenario II</th>
<th>Year</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBOR</td>
<td></td>
<td>6.5%</td>
<td>6.0%</td>
<td>5.0%</td>
<td>4.5%</td>
<td>4.0%</td>
</tr>
<tr>
<td>Floating rate received</td>
<td></td>
<td>7.5%</td>
<td>7.0%</td>
<td>6.0%</td>
<td>5.5%</td>
<td>5.0%</td>
</tr>
<tr>
<td>Fixed rate paid</td>
<td></td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
<td>9.0%</td>
</tr>
<tr>
<td>Swap differential</td>
<td></td>
<td>−1.5%</td>
<td>−2.0%</td>
<td>−3.0%</td>
<td>−3.5%</td>
<td>−4.0%</td>
</tr>
<tr>
<td>Net dollar amount received based on notional value of $100 million</td>
<td></td>
<td>−$1,500,000</td>
<td>−$2,000,000</td>
<td>−$3,000,000</td>
<td>−$3,500,000</td>
<td>−$4,000,000</td>
</tr>
</tbody>
</table>
crease. The second scenario (in the lower panel) reflects declining U.S. interest rates, which cause LIBOR to decrease. The swap differential derived for each scenario represents the floating interest rate received minus the fixed interest rate paid. The net dollar amount to be transferred as a result of the swap is determined by multiplying the swap differential by the notional principal.

**Forward Swaps**

A **forward swap** involves an exchange of interest payments that does not begin until a specified future point in time. It is useful for financial institutions or other firms that expect to be exposed to interest rate risk at a future point in time.

---

**ILLUSTRATION**

Detroit Bank is currently insulated against interest rate risk. Three years from now, it plans to increase its proportion of fixed-rate loans (in response to consumer demand for these loans) and reduce its proportion of floating-rate loans. To prevent the adverse effects of rising interest rates after that point in time, Detroit Bank may want to engage in interest rate swaps. It can immediately arrange for a forward swap that will begin three years from now. The forward swap allows Detroit Bank to lock in the terms of the arrangement today, even though the swap period is delayed (see Exhibit 15.5).

Although Detroit Bank could have waited before arranging for a swap, it may prefer a forward swap to lock in the terms of the swap arrangement at the prevailing interest rates. If it expects interest rates to be higher three years from now than they are today, and waits until then to negotiate a swap arrangement, the fixed interest rate specified in the arrangement will likely be higher. A forward interest rate swap may allow Detroit Bank to negotiate a fixed rate today that is less than the expected fixed rate on a swap negotiated in the future. Because Detroit Bank will be exchanging fixed payments for floating-rate payments, it wants to minimize the fixed rate used for the swap agreement.

The fixed rate negotiated on a forward swap will not necessarily be the same as the fixed rate negotiated on a swap that begins immediately. The pricing conditions on any swap are based on expected interest rates over the swap lifetime.

Like any interest rate swap, forward swaps involve two parties. Our example of a forward swap involves a U.S. institution that expects interest rates to rise and wants to
immediately lock in the fixed rate that it will pay when the swap period begins. The party that takes the opposite position in the forward swap will likely be a firm that will be adversely affected by declining interest rates and expects interest rates to decline. This firm would prefer to lock in the prevailing fixed rate, because that rate is expected to be higher than the applicable fixed rate when the swap period begins. Because this institution will be receiving the fixed interest payments, it wishes to maximize the fixed rate specified in the swap arrangement.

Callable Swaps

Another use of interest rate swaps is through swap options (or swaptions). A callable swap provides the party making the fixed payments with the right to terminate the swap prior to its maturity. It allows the fixed-rate payer to avoid exchanging future interest payments if it desires.

Reconsider the U.S. institution that wanted to swap fixed interest payments for floating interest payments to reduce any adverse effects of rising interest rates. If interest rates decline, the interest rate swap arrangement offsets the potential favorable effects on this institution. A callable swap allows the institution to terminate the swap in the event that interest rates decline (see Exhibit 15.6).

The disadvantage of a callable swap is that the party given the right to terminate the swap pays a premium that is reflected in a higher fixed interest rate than the party would pay without the call feature. The party may also incur a termination fee in the event that it exercises its right to terminate the swap arrangement.

Putable Swaps

A putable swap provides the party making the floating-rate payments with a right to terminate the swap. To illustrate, reconsider the European institution that wanted to exchange floating-rate payments for fixed-rate payments to reduce the adverse effects of declining interest rates. If interest rates rise, the interest rate swap arrangement offsets the potential favorable effects on the financial institution. A putable swap allows the institution to terminate the swap in the event that interest rates rise (see Exhibit 15.7). As with callable swaps, the party given the right to terminate the swap...
pays a premium. For putable swaps, the premium is reflected in a higher floating rate than would be paid without the put feature. The party may also incur a termination fee in the event that it exercises its right to terminate the swap arrangement.

**Extendable Swaps**

An extendable swap contains a feature that allows the fixed-for-floating party to extend the swap period.

**ILLUSTRATION**

Cleveland Bank negotiates a fixed-for-floating swap for eight years. Assume that interest rates increase over this time period as expected. If Cleveland Bank believes interest rates will continue to rise, it may prefer to extend the swap period (see Exhibit 15.8). Although it could create a new swap, the terms would reflect the current economic conditions. A new swap would typically involve an exchange of fixed payments at the prevailing higher interest rate for floating payments.
Cleveland Bank would prefer to extend the previous swap agreement that calls for fixed payments at the lower interest rate that existed at the time the swap was created. It has additional flexibility because of the extendable feature.

The terms of an extendable swap reflect a price paid for the extendability feature. That is, the interest rates specified in a swap agreement allowing an extension are not as favorable for Cleveland Bank as they would have been without the feature. In addition, if Cleveland Bank does extend the swap period, it may have to pay an extra fee.

**Zero-Coupon-for-Floating Swaps**

Another special type of interest rate swap is the *zero-coupon-for-floating swap*. The fixed-rate payer makes a single payment at the maturity date of the swap agreement, while the floating-rate payer makes periodic payments throughout the swap period. For example, consider a financial institution that primarily attracts short-term deposits and currently has large holdings of zero-coupon bonds that it purchased several years ago. At the time it purchased the bonds, it expected interest rates to decline. Now it has become concerned that interest rates will rise over time, which will not only increase its cost of funds but also reduce the market value of the bonds. This financial institution can request a swap period that matches the maturity of its bond holdings. If interest rates rise over the period of concern, the institution will benefit from the swap arrangement, thereby offsetting any adverse effects on the institution’s cost of funds. The other party in this type of transaction might be a firm that expects interest rates to decline (see Exhibit 15.9). Such a firm would be willing to provide floating-rate payments based on this expectation, because the payments will decline over time, while the single payment to be received at the end of the swap period is fixed.

**Rate-Capped Swaps**

A *rate-capped swap* involves the exchange of fixed-rate payments for floating-rate payments that are capped.

---

**ILLUSTRATION**

Reconsider the example in which the Bank of Orlando arranges to swap fixed payments for floating payments. The counterparty may want to limit its possible payments by setting a cap or ceiling on the interest rate it must pay. The floating-rate payer pays an up-front fee to the fixed-rate payer for this feature.

---

*Exhibit 15.9* Illustration of a Zero-Coupon-for-Floating Swap
In this case, the size of the potential floating payments to be received by the Bank of Orlando would now be limited by the cap, which may reduce the effectiveness of the swap in hedging its interest rate risk. If interest rates rise above the cap, the floating payments received will not move in tandem with the interest the Bank of Orlando will pay depositors for funds (see Exhibit 15.10). However, the Bank of Orlando might believe that interest rates will not exceed a specified level and would therefore be willing to allow a cap. Moreover, the Bank of Orlando would receive an up-front fee from the counterparty for allowing this cap.

**Equity Swaps**

An equity swap involves the exchange of interest payments for payments linked to the degree of change in a stock index. For example, using an equity swap arrangement, a company could swap a fixed interest rate of 7 percent in exchange for the rate of appreciation on the S&P 500 index each year over a four-year period. If the stock index appreciates by 9 percent over the year, the differential is 2 percent (9 percent received minus 7 percent paid), which will be multiplied by the notional principal to determine the dollar amount received. If the stock index appreciates by less than 7 percent, the company will have to make a net payment. This type of swap arrangement may be appropriate for portfolio managers of insurance companies or pension funds that are managing stocks and bonds. The swap would enhance their investment performance in bullish stock market periods without requiring the managers to change their existing allocation of stocks and bonds.

**Other Types of Swaps**

A variety of other swaps are also available, and additional types will be created to accommodate firms’ future needs.

**Use of Swaps to Accommodate Financing Preferences**

Some interest rate swaps are combined with other financial transactions such as the issuance of bonds. Corporate borrowers may be able to borrow at a more attractive interest rate when using floating-rate debt than when using fixed-rate debt. Yet, if they want to make fixed payments on their debt, they can swap fixed-rate payments for floating-rate payments and use the floating-rate payments received to cover their coupon payments. Alternatively, some corporations may prefer to borrow at a floating rate.
but find it advantageous to borrow at a fixed rate. These corporations can issue fixed-rate bonds and then swap floating-rate payments in exchange for fixed-rate payments.

**ILLUSTRATION** Quality Company is a highly rated firm that prefers to borrow at a variable rate. Risky Company is a low-rated firm that prefers to borrow at a fixed rate. These companies would pay the following rates when issuing either variable-rate or fixed-rate Eurobonds:

<table>
<thead>
<tr>
<th></th>
<th>Fixed-Rate Bond</th>
<th>Variable-Rate Bond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality Co.</td>
<td>9%</td>
<td>LIBOR + ½%</td>
</tr>
<tr>
<td>Risky Co.</td>
<td>10½%</td>
<td>LIBOR + 1%</td>
</tr>
</tbody>
</table>

Based on the information given, Quality Company has an advantage when issuing either fixed-rate or variable-rate bonds, but its advantage is greater when issuing fixed-rate bonds. Quality Company could issue fixed-rate bonds while Risky Company issues variable-rate bonds. Quality could then provide variable-rate payments to Risky in exchange for fixed-rate payments.

Assume that Quality negotiated with Risky to provide variable-rate payments at LIBOR plus ½ percent in exchange for fixed-rate payments of 9½ percent. This interest rate swap is shown in Exhibit 15.11. Quality Company benefits, because its fixed-rate payments received on the swap exceed the payments owed to bondholders by ½ percent. Its variable-rate payments to Risky Company are the same as what it would have paid if it had issued variable-rate bonds. Risky is receiving LIBOR plus ½ percent on the swap, which is ½ percent less than what it must pay on its variable-rate bonds. Yet, it is making fixed payments of 9½ percent, which is 1 percent less than it would have paid if it had issued fixed-rate bonds. Overall, it saves ½ percent per year on financing costs.

Two limitations of the swap just described are worth mentioning. First, the process of searching for a suitable swap candidate and negotiating the swap terms entails a cost in time and resources. Second, each swap participant faces the risk that the coun-
party could default on payments. For this reason, financial intermediaries may match up participants and sometimes assume the credit (default) risk involved (for a fee).

**Tax Advantage Swaps** Some swaps have recently been used by firms for tax purposes.

Columbus, Inc. has expiring tax loss carryforwards from previous years. To utilize the carryforwards before they expire, it may engage in a swap that calls for receipt of a large up-front payment with somewhat less favorable terms over time. Columbus may realize an immediate gain on the swap, with possible losses in future years. The tax loss carryforwards from previous years can be applied to offset any taxes on the immediate gain from the swap. Any future losses realized from future payments due to the swap agreement may be used to offset future gains from other operations.

Meanwhile, Ann Arbor, Inc. expects future losses but will realize large gains from operations in this year. It can take a position opposite to that of Columbus. That is, Ann Arbor will arrange for a swap in which it makes an immediate large payment and receives somewhat favorable terms on future payments. This year the firm will incur a tax loss on the swap, which can be used to offset some of its gains from other operations to reduce its tax liability.

**Risks of Interest Rate Swaps**

Several types of risk must be considered when engaging in interest rate swaps. Three of the more common types of risks are basis risk, credit risk, and sovereign risk.

**Basis Risk**

The interest rate of the index used for an interest rate swap will not necessarily move perfectly in tandem with the floating-rate instruments of the parties involved in the swap. For example, the index used on a swap may rise by 0.7 percent over a particular period, while the cost of deposits to a U.S. financial institution rises by 1.0 percent over the same period. The net effect is that the higher interest rate payments received from the swap agreement do not fully offset the increase in the cost of funds. This so-called **basis risk** prevents the interest rate swap from completely eliminating the financial institution’s exposure to interest rate risk.

**Credit Risk**

There is risk that a firm involved in an interest rate swap will not meet its payment obligations. This credit risk is not overwhelming, however, for the following reasons. As soon as the firm recognizes that it has not received the interest payments it is owed, it will discontinue its payments to the other party. The potential loss is a set of net payments that would have been received (based on the differential in swap rates) over time. In some cases, the financial intermediary that matched up the two parties incurs the credit risk by providing a guarantee (for a fee). If so, the parties engaged in the swap do not need to be concerned with the credit risk, assuming that the financial intermediary will be able to cover any guarantees promised.

**Concerns about a Swap Credit Crisis** The willingness of large banks and securities firms to provide guarantees has increased the popularity of interest rate swaps, but it has also raised concerns that widespread adverse effects might occur if any of these intermediaries cannot meet their obligations. If a large bank that has taken numerous swap positions and guaranteed many other swap positions fails,
there could be several defaults on swap payments. Such an event could cause cash flow problems for other swap participants and force them to default on some payment obligations they have on swaps or other financial agreements. Given the global integration of the swap network, defaults by a single large financial intermediary could be transmitted throughout the world.

Because of such concerns, various regulators have considered methods of reducing credit risk in the market. For example, bank regulators have considered forcing banks to maintain more capital if they provide numerous guarantees on swap payments. Other proposals include creating a regulatory agency that would oversee the swap market and minimize credit risk and requiring more complete disclosure of swap positions and guarantees created by financial intermediaries. Given the large growth in swaps, the concerns about credit risk in the market will continue to receive much attention.

**Sovereign Risk**

Sovereign risk reflects potential adverse effects resulting from a country’s political conditions. Various political conditions could prevent the counterparty from meeting its obligation in the swap agreement. For example, the local government might take over the counterparty and then decide not to meet its payment obligations. Alternatively, the government might impose foreign exchange controls that prohibit the counterparty from making its payments.

Sovereign risk differs from credit risk because it is dependent on the financial status of the government rather than the counterparty itself. A counterparty could have very low credit risk but conceivably be perceived as having high sovereign risk because of its government. It does not have control over some restrictions that are imposed by its government.

**Pricing Interest Rate Swaps**

The setting of specific interest rates for an interest rate swap is referred to as pricing the swap. The pricing is influenced by several factors, including prevailing market interest rates, availability of counterparties, and credit and sovereign risk.

**Prevailing Market Interest Rates**

The fixed interest rate specified in a swap is influenced by supply and demand conditions for funds with the appropriate maturity. For example, a plain vanilla (fixed-for-floating) interest rate swap structured when interest rates are very high would have specified a much higher fixed interest rate than one structured when interest rates were low. In general, the interest rates specified in a swap agreement reflect the prevailing interest rates at the time of the agreement.

**Availability of Counterparties**

Swap pricing is also determined by the availability of counterparties. When numerous counterparties are available for a particular desired swap, a party may be able to negotiate a more attractive deal. For example, consider a U.S. financial institution that wants a fixed-for-floating swap. If several European institutions are willing to serve as the counterparty, the U.S. institution may be able to negotiate a slightly lower fixed rate.

The availability of counterparties can change in response to economic conditions. For example, in a period when interest rates are expected to rise, many institutions will want a fixed-for-floating swap, but few institutions will be willing to serve as the counterparty. The fixed rate specified on interest rate swaps will be higher under these conditions than in a period when many financial institutions expect interest rates to decline.
Credit and Sovereign Risk
A party involved in an interest rate swap must assess the probability of default by the counterparty. For example, a firm that desires a fixed-for-floating swap will likely require a lower fixed rate applied to its outflow payments if the credit risk or sovereign risk of the counterparty is high. If a well-respected financial intermediary guarantees payments by the counterparty, however, the fixed rate will be higher.

Factors Affecting the Performance of Interest Rate Swaps
As Exhibit 15.12 shows, the performance of an interest rate swap is affected by several underlying forces; the most important are the forces that influence interest rate movements. The impact of the underlying forces on the performance of an interest rate swap depends on the party’s swap position. For example, to the extent that strong economic growth can increase interest rates, it will be beneficial for a party that is swapping fixed-rate payments for floating-rate payments, but it will adversely affect a party that is swapping floating-rate payments for fixed-rate payments.
The diagram in Exhibit 15.12 can be adjusted to fit any currency. For an interest rate swap involving an interest rate benchmark denominated in a foreign currency, the economic conditions of that country are the primary forces that determine interest rate movements in that currency and therefore the performance of the interest rate swap.

**Indicators Monitored by Participants in the Swaps Market**

Since the performance of a particular interest rate swap position is normally influenced by future interest rate movements, participants in the interest rate swap market closely monitor indicators that may affect these movements. Among the more closely watched indicators are indicators of economic growth (employment, gross domestic product), indicators of inflation (consumer price index, producer price index), and indicators of government borrowing (budget deficit, expected volume of funds borrowed at upcoming Treasury bond auctions).

Interest rate swaps use a variety of proxies (such as LIBOR or a T-bill rate) for the benchmark rate from which a floating-rate payment is determined in each period. These benchmarks tend to move together, however, because they are similarly affected by the economic factors just described.

**Interest Rate Caps, Floors, and Collars**

In addition to the more traditional forms of interest rate swaps, three other interest rate derivative instruments are commonly used:

- Interest rate caps
- Interest rate floors
- Interest rate collars

These instruments are normally classified separately from interest rate swaps, but they do result in interest payments between participants. Each of these instruments can be used by financial institutions to capitalize on expected interest rate movements or to hedge their interest rate risk.

**Interest Rate Caps**

An **interest rate cap** offers payments in periods when a specified interest rate index exceeds a specified ceiling (cap) interest rate. The payments are based on the amount by which the interest rate exceeds the ceiling, multiplied by the notional principal specified in the agreement. A fee is paid up-front to purchase an interest rate cap, and the lifetime of a cap commonly ranges between three and eight years.

The typical purchaser of an interest rate cap is a financial institution that is adversely affected by rising interest rates. If interest rates rise, the payments received from the interest rate cap agreement will help offset any adverse effects.

The seller of an interest rate cap receives the fee paid up-front and is obligated to provide periodic payments when the prevailing interest rates exceed the ceiling rate specified in the agreement. The typical seller of an interest rate cap is a financial institution that expects interest rates to remain stable or decline.

Large commercial banks and securities firms serve as dealers for interest rate caps, in which they act as the counterparty on the transaction. They also serve as brokers, matching up participants that wish to purchase or sell interest rate caps. They may even guarantee (for a fee) the interest payments that are to be paid to the purchaser of the interest rate cap over time.
Assume that Buffalo Savings Bank purchases a five-year cap for a fee of 4 percent of notional principal valued at $60 million (so the fee is $2.4 million), with an interest rate ceiling of 10 percent. The agreement specifies LIBOR as the index used to represent the prevailing market interest rate.

Assume that LIBOR moved over the next five years as shown in Exhibit 15.13. Based on the movements in LIBOR, Buffalo Savings Bank received payments in three of the five years. The amount received by Buffalo in any year is based on the percentage points above the 10 percent ceiling multiplied by the notional principal. For example, in Year 1 the payment is zero because LIBOR was below the ceiling rate. In Year 2, however, LIBOR exceeded the ceiling by 1 percentage point, so Buffalo received a payment of $600,000 (1% × $60 million). To the extent that Buffalo’s performance is adversely affected by high interest rates, the interest rate cap creates a partial hedge by providing payments to Buffalo that are proportionately related to the interest rate level. The seller of the interest rate cap in this example had the opposite payments of those shown for Buffalo in Exhibit 15.13.

Interest rate caps can be devised to meet various risk-return profiles. For example, Buffalo Savings Bank could have purchased an interest rate cap with a ceiling rate of 9 percent to generate payments whenever interest rates exceeded that ceiling. The bank would have had to pay a higher up-front fee for this interest rate cap, however.

### Interest Rate Floors

An **interest rate floor** offers payments in periods when a specified interest rate index falls below a specified floor rate. The payments are based on the amount by which the interest rate falls below the floor rate, multiplied by the notional principal specified in the agreement. A fee is paid up-front to purchase an interest rate floor, and the lifetime of the floor commonly ranges between three and eight years. The interest rate floor can be used to hedge against lower interest rates in the same manner that the interest rate cap hedges against higher interest rates. Any financial institution that purchases an interest rate floor will receive payments if interest rates decline below the floor, which will help offset any adverse interest rate effects.

The seller of an interest rate floor receives the fee paid up-front and is obligated to provide periodic payments when the interest rate on a specified money market instrument falls below the floor rate specified in the agreement. The typical seller of an interest rate floor is a financial institution that expects interest rates to remain stable or rise. Large commercial banks or securities firms serve as dealers and/or brokers of interest rate floors, just as they do for interest rate swaps or caps.
Assume that Toland Finance Company purchases a five-year interest rate floor for a fee of 4 percent of notional principal valued at $60 million (so the fee is $2.4 million), with an interest rate floor of 8 percent. The agreement specifies LIBOR as the index used to represent the prevailing interest rate.

Assume that LIBOR moved over the next five years as shown in Exhibit 15.14. Based on the movements in LIBOR, Toland received payments in two of the five years. The dollar amount received by Toland in any year is based on the percentage points below the 8 percent floor multiplied by the notional principal. For example, in Year 1, LIBOR was 2 percentage points below the interest rate floor, so Toland received a payment of $1.2 million (2% × $60 million). The seller of the interest rate floor in this example had the opposite payments of those shown for Toland in Exhibit 15.14.

**Interest Rate Collars**

An **interest rate collar** involves the purchase of an interest rate cap and the simultaneous sale of an interest rate floor. In its simplest form, the fee received up-front from selling the interest rate floor to one party can be used to pay the fee for purchasing the interest rate cap from another party. Any financial institution that desires to hedge against the possibility of rising interest rates can purchase an interest rate collar. The hedge results from the interest rate cap, which will generate payments to the institution if interest rates rise above the interest rate ceiling.

Because the collar also involves the sale of an interest rate floor, the financial institution is obligated to make payments if interest rates decline below the floor. Yet, if interest rates rise as expected, the rates will remain above the floor, so the financial institution will not have to make payments.

**Illustration**

Assume that Pittsburgh Bank’s performance is inversely related to interest rates. It anticipates that interest rates will rise over the next several years and decides to hedge its interest rate risk by purchasing a five-year interest rate collar, with LIBOR as the index used to represent the prevailing interest rate. The interest rate cap specifies a fee of 4 percent of notional principal valued at $60 million (so the fee is $2.4 million), with an interest rate ceiling of 10 percent. The interest rate floor specifies a fee of 4 percent of notional principal valued at $60 million and an interest rate floor of 8 percent.

Assume that LIBOR moved over the next five years as shown in Exhibit 15.15. Based on the movements in LIBOR, the payments received from purchasing the interest rate cap and the payments made from selling the interest rate floor are derived separately over each of the five years. Because the fee received from selling the inter-

<table>
<thead>
<tr>
<th>End of Year:</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIBOR</td>
<td>6%</td>
<td>11%</td>
<td>13%</td>
<td>12%</td>
<td>7%</td>
<td></td>
</tr>
<tr>
<td>Interest rate floor</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td>8%</td>
<td></td>
</tr>
<tr>
<td>LIBOR’s percent below the floor</td>
<td>2%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Payments received (based on $60 million of notional principal)</td>
<td>$1,200,000</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$600,000</td>
<td></td>
</tr>
<tr>
<td>Fee paid</td>
<td>$2,400,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
est rate floor was equal to the fee paid for the interest rate cap, the initial fees offset. The net payments received by Pittsburgh Bank as a result of purchasing the collar are equal to the payments received from the interest rate cap minus the payments made as a result of the interest rate floor. In the years when interest rates were relatively high, the net payments received by Pittsburgh Bank were positive.

As this example illustrates, when interest rates are high, the collar can generate payments, which may offset the adverse effects of the high interest rates on the bank’s normal operations. Although the net payments were negative in those years when interest rates were low, the performance of the bank’s normal operations should have been strong. Like many other hedging strategies, the interest rate collar reduces the sensitivity of the financial institution’s performance to interest rate movements.

Globalization of Swap Markets

The market for interest rate swaps is not restricted to the United States. As mentioned earlier, European financial institutions commonly have the opposite exposure to interest rate risk and therefore take swap positions counter to the positions desired by U.S. financial institutions. Manufacturing corporations from various countries that are exposed to interest rate risk also engage in interest rate swaps.

Interest rate swaps are executed in various countries and are denominated in many different currencies. Dollar-denominated interest rate swaps account for about half the value of all interest rate swaps outstanding.

Given that swap participants are from various countries, the banks and securities firms that serve as intermediaries have a globalized network of subsidiaries. In this way, they can link participants from various countries. One obvious barrier to the global swap market is the lack of information about participants based in other countries. Thus, concerns about credit risk may discourage some participants from engaging in swaps. This barrier is reduced when international banks and securities firms that serve as intermediaries are willing to back the payments that are supposed to occur under the provisions of the swap agreement.

<table>
<thead>
<tr>
<th>Exhibit 15.15 Illustration of an Interest Rate Collar (Combined Purchase of Interest Rate Cap and Sale of Interest Rate Floor)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>End of Year:</strong></td>
</tr>
<tr>
<td><strong>Purchase of interest rate cap:</strong></td>
</tr>
<tr>
<td>LIBOR</td>
</tr>
<tr>
<td>Interest rate ceiling</td>
</tr>
<tr>
<td>LIBOR’s percent above the ceiling</td>
</tr>
<tr>
<td>Payments received</td>
</tr>
<tr>
<td>Fee paid</td>
</tr>
<tr>
<td><strong>Sale of interest rate floor:</strong></td>
</tr>
<tr>
<td>Interest rate floor</td>
</tr>
<tr>
<td>LIBOR’s percent below the floor</td>
</tr>
<tr>
<td>Payments made</td>
</tr>
<tr>
<td>Fee received</td>
</tr>
<tr>
<td>Fee received minus fee paid</td>
</tr>
<tr>
<td>Payments received minus payments made</td>
</tr>
</tbody>
</table>
Currency Swaps

A currency swap is an arrangement whereby currencies are exchanged at specified exchange rates and at specified intervals. It is essentially a combination of currency futures contracts, although most futures contracts are not available for periods in the distant future. Currency swaps are commonly used by firms to hedge their exposure to exchange rate fluctuations.

Springfield Company is a U.S. firm that expects to receive 2 million British pounds (£) in each of the next four years. It may want to lock in the exchange rate at which it can sell British pounds over the next four years. A currency swap will specify the exchange rate at which the £2 million can be exchanged in each year. Assume the exchange rate specified by a swap is $1.70 (the spot exchange rate at the time of the swap arrangement), so Springfield will receive $3.4 million (£2 million × $1.70 per £) in each of the four years. Conversely, if the firm does not engage in a currency swap, the dollar amount received will depend on the spot exchange rate at the time the pounds are converted to dollars.

The impact of the currency swap is illustrated in Exhibit 15.16. This exhibit also shows the payments that would have been received under two alternative scenarios if the currency swap had not been arranged. Note that the payments received from the swap would have been less favorable than the unhedged strategy if the pound appreciated against the dollar over that period. However, the payments received from the swap would have been more favorable than the unhedged strategy if the pound depreciated against the dollar over that period. The currency swap arrangement reduces the firm’s exposure to changes in the pound’s value.

The large commercial banks that serve as financial intermediaries sometimes take positions. That is, they may agree to swap currencies with a firm rather than simply search for a suitable swap candidate.

Like interest rate swaps, currency swaps are available in several variations. Some currency swap arrangements allow one of the parties an option to terminate the
contract. That party incurs a premium for the option, which is either charged up-front or reflected in the exchange rates specified in the swap arrangement.

**Using Currency Swaps to Hedge Bond Payments** Although currency swaps are commonly used to hedge payments on international trade, they may also be used in conjunction with bond issues to hedge foreign cash flows.

Philly Company, a U.S. firm, wants to issue a bond denominated in euros (the currency now used in several European countries) because it could make payments with euro inflows to be generated from ongoing operations. Philly, however, is not well known to investors who would consider purchasing euro-denominated bonds. Another firm, Windy Company, wants to issue dollar-denominated bonds because its inflow payments are mostly in dollars, but Windy is not well known to the investors who would purchase these bonds. If Philly is known in the dollar-denominated market and Windy is known in the euro-denominated market, the following transactions are appropriate. Philly can issue dollar-denominated bonds, while Windy issues euro-denominated bonds. Philly can exchange euros for dollars to make its bond payments. Windy will receive euros in exchange for dollars to make its bond payments. This currency swap is illustrated in Exhibit 15.17.

**Risk of Currency Swaps**
The same types of risk applicable to interest rate swaps may also apply to currency swaps. First, basis risk can exist if the firm cannot obtain a currency swap on the currency it is exposed to and uses a related currency instead. For example, consider a U.S. firm with cash inflows in British pounds that cannot find a counterparty to enact a swap in pounds. The firm may enact a swap in euros because movements in the euro and the pound against the dollar are highly correlated. To be specific, the firm will
enact a currency swap to exchange euros for dollars. As it receives pounds, it will convert them to euros and then exchange the euros for dollars as specified by the swap arrangement. The exchange rate between pounds and euros is not constant, however, so basis risk exists.

Currency swaps can also be subject to credit risk, which reflects the possibility that the counterparty may default on its obligation. The potential loss is somewhat limited, however, because one party can stop exchanging its currency if it no longer receives currency from the counterparty.

A third type of risk is sovereign risk, which reflects the possibility that a country may restrict the convertibility of a particular currency. In this case, a party involved in a swap arrangement may not be able to fulfill its obligation because its government prohibits the local currency from being converted to another currency. This scenario is less likely in countries that encourage free trade of goods and securities across borders.

**Summary**

- Various types of interest rate swaps are used to reduce interest rate risk. Some of the more popular types of interest rate swaps are plain vanilla swaps, forward swaps, callable swaps, putable swaps, extendable swaps, rate-capped swaps, and equity swaps. Each type of swap accommodates a particular need of financial institutions or other firms that are exposed to interest rate risk.

- When engaging in interest rate swaps, the participants can be exposed to basis risk, credit risk, and sovereign risk. Basis risk prevents the interest rate swap from completely eliminating the swap user’s exposure to interest rate risk. Credit risk reflects the possibility that the counterparty on a swap agreement may not meet its payment obligations. Sovereign risk reflects the possibility that political conditions could prevent the counterparty in a swap agreement from meeting its payment obligations.

- In addition to the traditional forms of interest rate swaps, three other interest rate derivative instruments are commonly used to hedge interest rate risk: interest rate caps, interest rate floors, and interest rate collars. Interest rate caps offer payments when a specified interest rate index exceeds the interest rate ceiling (cap) and therefore can hedge against rising interest rates. Interest rate floors offer payments when a specified interest rate index falls below a specified interest rate floor; they can be used to hedge against declining interest rates. An interest rate collar involves the purchase of an interest rate cap and the simultaneous sale of an interest rate floor and is used to hedge against rising interest rates.

- The interest rate swap market has become globalized in the sense that financial institutions from various countries participate. Interest rate swaps are available in a variety of currencies.

**Point Counter-Point**

**Should Financial Institutions Engage in Interest Rate Swaps for Speculative Purposes?**

**Point** Yes. They have expertise in forecasting future interest rate movements and can generate gains for their shareholders by taking speculative positions.

**Counter-Point** No. They should use their main business to generate gains for their shareholders. They should serve as intermediaries for swap transactions only in order to generate transaction fees or should take a position only if it is to hedge their exposure to interest rate risk.

**Who Is Correct?** Use the Internet to learn more about this issue. Offer your own opinion on this issue.
Chapter 15: Interest Rate Derivative Markets

Questions and Applications

1. **Hedging with Interest Rate Swaps**  Bowling Green Savings & Loan uses short-term deposits to fund fixed-rate mortgages. Explain how Bowling Green can use interest rate swaps to hedge its interest rate risk.

2. **Decision to Hedge with Interest Rate Swaps**  Explain the types of cash flow characteristics that would cause a firm to hedge interest rate risk by swapping floating-rate payments for fixed payments. Why would some firms avoid the use of interest rate swaps, even when they are highly exposed to interest rate risk?

3. **Role of Securities Firms in Swap Market**  Describe the possible roles of securities firms in the swap market.

4. **Hedging with Swaps**  Chelsea Finance Company receives floating inflow payments from its provision of floating-rate loans. Its outflow payments are fixed because of its recent issuance of long-term bonds. Chelsea is somewhat concerned that interest rates will decline in the future. Yet, it does not want to hedge its interest rate risk because it believes interest rates may increase. Recommend a solution to Chelsea’s dilemma.

5. **Basis Risk**  Comiskey Savings provides fixed-rate mortgages of various maturities, depending on what customers want. It obtains most of its funds from issuing certificates of deposit with maturities ranging from one month to five years. Comiskey has decided to engage in a fixed-for-floating swap to hedge its interest rate risk. Is Comiskey exposed to basis risk?

6. **Fixed-for-Floating Swaps**  Shea Savings negotiates a fixed-for-floating swap with a reputable firm in South America that has an exceptional credit rating. Shea is very confident that there will not be a default on inflow payments because of the very low credit risk of the South American firm. Do you agree? Explain.

7. **Fixed-for-Floating Swaps**  North Pier Company entered into a two-year swap agreement, which would provide fixed-rate payments for floating-rate payments. Over the next two years, interest rates declined. Based on these conditions, did North Pier Company benefit from the swap?

8. **Equity Swap**  Explain how an equity swap could allow Marathon Insurance Company to capitalize on expectations of a strong stock market performance over the next year without altering its existing portfolio mix of stocks and bonds.

9. **Swap Network**  Explain how the failure of a large commercial bank could cause a worldwide swap credit crisis.

10. **Currency Swaps**  Markus Company purchases supplies from France once a year. Would Markus be favorably affected if it establishes a currency swap arrangement and the dollar strengthens? What if it establishes a currency swap arrangement and the dollar generally weakens?

11. **Basis Risk**  Explain basis risk as it relates to a currency swap.

12. **Sovereign Risk**  Give an example of how sovereign risk is related to currency swaps.

13. **Use of Interest Rate Swaps**  Explain why some companies that issue bonds engage in interest rate swaps in financial markets. Why do they not simply issue bonds that require the type of payments (fixed or variable) that they prefer to make?

14. **Use of Currency Swaps**  Explain why some companies that issue bonds engage in currency swaps. Why do they not simply issue bonds in the currency that they would prefer to use for making payments?

Advanced Questions

15. **Rate-Capped Swaps**  Bull and Finch Company wants a fixed-for-floating swap. It expects interest rates to rise far above the fixed rate that it would have to pay and to remain very high until the swap maturity date. Should it consider negotiating for a rate-capped swap with the cap set at two percentage points above the fixed rate? Explain.

16. **Forward Swaps**  Rider Company negotiates a forward swap to begin two years from now, in which it will swap fixed payments for floating-rate payments. What will be the effect on Rider if interest rates rise substantially over the next two years? That is, would Rider have been better off by using a forward swap than by simply waiting two years before negotiating the swap? Explain.

17. **Swap Options**  Explain the advantage of a swap option to a financial institution that wants to swap fixed payments for floating payments.

18. **Callable Swaps**  Back Bay Insurance Company negotiated a callable swap involving fixed payments in exchange for floating payments. Assume that interest rates decline consistently up until the swap maturity date. Do you think Back Bay might terminate the swap prior to maturity? Explain.
Interpreting Financial News
Interpret the following comments made by Wall Street analysts and portfolio managers:

a. “The swaps market is another Wall Street–developed house of cards.”
b. “As a dealer in interest rate swaps, our bank takes various steps to limit our exposure.”
c. “The regulation of commercial banks, securities firms, and other financial institutions that participate in the swaps market could create a regulatory war.”

Managing in Financial Markets
Assessing the Effects of an Interest Rate Collar
As a manager of a commercial bank, you just purchased a three-year interest rate collar, with LIBOR as the interest rate index. The interest rate cap specifies a fee of 2 percent of notional principal valued at $100 million and an interest rate ceiling of 9 percent. The interest rate floor specifies a fee of 3 percent of notional principal valued at $100 million and an interest rate floor of 7 percent. Assume that LIBOR is expected to be 6 percent, 10 percent, and 11 percent, respectively, at the end of each of the next three years.

a. Determine the net fees paid, and also determine the expected net payments to be received as a result of purchasing the interest rate collar.
b. Assuming you are very confident that interest rates will rise, should you consider purchasing a callable swap instead of the collar? Explain.
c. Explain the conditions in which your purchase of an interest rate collar could backfire.

Problems

1. Vanilla Swaps
Cleveland Insurance Company has just negotiated a three-year plain vanilla swap in which it will exchange fixed payments of 8 percent for floating payments of LIBOR plus 1 percent. The notional principal is $50 million. LIBOR is expected to be 7 percent, 9 percent, and 10 percent, respectively, at the end of each of the next three years.

a. Determine the net dollar amount to be received (or paid) by Cleveland each year.
b. Determine the dollar amount to be received (or paid) by the counterparty on this interest rate swap each year based on the forecasts of LIBOR assumed above.

2. Interest Rate Caps
Northbrook Bank purchases a four-year cap for a fee of 3 percent of notional principal valued at $100 million, with an interest rate ceiling of 9 percent and LIBOR as the index representing the market interest rate. Assume that LIBOR is expected to be 8 percent, 10 percent, 12 percent, and 13 percent, respectively, at the end of each of the next four years.

a. Determine the initial fee paid, and also determine the expected payments to be received by Northbrook if LIBOR moves as forecasted.
b. Determine the dollar amount to be received (or paid) by the seller of the interest rate cap based on the forecasts of LIBOR assumed above.

3. Interest Rate Floors
Iowa City Bank purchases a three-year interest rate floor for a fee of 2 percent of notional principal valued at $80 million, with an interest rate floor of 6 percent and LIBOR representing the interest rate index. The bank expects LIBOR to be 6 percent, 5 percent, and 4 percent, respectively, at the end of each of the next three years.

a. Determine the initial fee paid, and also determine the expected payments to be received by Iowa City if LIBOR moves as forecasted.
b. Determine the dollar amounts to be received (or paid) by the seller of the interest rate floor based on the forecasts of LIBOR assumed above.

Flow of Funds Exercise
Hedging with Interest Rate Derivatives
Recall that if the economy continues to be strong, Carson Company may need to increase its production capacity by about 50 percent over the next few years to satisfy demand. It would need financing to expand and accommodate the increase in production. Recall that the yield curve is currently upward sloping. Also recall that Carson is concerned about a possible slowing of the economy because of potential Fed actions to reduce
inflation. Carson currently relies mostly on commercial loans with floating interest rates for its debt financing. It has contacted Blazo Bank about the use of interest rate derivatives to hedge the risk.

a. How could Carson use interest rate swaps to reduce the exposure of its cost of debt to interest rate movements?
b. What is a possible disadvantage of Carson using the interest rate swap hedge as opposed to no hedge?
c. How could Carson use an interest rate cap to reduce the exposure of its cost of debt to interest rate movements?
d. What is a possible disadvantage of Carson using the interest rate cap as opposed to no hedge?
e. Explain the tradeoff from using an interest rate swap versus an interest rate cap.

Internet/Excel Exercises


1. Review the recent annualized rate for a short-term security such as the 1-year Treasury rate versus a long-term security such as the 10-year Treasury rate. Based on this information, do you think that the market expects interest rates to rise over time? Explain.

2. Assume that you need long-term funds and can borrow at the short-term Treasury rate. Based on the existing interest rates, would you consider engaging in a swap of a floating rate in exchange for a fixed rate? Explain.

Impact of Interest Rates on a Swap Arrangement

Use a recent issue of The Wall Street Journal to determine how short-term interest rates have changed over the last year (assess the Treasury yield for a three-month maturity based on the yield curve shown for today versus the yield curve shown for a year ago). The three-month Treasury bill rate at the present time and one year ago are quoted in the Money & Investing section of The Wall Street Journal. Explain whether the interest rate movement would have had a favorable impact on a firm that initiated a fixed-for-floating swap agreement one year ago.