Due to growth in international business over the last 30 years, various international financial markets have been developed. Financial managers of MNCs must understand the various international financial markets that are available so that they can use those markets to facilitate their international business transactions.

The specific objectives of this chapter are to describe the background and corporate use of the following international financial markets:
• foreign exchange market
• Eurocurrency market
• Eurocredit market
• Eurobond market
• international stock markets

MOTIVES FOR USING INTERNATIONAL FINANCIAL MARKETS

Several barriers prevent the markets for real or financial assets from becoming completely integrated; these barriers include tax differentials, tariffs, quotas, labor immobility, cultural differences, financial reporting differences, and significant costs of communicating information across countries. Nevertheless, the barriers can also create unique opportunities for specific geographic markets that will attract foreign creditors and investors. For example, barriers such as tariffs, quotas, and labor immobility can cause a given country’s economic conditions to be distinctly different from others. Investors and creditors may want to do business in that country to capitalize on favorable conditions unique to that country. The existence of imperfect markets has precipitated the internationalization of financial markets.
Motives for Investing in Foreign Markets

Investors invest in foreign markets for one or more of the following motives:

- Economic conditions. Investors may expect firms in a particular foreign country to achieve more favorable performance than those in the investor’s home country. For example, the loosening of restrictions in Eastern European countries created favorable economic conditions there. Such conditions attracted foreign investors and creditors.

- Exchange rate expectations. Some investors purchase financial securities denominated in a currency that is expected to appreciate against their own. The performance of such an investment is highly dependent on the currency movement over the investment horizon.

- International diversification. Investors may achieve benefits from internationally diversifying their asset portfolio. When an investor’s entire portfolio does not depend solely on a single country’s economy, cross-border differences in economic conditions can allow for risk-reduction benefits. A stock portfolio representing firms across European countries is less risky than a stock portfolio representing firms in any single European country. Furthermore, access to foreign markets allows investors to spread their funds across a more diverse group of industries than may be available domestically. This is especially true for investors residing in countries where firms are concentrated in a relatively small number of industries.

Motives for Providing Credit in Foreign Markets

Creditors (including individual investors who purchase debt securities) have one or more of the following motives for providing credit in foreign markets:

- High foreign interest rates. Some countries experience a shortage of loanable funds, which can cause market interest rates to be relatively high, even after considering default risk. Foreign creditors may attempt to capitalize on the higher rates, thereby providing capital to overseas markets. Yet, relatively high interest rates are often perceived to reflect relatively high inflationary expectations in that country. To the extent that inflation can cause depreciation of the local currency against others, high interest rates in the country may be somewhat offset by a weakening of the local currency over the time period of concern. The relation between a country’s expected inflation and its local currency movements is not precise, however, because several other factors can influence currency movements as well. Thus, some creditors may believe that the interest rate advantage in a particular country will not be offset by a local currency depreciation over the period of concern.

- Exchange rate expectations. Creditors may consider supplying capital to countries whose currencies are expected to appreciate against their own. Whether the form of the transaction is a bond or a loan, the creditor benefits when the currency of denomination appreciates against the creditor’s home currency.

- International diversification. Creditors can benefit from international diversification, which may reduce the probability of simultaneous bankruptcy across borrowers. The effectiveness of such a strategy depends on the correlation.
between the economic conditions of countries. If the countries of concern tend to experience somewhat similar business cycles, diversification across countries will be less effective.

**Motives for Borrowing in Foreign Markets**

Borrowers may have one or more of the following motives for borrowing in foreign markets:

- **Low interest rates.** Some countries have a large supply of funds available compared to the demand for funds, which can cause relatively low interest rates. Borrowers may attempt to borrow funds from creditors in these countries because the interest rate charged is lower. A country with relatively low interest rates is often expected to have a relatively low rate of inflation, which can place upward pressure on the foreign currency’s value and offset any advantage of lower interest rates. The relation between expected inflation differentials and currency movements is not precise, however, so some borrowers will choose to borrow from a market where nominal interest rates are low, since they do not expect an adverse currency movement to fully offset this advantage.

- **Exchange rate expectations.** When a foreign subsidiary of a U.S.-based MNC remits funds to its U.S. parent, the funds must be converted to dollars and are subject to exchange rate risk. The MNC will be adversely affected if the foreign currency depreciates at that time. If the MNC expects that the foreign currency may depreciate against the dollar, it can reduce the exchange rate risk by having the subsidiary borrow funds locally to support its business. The subsidiary will remit less funds to the parent if it must pay interest on local debt before remitting the funds. Thus, the amount of funds converted to dollars will be smaller, resulting in less exposure to exchange rate risk.

  If the U.S. parent needs to borrow funds for its own purposes, it may pursue a more aggressive strategy and borrow a foreign currency that is expected to depreciate. In this case, the parent would borrow that currency and convert it to dollars for use. The value of the foreign currency when converted to dollars would exceed the value when the MNC repurchases the currency to repay the loan. The favorable currency effect can offset part or all of the interest owed on the funds borrowed. Such a strategy may be especially desirable if the foreign currency has a low interest rate compared to the U.S. interest rate.

**Foreign Exchange Market**

The foreign exchange market allows currencies to be exchanged in order to facilitate international trade or financial transactions. MNCs rely on the foreign exchange market to exchange their home currency for a foreign currency that they need to purchase imports or use for direct foreign investment. Alternatively, they may need the foreign exchange market to exchange a foreign currency that they receive into their home currency. The system for establishing exchange rates has changed over time.
History of Foreign Exchange

The system used for exchanging foreign currencies has evolved from the gold standard, to an agreement on fixed exchange rates, to a floating rate system.

Gold Standard. From 1876 to 1913, exchange rates were dictated by the gold standard. Each currency was convertible into gold at a specified rate. Thus, the exchange rate between two currencies was determined by their relative convertibility rates per ounce of gold. Each country used gold to back its currency.

When World War I began in 1914, the gold standard was suspended. Some countries reverted to the gold standard in the 1920s but abandoned it as a result of a banking panic in the United States and Europe during the Great Depression. In the 1930s, some countries attempted to peg their currency to the dollar or the British pound, but there were frequent revisions. As a result of the instability in the foreign exchange market and the severe restrictions on international transactions during this period, the volume of international trade declined.

Agreements on Fixed Exchange Rates. In 1944, an international agreement (known as the Bretton Woods Agreement) called for fixed exchange rates between currencies. This agreement lasted until 1971. During this period, governments would intervene to prevent exchange rates from moving more than 1 percent above or below their initially established levels.

By 1971, the U.S. dollar appeared to be overvalued; the foreign demand for U.S. dollars was substantially less than the supply of dollars for sale (to be exchanged for other currencies). Representatives from the major nations met to discuss this dilemma. As a result of this conference, which became known as the Smithsonian Agreement, the U.S. dollar was devalued relative to the other major currencies. The degree to which the dollar was devalued varied with each foreign currency. Not only was the dollar’s value reset, but exchange rates were also allowed to fluctuate by 2 percent in either direction from the newly set rates. This was the first step in letting market forces (supply and demand) determine the appropriate price of a currency. Although boundaries still existed for exchange rates, they were widened, allowing the currency values to move more freely toward their appropriate levels.

Floating Exchange Rate System. Even after the Smithsonian Agreement, governments still had difficulty maintaining exchange rates within the stated boundaries. By March 1973, the more widely traded currencies were allowed to fluctuate in accordance with market forces, and the official boundaries were eliminated.

Foreign Exchange Transactions

The “foreign exchange market” should not be thought of as a specific building or location where traders exchange currencies. Companies normally exchange one currency for another through a commercial bank over a telecommunications network.

Spot Market. The most common type of foreign exchange transaction is for immediate exchange at the so-called spot rate. The market where these transactions occur is known as the spot market. The average daily foreign exchange trading by banks
around the world now exceeds $1.5 trillion. The average daily foreign exchange trading in the United States alone exceeds $200 billion.

The U.S. dollar is not part of every transaction. Foreign currencies can be traded for each other. For example, a Japanese firm may need British pounds to pay for imports from the United Kingdom. Much of the foreign exchange trading is conducted by banks in London, New York, and Tokyo, the three largest foreign exchange trading centers.

Many foreign transactions do not require an exchange of currencies but allow a given currency to cross country borders. For example, the U.S. dollar is commonly accepted as a medium of exchange by merchants in many countries, especially in countries such as Bolivia, Brazil, China, Cuba, Indonesia, Russia, and Vietnam where the home currency is either weak or subject to foreign exchange restrictions. Many merchants accept U.S. dollars because they can use them to purchase goods from other countries. The U.S. dollar is the official currency of Liberia and Panama.
**Spot Market Structure.** Hundreds of banks facilitate foreign exchange transactions, but the top 20 handle about 50 percent of the transactions. Deutsche Bank (Germany), Citibank (subsidiary of Citigroup, U.S.), and J.P. Morgan Chase are the largest traders of foreign exchange. Some banks and other financial institutions have formed alliances (one example is FX Alliance LLC) to offer currency transactions over the Internet.

At any given point in time, the exchange rate between two currencies should be similar across the various banks that provide foreign exchange services. If there is a large discrepancy, customers or other banks will purchase large amounts of a currency from whatever bank quotes a relatively low price and immediately sell it to whatever bank quotes a relatively high price. Such actions cause adjustments in the exchange rate quotations that eliminate any discrepancy.

If a bank begins to experience a shortage in a particular foreign currency, it can purchase that currency from other banks. This trading between banks occurs in what is often referred to as the interbank market. Within this market, banks can obtain quotes, or they can contact brokers who sometimes act as intermediaries, matching one bank desiring to sell a given currency with another bank desiring to buy that currency. About 10 foreign exchange brokerage firms handle much of the interbank transaction volume.

Although foreign exchange trading is conducted only during normal business hours in a given location, these hours vary among locations due to different time zones. Thus, at any given time on a weekday, somewhere around the world a bank is open and ready to accommodate foreign exchange requests.

When the foreign exchange market opens in the United States each morning, the opening exchange rate quotations are based on the prevailing rates quoted by banks in London and other locations where the foreign exchange markets have opened earlier. Suppose the quoted spot rate of the British pound was $1.80 at the previous close of the U.S. foreign exchange market, but by the time the market opens the following day, the opening spot rate is $1.76. News occurring in the morning before the U.S. market opened could have changed the supply and demand conditions for British pounds in the London foreign exchange market, reducing the quoted price for the pound.

With the newest electronic devices, foreign currency trades are negotiated on computer terminals, and a push of a button confirms the trade. Traders now use electronic trading boards that allow them to instantly register transactions and check their bank’s positions in various currencies. Also, several U.S. banks have established night trading desks. The largest banks initiated night trading to capitalize on foreign exchange movements at night and to accommodate corporate requests for currency trades. Even some medium-sized banks have begun to use night trading to accommodate corporate clients.

**Forward Transactions.** In addition to the spot market, a forward market for currencies enables an MNC to lock in the exchange rate (called a forward rate) at which it will buy or sell a currency. A forward contract specifies the amount of a particular currency that will be purchased or sold by the MNC at a specified future point in time and at a specified exchange rate. Commercial banks accommodate the MNCs that desire forward contracts. MNCs commonly use the forward market to hedge future payments that they expect to make or receive in a foreign currency. In this way, they do not have to worry about fluctuations in the spot rate until the time of their future payments.
Attributes of Banks That Provide Foreign Exchange. The following characteristics of banks are important to customers in need of foreign exchange:

1. Competitiveness of quote. A savings of 1¢ per unit on an order of one million units of currency is worth $10,000.
2. Special relationship with the bank. The bank may offer cash management services or be willing to make a special effort to obtain even hard-to-find foreign currencies for the corporation.
3. Speed of execution. Banks may vary in the efficiency with which they handle an order. A corporation needing the currency will prefer a bank that conducts the transaction promptly and handles any paperwork properly.
4. Advice about current market conditions. Some banks may provide assessments of foreign economies and relevant activities in the international financial environment that relate to corporate customers.
5. Forecasting advice. Some banks may provide forecasts of the future state of foreign economies, the future value of exchange rates, etc.

This list suggests that a corporation needing a foreign currency should not automatically choose a bank that will sell that currency at the lowest price. Most corporations that often need foreign currencies develop a close relationship with at least one major bank in case they ever need favors from a bank.

HTTP:// USING THE WEB

Currency Accounts for Individuals Individuals can open an FDIC-insured money market account or a CD account in a foreign currency. The details are provided at www.everbank.com. Look for the link to FDIC-Insured Deposits in Foreign Currencies.

Bid/Ask Spread of Banks. Commercial banks charge fees for conducting foreign exchange transactions. At any given point in time, a bank’s bid (buy) quote for a foreign currency will be less than its ask (sell) quote. The bid/ask spread represents the differential between the bid and ask quotes, and is intended to cover the costs involved in accommodating requests to exchange currencies. The bid/ask spread is normally expressed as a percentage of the ask quote.

Example To understand how a bid/ask spread could affect you, assume you have $1,000 and plan to travel from the United States to the United Kingdom. Assume further that the bank’s bid rate for the British pound is $1.52 and its ask rate is $1.60. Before leaving on your trip, you go to this bank to exchange dollars for pounds. Your $1,000 will be converted to 625 pounds (£), as follows:

\[
\frac{\text{Amount is U.S. dollars to be converted}}{\text{Price charged by bank per pound}} = \frac{\$1,000}{\$1.60} = 625 \text{ pounds (£)}
\]

Now suppose that because of an emergency you cannot take the trip, and you reconvert the £625 back to U.S. dollars, just after purchasing the pounds. If the exchange rate has not changed, you will receive

\[
625 \times (\text{Bank's bid rate of } 1.52 \text{ per pound}) = 950.
\]

Due to the bid/ask spread, you have $50 (5 percent) less than what you started with. Obviously, the dollar amount of the loss would be larger if you originally converted more than $1,000 into pounds.
Comparison of Bid/Ask Spread among Currencies. The differential between a bid quote and an ask quote will look much smaller for currencies that have a smaller value. This differential can be standardized by measuring it as a percentage of the currency's spot rate.

Example

Charlotte Bank quotes a bid price for yen of $.007 and an ask price of $.0074. In this case, the nominal bid/ask spread is $.0074 – $.007, or just four-hundredths of a penny. Yet, the bid/ask spread in percentage terms is actually slightly higher for the yen in this example than for the pound in the previous example. To prove this, consider a traveler who sells $1,000 for yen at the bank’s ask price of $.0074. The traveler receives about ¥135,135 (computed as $1,000/.0074). If the traveler cancels the trip and converts the yen back to dollars, then, assuming no changes in the bid/ask quotations, the bank will buy these yen back at the bank’s bid price of $.007 for a total of about $946 (computed by ¥135,135 × $.007), $54 (or 5.4 percent) less than what the traveler started with. This spread exceeds that of the British pound (5 percent in the previous example).
A common way to compute the bid/ask spread in percentage terms follows:

\[
\text{Bid/ask spread} = \frac{\text{Ask rate} - \text{Bid rate}}{\text{Ask rate}}
\]

Using this formula, the bid/ask spreads are computed in Exhibit 3.1 for both the British pound and the Japanese yen.

Notice that these numbers coincide with those derived earlier. Such spreads are common for so-called retail transactions serving consumers. For larger so-called wholesale transactions between banks or for large corporations, the spread will be much smaller. The spread is normally larger for currencies that are less frequently traded. Commercial banks are normally exposed to more exchange rate risk when maintaining these currencies.
The bid/ask spread as defined here represents the discount in the bid rate as a percentage of the ask rate. An alternative bid/ask spread uses the bid rate as the denominator instead of the ask rate and measures the percentage markup of the ask rate above the bid rate. The spread is slightly higher when using this formula because the bid rate used in the denominator is always less than the ask rate.

In the following discussion and in examples throughout much of the text, the bid/ask spread will be ignored. That is, only one price will be shown for a given currency to allow you to concentrate on understanding other relevant concepts. These examples depart slightly from reality because the bid and ask prices are, in a sense, assumed to be equal. Although the ask price will always exceed the bid price by a small amount in reality, the implications from examples should nevertheless hold, even though the bid/ask spreads are not accounted for. In particular examples where the bid/ask spread can contribute significantly to the concept, it will be accounted for.

### Impact of the Euro on Foreign Exchange Transactions

As a result of several European countries adopting the euro as their currency, many transactions within Europe no longer require conversion into a different currency. This is relevant for MNCs that conduct operations in Europe because they no longer incur a transaction cost from exchanging currencies and no longer need to worry about exchange rate fluctuations on most transactions within Europe.

### Managing for Value: Intel’s Currency Trading

When Intel needs to exchange foreign currency, it no longer calls a bank to request an exchange of currencies. Instead, it logs on to an online currency trader who serves as an intermediary between Intel and member banks. One popular online currency trader is Currenex, which conducts more than $300 million in foreign exchange transactions per day. If Intel needs to purchase a foreign currency, it logs on and specifies its order. Currenex relays the order to various banks that are members of its system and are allowed to bid for the orders. When Currenex relays the order, member banks have 25 seconds to specify a quote online for the currency that the customer (Intel) desires. Then, Currenex displays the quotes on a screen, ranked from highest to lowest. Intel has 5 seconds to select one of the quotes provided, and the deal is completed. This process is much more transparent than traditional foreign exchange market transactions, because Intel can review quotes of many competitors at one time. Thus, it enables Intel to make sure that it does not overpay for a currency and therefore enhances the company’s value.
Interpreting Foreign Exchange Quotations

Exchange rate quotations for widely traded currencies are provided in The Wall Street Journal and in business sections of many newspapers on a daily basis. With some exceptions, each country has its own currency. In 1999, several European countries (including Germany, France, and Italy) adopted the euro as their new currency for commercial transactions, replacing their own currencies. Their own currencies were phased out by the year 2002.

A summary of exchange rate movements is illustrated on a world map at http://www.oanda.com.

Click on FXTrading to open an account that enables you to trade currencies online.

Quotations of Forward Rates. Some quotations of exchange rates include forward rates for the most widely traded currencies. Other forward rates are not quoted in business newspapers but are quoted by the banks that offer forward contracts in various currencies.

Direct versus Indirect Quotations. The quotations of exchange rates for currencies normally reflect the ask prices for large transactions. Since exchange rates change
throughout the day, the exchange rates quoted in a newspaper reflect only one specific point in time during the day. Quotations that represent the value of a foreign currency in dollars (number of dollars per currency) are referred to as direct quotations. Conversely, quotations that represent the number of units of a foreign currency per dollar are referred to as indirect quotations. The indirect quotation is the reciprocal of the corresponding direct quotation.

Discussions of exchange rate movements can be confusing because some comments refer to direct quotations while others refer to indirect quotations. For consistency, this text uses direct quotations unless an example can be clarified by the use of indirect quotations. Direct quotations are easier to link with comments about any foreign currency.

Cross Exchange Rates. Most tables of exchange rate quotation express currencies relative to the dollar, but in some instances, a firm will be concerned about the exchange rate between two nondollar currencies. For example, if a Canadian firm

Click on Currencies, and then click on Key Cross Currency Rates.
Cross exchange rate are available for several currencies. The abbreviation for each currency is shown just below the table.
needs Mexican pesos to buy Mexican goods, it is concerned about the Mexican peso value relative to the Canadian dollar. The type of rate desired here is known as a **cross exchange rate**, because it reflects the amount of one foreign currency per unit of another foreign currency. Cross exchange rates can be easily determined with the use of foreign exchange quotations. The general formula follows.

\[
\text{Value of 1 unit of Currency A in units of Currency B} = \frac{\text{Value of Currency A in $}}{\text{Value of Currency B in $}}
\]

**Example**

If the peso is worth $.07, and the Canadian dollar is worth $.70, the value of the peso in Canadian dollars (C$) is calculated as follows:

\[
\text{Value of peso in C$} = \frac{\text{Value of peso in $}}{\text{Value of C$ in $}} = \frac{.07}{.70} = .10
\]

Thus, a Mexican peso is worth C$.10. The exchange rate can also be expressed as the number of pesos equal to one Canadian dollar. This figure can be computed by taking the reciprocal: \( .70/0.07 = 10.0 \), which indicates that a Canadian dollar is worth about 10.0 pesos according to the information provided.

**Currency Futures and Options Markets**

A **currency futures contract** specifies a standard volume of a particular currency to be exchanged on a specific settlement date. Some MNCs involved in international trade use the currency futures markets to hedge their positions.

**Example**

Memphis Co. has ordered supplies from European countries that are denominated in euros. It expects the euro to increase in value over time and therefore desires to hedge its payables in euros. Memphis buys futures contracts on euros to lock in the price that it will pay for euros at a future point in time. Meanwhile, it will receive Mexican pesos in the future and wants to hedge these receivables. Memphis sells futures contracts on pesos to lock in the dollars that it will receive when it sells the pesos at a specified point in the future.

Futures contracts are somewhat similar to forward contracts except that they are sold on an exchange whereas forward contracts are offered by commercial banks. Additional details on futures contracts, including other differences from forward contracts, are provided in Chapter 5.

Currency options contracts can be classified as calls or puts. A **currency call option** provides the right to buy a specific currency at a specific price (called the **strike price** or **exercise price**) within a specific period of time. It is used to hedge future payables. A **currency put option** provides the right to sell a specific currency at a specific price within a specific period of time. It is used to hedge future receivables.

Currency call and put options can be purchased on an exchange. They offer more flexibility than forward or futures contracts because they do not require any obligation. That is, the firm can elect not to exercise the option.
Currency options have become a popular means of hedging. The Coca-Cola Co. has replaced about 30 to 40 percent of its forward contracting with currency options. FMC, a U.S. manufacturer of chemicals and machinery, now hedges its foreign sales with currency options instead of forward contracts. A recent study by the Whitney Group found that 85 percent of U.S.-based MNCs use currency options. Additional details about currency options, including other differences from futures and forward contracts, are provided in Chapter 5.

**Eurocurrency Market**

Financial markets exist in every country to ensure that funds are transferred efficiently from surplus units (savers) to deficit units (borrowers). These markets are overseen by various regulators that attempt to enhance the markets' safety and efficiency. The financial institutions that serve these financial markets exist primarily to provide information and expertise. The surplus units typically do not know who needs to borrow funds at any particular point in time. Furthermore, they often cannot adequately evaluate the credit risk of any potential borrowers or establish the documentation necessary when providing loans. Financial institutions specialize in collecting funds from surplus units and then repackaging and transferring the funds to deficit units.

**Development of the Eurocurrency Market**

Like domestic firms, MNCs sometimes obtain funding through short-term loans from local financial institutions or by issuing short-term securities such as commercial paper. However, they can also obtain funds from the financial institutions in foreign markets. International financial intermediation emerged in the 1960s and 1970s as MNCs expanded their operations. During this period, the Eurodollar market, or what is now referred to as the *Eurocurrency market*, grew to accommodate the increasing international business. The Eurodollar market was created as corporations in the United States deposited U.S. dollars in European banks. These European banks were willing to accept dollar deposits, since they could then lend dollars to corporate customers based in Europe.

Because the U.S. dollar is widely used even by foreign countries as a medium for international trade, there is a consistent need for dollars in Europe. U.S.-dollar deposits in banks located in Europe and on other continents as well became known as *Eurodollars*.

The growth of the Eurodollar market was stimulated by U.S. regulations in 1968, which limited foreign lending by U.S. banks. Foreign subsidiaries of U.S.-based MNCs could obtain U.S. dollars from banks in Europe. In addition, when ceilings were placed on the interest rates of dollar deposits in the United States, dollars were transferred to the Eurodollar market, which had no ceilings. Furthermore, Eurodollar deposits were not subject to reserve requirements. Thus, banks could reduce the spread between what they paid on such deposits and charged on loans and still make a reasonable profit. This added to the popularity of the Eurodollar market, since banks could offer attractive deposit rates to corporations and governments with excess cash and attractive loan rates to corporations and governments with deficient funds.
Composition of the Eurocurrency Market

The Eurocurrency market is composed of several large banks (referred to as Eurobanks) that accept deposits and provide loans in various currencies. Countries in the Organization of Petroleum Exporting Countries (OPEC) also use the Eurocurrency market to deposit a portion of their petroleum revenues. The deposits usually are denominated in U.S. dollars because OPEC generally requires payment for oil in dollars. The deposits are sometimes referred to as petrodollars. The Eurocurrency market has historically recycled the oil revenues from the oil-exporting countries to other countries. That is, oil revenues deposited in the Eurobanks are sometimes lent to oil-importing countries that are short of cash. As these countries purchase more oil, funds are again transferred to oil-exporting countries, which in turn results in new deposits. This recycling process has been an important source of funds for some countries.

The Eurocurrency market normally focuses on business transactions that involve large deposits and loans, often the equivalent of $1 million or more. Large financial transactions such as these can reduce a bank’s operating expenses. This is another reason why Eurobanks can offer attractive rates on deposits and loans.

Syndicated Eurocurrency Loans

Although the Eurocurrency market concentrates on large-volume transactions, at times no single Eurobank may be willing to provide the amount needed by a particular corporation or government agency. In this case, a syndicate of Eurobanks may be organized. Each bank within the syndicate participates in the lending. A lead bank is responsible for negotiating terms with the borrower. Then the lead bank organizes a group of banks to underwrite the loans. The syndicate of banks is usually formed in about six weeks, or less if the borrower is well known because the credit evaluation can then be conducted more quickly.

Borrowers that receive a syndicated loan incur various fees besides the interest on the loan. Front-end management fees are paid to cover the costs of organizing the syndicate and underwriting the loan. In addition, a commitment fee of about .25 percent or .50 percent is charged annually on the unused portion of the available credit extended by the syndicate.

Syndicated loans can be denominated in a variety of currencies. The interest rate depends on the currency denominating the loan, the maturity of the loan, and the creditworthiness of the borrower. Interest rates on syndicated loans are commonly adjustable according to movements in an interbank lending rate, and the adjustment may occur every six months or every year.

Syndicated Eurocurrency loans not only reduce the default risk of a large loan to the degree of participation for each individual bank, but they can also add an extra incentive for the borrower to repay the loan. If a government defaults on a loan to a syndicate, word will quickly spread among banks, and the government will likely have difficulty obtaining future loans. Borrowers are therefore strongly encouraged to repay syndicated loans promptly. From the perspective of the banks, syndicated Eurocurrency loans increase the probability of prompt repayment.
Standardizing Bank Regulations within the Eurocurrency Market

The trend toward globalization in the banking industry is attributed to the growing standardization of regulations around the world. Two of the more significant regulatory events allowing for a more competitive global playing field are (1) the Single European Act and (2) the Basel Accord, which are described next.

**Single European Act.** One of the most significant events affecting international banking is the Single European Act, which was phased in by 1992 throughout the European Union (EU) countries. The following are some of the more relevant provisions of the Single European Act for the banking industry:

- Capital can flow freely throughout Europe.
- Banks can offer a wide variety of lending, leasing, and securities activities in the EU.
- Regulations regarding competition, mergers, and taxes are similar throughout the EU.
- A bank established in any one of the EU countries has the right to expand into any or all of the other EU countries.

As a result of this act, banks have expanded across European countries. Efficiency in the European banking markets has increased because banks can more easily cross countries without concern for country-specific regulations that prevailed in the past. Another key provision of the act is that banks entering Europe receive the same banking powers as other banks there. Similar provisions apply to non-U.S. banks that enter the United States.

**Basel Accord.** Before 1987, capital standards imposed on banks varied across countries, which allowed some banks to have a comparative global advantage over others. As an example, suppose that a bank in the United States was subject to a 6 percent capital ratio, which was twice that of a foreign bank. The foreign bank could achieve the same return on equity as the U.S. bank by generating a return on assets that was only one-half that of the U.S. bank. In essence, the foreign bank’s equity multiplier (assets divided by equity) was double that of the U.S. bank, which would offset the low return on assets. Given these conditions, foreign banks could accept lower profit margins while still achieving the same return on equity. This afforded them a stronger competitive position. In addition, they could grow more easily, as a relatively small amount of capital was needed to support an increase in assets.

Some analysts countered that these advantages were somewhat offset by the perception that banks with low capital ratios entailed higher risks. Nevertheless, because the governments in those countries were likely to back banks that experienced financial problems, the banks with low capital were not necessarily perceived as too risky. Therefore, some non-U.S. banks had globally competitive advantages over U.S. banks, without being subject to excessive risk. In December 1987, 12 major industrialized countries attempted to resolve the disparity by proposing uniform bank standards. In July 1988, in the Basel Accord, central bank governors of the 12 countries agreed on standardized guidelines. Capital was classified as either Tier 1 (“core”) capital or Tier 2 (“supplemental”) capital (Tier 1 capital being at
least 4 percent of risk-weighted assets). The use of risk weightings on assets implicitly created a higher required capital ratio for riskier assets. Off-balance sheet items were also accounted for so that banks could not circumvent capital requirements by focusing on services (such as letters of credit and interest rate swaps) that are not explicitly shown on a balance sheet. The uniform capital requirements represent significant progress toward a more level global field.

Asian Dollar Market

Although the Eurocurrency market can be broadly defined to include banks in Asia that accept deposits and make loans in foreign currencies (mostly dollars), this market is sometimes referred to separately as the Asian dollar market. Most activity takes place in Hong Kong and Singapore. The only significant difference between the Asian market and the Eurocurrency market is location. Like the Eurocurrency market, the Asian dollar market grew to accommodate the needs of businesses that were using the U.S. dollar (and some other foreign currencies) as a medium of exchange for international trade. These businesses could not rely on banks in Europe because of the distance and different time zones.

The primary function of banks in the Asian dollar market is to channel funds from depositors to borrowers. The major sources of Asian dollar deposits are MNCs with excess cash and government agencies. Manufacturers are major borrowers in this market. Another function is interbank lending and borrowing. Banks that have more qualified loan applicants than they can accommodate use the interbank market to obtain additional funds. Banks in the Asian market commonly borrow from or lend to banks in the Eurocurrency market.

Eurocredit Market

Multinational corporations and domestic firms sometimes obtain medium-term funds through term loans from local financial institutions or through the issuance of notes (medium-term debt obligations) in their local markets. However, MNCs also have access to medium-term funds through Eurobanks located in foreign markets. Loans of one year or longer extended by Eurobanks to MNCs or government agencies are commonly called Eurocredits or Eurocredit loans. These loans are provided in the so-called Eurocredit market. The loans can be denominated in dollars or many other currencies and commonly have a maturity of five years.

Because Eurobanks accept short-term deposits and sometimes provide longer-term loans, their asset and liability maturities do not match. This can adversely affect a bank’s performance during periods of rising interest rates, since the bank may have locked in a rate on its Eurocredit loans while the rate it pays on short-term deposits is rising over time. To avoid this risk, Eurobanks now commonly use floating rate Eurocredit loans. The loan rate floats in accordance with the movement of some market interest rate, such as the London Interbank Offer Rate (LIBOR), which is the rate commonly charged for loans between Eurobanks. For example, a Eurocredit loan may have a loan rate that adjusts every six months and is set at “LIBOR plus 3 percent.” The premium paid above LIBOR will depend on the credit risk of the borrower.
MNCs, like domestic firms, can obtain long-term debt by issuing bonds in their local markets. MNCs can access long-term funds in foreign markets by issuing bonds in the international bond markets. International bonds are typically classified as either foreign bonds or Eurobonds. A foreign bond is issued by a borrower foreign to the country where the bond is placed. For example, a U.S. corporation may issue a bond denominated in Japanese yen, which is sold to investors in Japan. In some cases, a firm may issue a variety of bonds in various countries. The currency denoting each type of bond is determined by the country where it is sold. These foreign bonds are sometimes specifically referred to as parallel bonds.

Eurobonds are sold in countries other than the country represented by the currency denoting them. They have been very popular during the last decade as a means of attracting long-term funds. U.S.-based MNCs such as McDonald’s and Walt Disney commonly use the Eurobond market. Non-U.S. firms such as Guinness, Nestlé, and Volkswagen also use this market as a source of funds.

In recent years, governments and corporations from emerging markets such as Croatia, Ukraine, Romania, and Hungary have frequently utilized the Eurobond market. New corporations that have been established in emerging markets rely on the Eurobond market to finance their growth. They have to pay a risk premium of at least three percentage points annually above the U.S. Treasury bond rate on dollar-denominated Eurobonds.

Development of the Eurobond Market

The emergence of the Eurobond market was partially the result of the Interest Equalization Tax (IET) imposed by the U.S. government in 1963 to discourage U.S. investors from investing in foreign securities. Thus, non-U.S. borrowers that historically had sold securities to U.S. investors began to look elsewhere for funds.

Before 1984, investors that directly purchased U.S.-placed bonds were subject to a 30 percent withholding tax. The issuers of these bonds retained 30 percent of the interest payments to satisfy the withholding tax laws. In some cases, however, tax treaties between the United States and other countries modified this role, causing the tax to affect investors in some countries more than those in others. Because of the withholding tax, many U.S. bonds were issued in the Eurobond market through financing subsidiaries in the Netherlands Antilles. A tax treaty allowed interest payments from Antilles subsidiaries of U.S.-based corporations to non-U.S. investors to be exempt from the withholding tax. U.S. firms that used this method of financing were able to sell their bonds at a relatively high price because of the tax exemption. Thus, they obtained funds at a relatively low cost. Some U.S. firms did not use this financing method, because they knew the U.S. government might prohibit this method of circumventing the tax at some point in the future. Indeed, in July 1984, the U.S. government abolished the withholding tax and allowed U.S. corporations to issue bearer bonds directly to non-U.S. investors. The result was a large increase in the volume of bonds sold by U.S. corporations to non-U.S. investors.
Underwriting Process

Eurobonds are underwritten by a multinational syndicate of investment banks and simultaneously placed in many countries, providing a wide spectrum of fund sources to tap. The underwriting process takes place in a sequence of steps. The multinational managing syndicate sells the bonds to a large underwriting crew. In many cases, a special distribution to regional underwriters is allocated before the bonds finally reach the bond purchasers. One problem with the distribution method is that the second- and third-stage underwriters do not always follow up on their promise to sell the bonds. The managing syndicate is therefore forced to redistribute the unsold bonds or to sell them directly, which creates “digestion” problems in the market and adds to the distribution cost. To avoid such problems, bonds are often distributed in higher volume to underwriters that have fulfilled their commitments in the past at the expense of those that have not. This has helped the Eurobond market maintain its desirability as a bond placement center.

Features

Eurobonds have several distinguishing features. They usually are issued in bearer form, and coupon payments are made yearly. Some Eurobonds carry a convertibility clause allowing them to be converted into a specified number of common stock shares. Eurobonds typically have few, if any, protective covenants, which is an advantage to the issuer. Also, even short-maturity Eurobonds include call provisions. Some Eurobonds, called floating rate notes (FRNs), have a variable rate provision that adjusts the coupon rate over time according to prevailing market rates.

Denominations. Various currencies are commonly used to denominate Eurobonds. The U.S. dollar is used the most, denoting 70 to 75 percent of the Eurobonds, but many Eurobonds will likely be denominated in euros in the future.

Recently, some firms have denominated debt in Japanese yen because of Japan’s extremely low interest rates. For example, some MNCs were able to issue bonds at a yield of about 1 percent in the late 1990s.

Interest rates for each currency and credit conditions in the Eurobond market change constantly, causing the popularity of the Eurobond market to vary among currencies. MNCs that need funds attempt to “read” market conditions so that they can properly time their bond offerings. They prefer to issue bonds in the desired currency when the interest rate for that currency is low and when the institutional investors who invest in the Eurobond market charge a minimal premium (above the currency’s risk-free rate) for credit risk. In the late 1990s, the credit risk premium required by institutional investors in various currencies was generally low (especially for MNCs with limited exposure to Asia), which encouraged many MNCs to obtain funds by issuing Eurobonds.

Secondary Market. Eurobonds also have a secondary market. The market makers are in many cases the same underwriters who sell the primary issues. A technological advancement called Euro-clear helps to inform all traders about outstanding issues for sale, thus allowing a more active secondary market. The intermediaries in the secondary market are based in 10 different countries, with those in the United Kingdom dominating the action. They can act not only as brokers but also as
dealers that hold inventories of Eurobonds. Many of these intermediaries, such as Bank of America International, Salomon Smith Barney, and Citicorp International, are subsidiaries of U.S. corporations.

Before the adoption of the euro, each country’s MNCs would commonly prefer to issue bonds in their own local currency. The market for bonds in each currency was limited. Now, with the adoption of the euro by many countries, MNCs from many different countries can issue bonds denominated in euros, which allows for a much larger and more liquid market. This is beneficial to MNCs because they can more easily obtain debt by issuing bonds, as investors know that there will be adequate liquidity in the secondary market.

Ratings. Although ratings are available for most Eurobond issues, purchasers have tended to ignore ratings in favor of a well-known name. This provides an advantage for well-known U.S. firms that have not been assigned the highest rating. About one-fourth of the debt issues in the Eurobond market are for less than $100 million, while more than one-third of the issues are for more than $300 million. For example, Gillette, which is known worldwide, raised $300 million from a single issue in the Eurobond market and paid an annual yield of just .14 percent above U.S. Treasury bonds.

**Comparing Interest Rates Among Currencies**

Recently quoted annualized interest rates are shown in Exhibit 3.2. Notice the wide disparity among interest rates of different countries. At one extreme, Japan’s annualized interest rate is about 1 percent, while Brazil’s annualized interest rate is 19 percent.

The interest rates in debt markets (such as in the Eurobond and Eurocurrency markets) are crucial because they affect the MNC’s cost of financing. Since interest rates can vary substantially among currencies, the cost of local financing for foreign projects varies among countries. The interest rate on a debt instrument denominated in a specific currency in the Eurocurrency, Eurocredit, and Eurobond markets is determined by the demand for funds denominated in that currency and the supply of funds available in that currency.

**Example**

The supply and demand schedules for the U.S. dollar and for Brazil’s currency (the real) are compared for a given point in time in Exhibit 3.3. The demand schedule for loanable funds is downward sloping for any currency, which simply means that the quantity of funds demanded at any point in time is inversely related to the interest rate level. That is, the total amount of loanable funds demanded (borrowed) at a given point in time is higher if the cost of borrowing is lower.

The supply schedule for loanable funds denominated in a given currency is upward sloping, which means that the total amount of loanable funds supplied (such as savings by individuals) at a given point in time is positively related to the interest rate level. That is, the total amount of loanable funds supplied to the market is higher if the interest rate offered on savings accounts is higher.

Though the demand schedule for loanable funds should be downward sloping for every currency and the supply schedule of loanable funds should be upward sloping for every currency, the actual positions of these schedules vary among currencies. First, notice that the demand and supply curves are further to the
Exhibit 3.2
Comparison of Annualized Short-Term Interest Rates among Countries in 2001

Rates are rounded to the nearest percent.
right for the dollar than for the Brazilian real. The amount of dollar-denominated loanable funds supplied and demanded is much greater than the Brazilian real-denominated loanable funds because the U.S. economy is much larger than Brazil’s economy.

Also notice that the positions of the demand and supply schedules for loanable funds are much higher for the Brazilian real than for the dollar. The supply schedule for loanable funds denominated in Brazilian real shows that hardly any amount of savings would be supplied at low interest rate levels because the high inflation there encourages households to spend all of their disposable income before prices increase more. It discourages households from saving unless the interest rate is sufficiently high. In addition, the demand for loanable funds in Brazilian real shows that borrowers are willing to borrow even at very high rates of interest because they would rather borrow funds to make purchases now before prices increase. Firms would be willing to pay 70 percent interest on a loan to purchase machines whose prices will increase by 90 percent next year.

Because of the differences in the positions of the demand and supply schedules for the two currencies shown in Exhibit 3.3, the equilibrium interest rate for the Brazilian real is much higher than for the dollar.

As the demand and supply schedules change over time for a specific currency, so will the equilibrium interest rate.

**Example**

If Brazil’s government was able to substantially reduce the local inflation, the supply schedule of loanable funds denominated in Brazilian real would shift out (to the right). Conversely, the demand schedule of loanable funds denominated in real would shift in (to the left). The two shifts would result in a lower equilibrium interest rate.

One might think that investors from other countries should invest in savings accounts in high-inflation countries such as Brazil. However, the currencies of these high-inflation countries usually weaken over time, which may more than offset the
Many investors shift their savings from currency to currency of the more developed countries to take advantage of relatively high interest rates. In addition, borrowers sometimes borrow a different currency from what they need to take advantage of a relatively low interest rate. For example, assume that U.S. and Canadian interest rates are initially at the same level. Then, high economic growth in the United States results in an increased demand for loanable funds, which causes interest rates in the United States to rise. When U.S. interest rates are significantly above Canadian interest rates, some U.S. borrowers decide to obtain funding in Canadian dollars where interest rates are relatively low. This results in an increased demand for loanable funds denominated in Canadian dollars, which places upward pressure on Canadian interest rates.

When U.S. and Canadian interest rates have risen, some borrowers in these countries may consider borrowing European currencies if European interest rates are relatively low; this may ultimately place upward pressure on European interest rates.

Supply and demand conditions can explain the relative interest rate for any currency. The Japanese yen’s very low interest rate is attributed to a large supply of savings by Japanese households relative to a weak demand for funds because of a weak economy (limited borrowing). The relatively high interest rate in Brazil is attributed to both high inflation, which encourages firms and consumers to borrow and make purchases before prices increase further, and to excessive borrowing by the government.

A change in one currency’s interest rate can have an impact on another within the same day, week, or month. The point is that the freedom to transfer funds across countries causes the demand and supply conditions for funds to be somewhat integrated, which can cause interest rate movements to be integrated. Interest rates in the European countries participating in the euro are similar because they are subject to the same money supply and demand conditions.

MNCs and domestic firms commonly obtain long-term funding by issuing stock locally. Yet, MNCs can also attract funds from foreign investors by issuing stock in international markets. The stock offering may be more easily digested when it is issued in several markets. In addition, the issuance of stock in a foreign country can enhance the firm’s image and name recognition there.

The recent conversion of many European countries to a single currency (the euro) has resulted in more stock offerings in Europe by U.S.- and European-based MNCs. In the past, an MNC needed a different currency in every country where it conducted business and therefore borrowed currencies from local banks in those
Now, it can use the euro to finance its operations across several European countries and may be able to obtain all the financing it needs with one stock offering in which the stock is denominated in euros. The MNCs can then use a portion of the revenue (in euros) to pay dividends to shareholders who have purchased the stock.

**Issuance of Foreign Stock in the United States**

Non-U.S. corporations or governments that need large amounts of funds sometimes issue the stock in the United States (these are called **Yankee stock offerings**) due to the liquidity of the new-issues market there. In other words, a foreign corporation or government may be more likely to sell an entire issue of stock in the U.S. market, whereas in other, smaller markets, the entire issue may not necessarily sell.

The U.S. investment banks commonly serve as underwriters of the stock targeted for the U.S. market and receive underwriting fees ranging from about 3 to 6 percent of the value of stock issued. Since many financial institutions in the United States purchase non-U.S. stocks as investments, non-U.S. firms may be able to place an entire stock offering within the United States.

Firms that issue stock in the United States typically are required to satisfy stringent disclosure rules on their financial condition. However, they are exempt from some of these rules when they qualify for a Securities and Exchange Commission guideline (called Rule 144a) through a direct placement of stock to institutional investors.

Many of the recent stock offerings in the United States by non-U.S. firms have resulted from privatization programs in Latin America and Europe, whereby businesses that were previously government owned are being sold to U.S. shareholders. Given the large size of some of these businesses, the local stock markets are not large enough to digest the stock offerings. Consequently, U.S. investors are financing many privatized businesses based in foreign countries.

When a non-U.S. firm issues stock in its own country, its shareholder base is quite limited, as a few large institutional investors may own most of the shares. By issuing stock in the United States, such a firm diversifies its shareholder base, which can reduce share price volatility caused when large investors sell shares.

Non-U.S. firms also obtain equity financing by using **American depository receipts (ADRs)**, which are certificates representing bundles of stock. The use of ADRs circumvents some disclosure requirements imposed on stock offerings in the United States, yet enables non-U.S. firms to tap the U.S. market for funds. The ADR market grew after businesses were privatized in the early 1990s, as some of these businesses issued ADRs to obtain financing.

**Issuance of Stock in Foreign Markets**

Although the U.S. market offers an advantage for new stock issues due to its size, the registration requirements can sometimes cause delays in selling the new issues. For this reason, some U.S. firms have issued new stock in foreign markets in recent years. Other U.S. firms issue stock in foreign markets simply to enhance their global image. The existence of various markets for new issues provides corporations in need of equity with a choice. This competition among various new-issues markets should increase the efficiency of new issues.
The locations of an MNC’s operations can influence the decision about where to place stock, as the MNC may desire a country where it is likely to generate enough future cash flows to cover dividend payments. The stocks of some U.S.-based MNCs are widely traded on numerous stock exchanges around the world. For example, the stock of The Coca-Cola Co., IBM, TRW and many other U.S.-based MNCs have their stock listed on several different stock exchanges overseas. When an MNC’s stock is listed on foreign stock exchanges, it can easily be traded by foreign investors who have access to those exchanges.

Impact of the Euro. The adoption of the euro by many European countries has encouraged MNCs based in Europe to issue stock. Investors throughout Europe are more willing to invest in stocks when they do not have to worry about exchange rate effects. For example, a German insurance company may be more willing to buy a stock issued by a firm in Portugal now that the same currency is used in both countries. The secondary market for stocks denominated in euros is more liquid as a result of the participation by investors from several different countries that have adopted the euro.

Comparison of Stock Markets. Exhibit 3.4 provides a summary of the major stock markets, but there are numerous other exchanges. Some foreign stock markets are much smaller than the U.S. markets because their firms have relied more on debt financing than equity financing in the past. Recently, however, firms outside the United States have been issuing stock more frequently, which has resulted in the growth of non-U.S. stock markets. The percentage of individual versus institutional ownership of shares varies across stock markets. Financial institutions and other firms own a large proportion of the shares outside the United States, while individual investors own a relatively small proportion of shares.

Large MNCs have begun to float new stock issues simultaneously in various countries. Investment banks underwrite stocks through one or more syndicates across countries. The global distribution of stock can reach a much larger market, so greater quantities of stock can be issued at a given price.

HTTP:// USING THE WEB


In recent years, many new stock markets have been developed. These so-called emerging markets enable foreign firms to raise large amounts of capital by issuing stock. These markets may enable U.S. firms doing business in emerging markets to raise funds by issuing stock there and listing their stock on the local stock exchanges. Market characteristics such as the amount of trading relative to market capitalization and the applicable tax rates can vary substantially among emerging markets.

Alliances and ECNs. Several stock markets in Europe have created alliances that enable their stocks to be traded across exchanges. Several stock markets on different continents are conducting ongoing discussions of alliances, which will result in the consolidation of markets.
In recent years, electronic communications networks (ECNs) have been created to match orders between buyers and sellers. ECNs do not have a visible trading floor, as the trades are executed by a computer network. Examples of popular ECNs include Archipelago, Instinet, and Tradebook. ECNs will likely become more popular over time and may ultimately be merged with each other or with other exchanges to create a single global stock exchange, where any stock can be traded at any time.

**Comparison of International Financial Markets**

Exhibit 3.5 illustrates the foreign cash flow movements of a typical MNC. These cash flows can be classified into four corporate functions, all of which generally require use of the foreign exchange markets. The spot market, forward market,
currency futures market, and currency options market are all classified as foreign exchange markets.

The first function is foreign trade with business clients. Exports generate foreign cash inflows, while imports require cash outflows. A second function is direct foreign investment, or the acquisition of foreign real assets. This function requires cash outflows but generates future inflows through remitted dividends back to the MNC parent or the sale of these foreign assets. A third function is short-term investment or financing in foreign securities. The Eurocurrency market is commonly used for this purpose. A fourth function is longer-term financing in the Eurocredit, Eurobond, or international stock markets.

Use of International Financial Markets
Like most MNCs, Nike frequently uses international financial markets to facilitate its international business operations. Since its cash flows are going to or coming from foreign subsidiaries, Nike frequently uses the foreign exchange market to facilitate its transactions. It also maintains short-term deposits at foreign banks and has access to short-term debt from foreign banks. It issued bonds denominated in Japanese yen to borrow the equivalent of about $100 million.

Discussion: Why do you think that Nike's foreign subsidiaries do not just rely on a large bank in the United States to provide all of its foreign exchange services and its deposit or loan services?
How Financial Markets Affect an MNC’s Value

The use of international financial markets can affect the value of an MNC, as shown in Exhibit 3.6. To the extent that issuing stock in a foreign market creates more name recognition in a foreign country, an MNC may be able to increase its presence in that country, which can lead to higher cash flows generated from that country and a higher valuation.

Financial markets can also affect an MNC’s value by influencing the cost of borrowing for foreign customers of the MNC. Changes in foreign interest rates can affect economic growth, which in turn affects the demand for products sold by foreign subsidiaries of the MNC. A lower interest rate can stimulate borrowing and spending, which would result in a higher demand for products produced by the foreign subsidiaries and therefore increase foreign currency cash flows. Conversely, an increase in local interest rates would reduce economic growth in the country, reduce the demand for the foreign subsidiary’s products, reduce its foreign currency cash flows, and therefore reduce its value.

Since interest rates commonly vary among countries, an MNC’s parent may use the Eurocurrency, Eurocredit, or Eurobond market to obtain funds at a lower cost than the cost of funds obtained locally. It reduces its cost of debt and therefore reduces its weighted average cost of capital, which results in a higher valuation.

An MNC’s parent may be able to achieve a lower weighted average cost of capital by issuing equity in some foreign markets rather than issuing equity in its local market. If the MNC achieves a lower cost of capital, it can achieve a lower required rate of return and a higher valuation.

Exhibit 3.6
Impact of Global Financial Markets on an MNC’s Value

\[ V = \sum_{t=1}^{n} \left( \sum_{j=1}^{m} \left[ E(CF_{j,t}) \times E(ER_{j,t}) \right] \right) \times (1 + k)^t \]

\[ V = \text{value of the U.S.-based MNC} \]
\[ E(CF_{j,t}) = \text{expected cash flows denominated in currency } j \text{ to be received by the U.S. parent in period } t \]
\[ E(ER_{j,t}) = \text{expected exchange rate at which currency } j \text{ can be converted to dollars at the end of period } t \]
\[ k = \text{weighted average cost of capital of the U.S. parent company} \]
\[ m = \text{number of currencies} \]
\[ n = \text{number of periods} \]
SUMMARY

- The existence of market imperfections prevents markets from being completely integrated. Consequently, investors and creditors can attempt to capitalize on unique characteristics that make foreign markets more attractive than domestic markets. This motivates the international flow of funds and results in the development of international financial markets.

- The foreign exchange market allows currencies to be exchanged in order to facilitate international trade or financial transactions. Commercial banks serve as financial intermediaries in this market. They stand ready to exchange currencies on the spot or at a future point in time with the use of forward contracts.

- The Eurocurrency market is composed of several large banks that accept deposits and provide short-term loans in various currencies. This market is primarily used by governments and large corporations.

- The Eurocredit market is composed of the same commercial banks that serve the Eurocurrency market. These banks convert some of the deposits received into Eurocredit loans (for medium-term periods) to governments and large corporations.

- The Eurobond market facilitates international transfers of long-term credit, thereby enabling governments and large corporations to borrow funds from various countries. Eurobonds are underwritten by a multinational syndicate of investment banks and are placed in various countries.

- Just as the Eurocurrency, Eurocredit, and Eurobond markets enable firms to borrow funds in foreign countries, international stock markets enable firms to obtain equity financing in foreign countries. Thus, these markets have helped MNCs finance their international expansion.

SELF TEST

Answers are provided in Appendix A at the back of the text.

1. Stetson Bank quotes a bid rate of $.784 for the Australian dollar and an ask rate of $.80. What is the bid/ask percentage spread?

2. Fullerton Bank quotes an ask rate of $.190 for the Peruvian currency (new sol) and a bid rate of $.188. Determine the bid/ask percentage spread.

3. Briefly explain how MNCs can make use of each international financial market described in this chapter.

QUESTIONS AND APPLICATIONS

1. List some of the important characteristics of bank foreign exchange services that MNCs should consider.

2. Utah Bank’s bid price for Canadian dollars is $.7938, and its ask price is $.81. What is the bid/ask percentage spread?

3. Compute the bid/ask percentage spread for Mexican peso retail transactions in which the ask rate is $.11 and the bid rate is $.10.

4. Of what use is a forward contract to an MNC?

5. Explain the foreign exchange situation for countries that use the euro when they
engage in international trade among themselves.

6. If a euro is worth $.80, what is the value of a dollar in euros?

7. Assume Poland’s currency (the zloty) is worth $.17 and the Japanese yen is worth $.008. What is the cross rate of the zloty with respect to yen? That is, how many yen equal a zloty?

8. Explain how the Eurocurrency, Eurocredit, and Eurobond markets differ from one another.

9. Briefly describe the historical developments that led to floating exchange rates as of 1973.

10. What is the function of the Eurocurrency market?

11. Briefly describe the reasons for the development and growth of the Eurocurrency market.

12. Why do interest rates vary among countries? Why are interest rates similar for those European countries that use the euro as their currency?

13. With regard to Eurocredit loans, who are the borrowers?

14. What is LIBOR, and how is it used in the Eurocredit market?

15. Why would a bank desire to participate in syndicated Eurocredit loans?

16. Discuss some reasons for the popularity of the Eurobond market.

17. Compute the forward discount or premium for the British pound whose 180-day forward rate is $1.75 and spot rate is $1.78. State whether your answer is a discount or a premium.

18. The Wolfpack Corporation is a U.S. exporter that invoices its exports to the United Kingdom in British pounds. If it expects that the pound will appreciate against the dollar in the future, should it hedge its exports with a forward contract? Explain.

19. Explain why firms may issue stock in foreign markets. Why might U.S. firms issue more stock in Europe since the conversion to a single currency in 1999?

20. Bullet, Inc., a U.S. firm, is planning to issue new stock in the United States during this month. The only decision still to be made is the specific day on which the stock will be issued. Why do you think Bullet monitors results of the Tokyo stock market every morning?

21. Recently, Wal-Mart established two retail outlets in the city of Shanzan, China, which has a population of 3.7 million. These outlets are massive and contain products purchased locally as well as imports. As Wal-Mart generates earnings beyond what it needs in Shanzan, it may remit those earnings back to the United States. Wal-Mart is likely to build additional outlets in Shanzan or in other cities in the future.

   a. Explain how the Wal-Mart outlets in China would use the spot market in foreign exchange.
   
   b. Explain how Wal-Mart might utilize the Eurocurrency market when it is establishing other Wal-Mart stores in Asia.
   
   c. Explain how Wal-Mart could use the Eurobond market to finance the establishment of new outlets in foreign markets.

22. Explain how the Asian crisis would have affected the returns to a U.S. firm investing in the Asian stock markets as a means of international diversification. [See the chapter appendix.]

**Impact of 9/11/01**

23. How do you think the terrorist attack on the United States could cause a decline in U.S. interest rates? Given the potential decline in U.S. interest rates and stock prices, how might capital flows between the United States and other countries be affected?
Internet Application


a. Use this website to determine the cross exchange rate between the Japanese yen and the Australian dollar. That is, determine how many yen must be converted to an Australian dollar for Japanese importers that purchase Australian products today.

b. Use this website to review how stock markets performed today. (This relates to the appendix of this chapter.) Does it appear that returns on Asian stock markets today are related? Does it appear that the returns on European stock markets today are related?

Running Your Own MNC

This exercise can be found on the Student CD-ROM.

Blades, Inc. Case

Decisions to Use International Financial Markets

As a financial analyst for Blades, Inc., you are reasonably satisfied with Blades’ current setup of exporting “Speedos” (roller blades) to Thailand. Due to the unique arrangement with Blades’ primary customer in Thailand, forecasting the revenue to be generated there is a relatively easy task. Specifically, your customer has agreed to purchase 180,000 pairs of Speedos annually, for a period of three years, at a price of THB4,594 (THB = Thai baht) per pair. The current direct quotation of the dollar-baht exchange rate is $0.024.

The cost of goods sold incurred in Thailand (due to imports of the rubber and plastic components from Thailand) runs at approximately THB2,871 per pair of Speedos, but Blades currently only imports materials sufficient to manufacture about 72,000 pairs of Speedos. Blades’ primary reasons for using a Thai supplier are the high quality of the components and the low cost, which has been facilitated by a continuing depreciation of the Thai baht against the U.S. dollar. If the dollar cost of buying components becomes more expensive in Thailand than in the United States, Blades is contemplating providing its U.S. supplier with the additional business.

Your plan is quite simple; Blades is currently using its Thai-denominated revenues to cover the cost of goods sold incurred there. During the last year, excess revenue was converted to U.S. dollars at the prevailing exchange rate. Although your cost of goods sold is not fixed contractually as the Thai revenues are, you expect them to remain relatively constant in the near future. Consequently, the baht-denominated cash inflows are fairly predictable each year because the Thai customer has committed to the purchase of 180,000 pairs of Speedos at a fixed price. The excess dollar revenue resulting from the conversion of baht is used either to support the U.S. production of Speedos if needed or to invest in the United States. Specifically, the revenues are used to cover cost of goods sold in the U.S. manufacturing plant, located in Omaha, Nebraska.

Ben Holt, Blades’ CFO, notices that Thailand’s interest rates are approximately 15 percent (versus 8 percent in the United States). You interpret the high interest rates in Thailand as an indication of the uncertainty resulting from Thailand’s unstable economy. Holt asks you to assess the feasibility of investing Blades’ excess funds from Thailand operations in Thailand at an interest rate of 15 percent. After you express your opposition to his plan, Holt asks you to detail the reasons in a detailed report.

1. One point of concern for you is that there is a tradeoff between the higher interest rates in Thailand and the delayed conversion of baht into dollars. Explain what this means.

2. If the net baht received from the Thailand
operation are invested in Thailand, how will U.S. operations be affected? (Assume that Blades is currently paying 10 percent on dollars borrowed and needs more financing for its firm.)

3. Construct a spreadsheet to compare the cash flows resulting from two plans. Under the first plan, net baht-denominated cash flows (received today) will be invested in Thailand at 15 percent for a one-year period, after which the baht will be converted to dollars. The expected spot rate for the baht in one year is about $0.022 (Ben Holt’s plan). Under the second plan, net baht-denominated cash flows are converted to dollars immediately and invested in the United States for one year at 8 percent. For this question, assume that all baht-denominated cash flows are due today. Does Holt’s plan seem superior in terms of dollar cash flows available after one year? Compare the choice of investing the funds versus using the funds to provide needed financing to the firm (a spreadsheet is not needed).

Small Business Dilemma

Use of the Foreign Exchange Markets by the Sports Exports Company

Each month, the Sports Exports Company (a U.S. firm) receives an order for footballs from a British sporting goods distributor. The monthly payment for the footballs is denominated in British pounds, as requested by the British distributor. Jim Logan, owner of the Sports Exports Company, must convert the pounds received into dollars.

1. Explain how the Sports Exports Company could utilize the spot market to facilitate the exchange of currencies. Be specific.

2. Explain how the Sports Exports Company is exposed to exchange rate risk and how it could use the forward market to hedge this risk.
The trading of financial assets (such as stocks or bonds) by investors in international financial markets has a major impact on MNCs. First, this type of trading can influence the level of interest rates in a specific country (and therefore the cost of debt to an MNC) because it affects the amount of funds available there. Second, it can affect the price of an MNC’s stock (and therefore the cost of equity to an MNC) because it influences the demand for the MNC’s stock. Third, it enables MNCs to sell securities in foreign markets. So, even though international investing in financial assets is not the most crucial activity of MNCs, international investing by individual and institutional investors can indirectly affect the actions and performance of an MNC. Consequently, an understanding of the motives and methods of international investing is necessary to anticipate how the international flow of funds may change in the future and how that change may affect MNCs.

BACKGROUND ON INTERNATIONAL STOCK EXCHANGES

The international trading of stocks has grown over time but has been limited by three barriers: transaction costs, information costs, and exchange rate risk. In recent years, however, these barriers have been reduced as explained here.

HTTP:// USING THE WEB

Stock Exchange Information  A summary of links to stock exchanges around the world is provided at http://www.aex.nl/finance/beurzen.html.

Reduction in Transaction Costs

Most countries tend to have their own stock exchanges, where the stocks of local publicly held companies are traded. In recent years, exchanges have been consolidated within a country, which has increased efficiency and reduced transaction costs. Some European stock exchanges now have extensive cross-listings so that investors in a given European country can easily purchase stocks of companies based in other European countries.

In particular, because of its efficiency, the stock exchange of Switzerland may serve as a model that will be applied to many other stock exchanges around the world. The Swiss stock exchange is now fully computerized, so a trading floor is not
needed. Orders by investors to buy or sell flow to financial institutions that are certified members of the Swiss stock exchange. These institutions are not necessarily based in Switzerland. The details of the orders, such as the name of the stock, the number of shares to be bought or sold, and the price at which the investor is willing to buy or sell, are fed into a computer system. The system matches buyers and sellers and then sends information confirming the transaction to the financial institutions, which informs the investor that the transaction is completed.

When there are many more buy orders than sell orders for a given stock, the computer will not be able to accommodate all orders. Some buyers will then increase the price they are willing to pay for the stock. Thus, the price adjusts in response to the demand (buy orders) for the stock and the supply (sell orders) of the stock for sale recorded by the computer system. Similar dynamics occur when a trading floor is used, but the computerized system has documented criteria by which it prioritizes the execution of orders; traders on a trading floor may execute some trades in ways that favor themselves at the expense of investors.

Over time, it is likely that other stock exchanges will adopt similar computerized systems. For example, the Brussels stock exchange already has conformed to the Swiss system. Furthermore, the electronic computer networks (ECNs) allow investors to place orders on their computers that are then executed and confirmed by the computer system through the Internet to the investor. Thus, all parts of the trading process from the placement of the order to the confirmation that the transaction has been executed can be conducted by computers. The ease with which such orders can occur, regardless of the locations of the investor and the stock exchange, is sure to increase the volume of international stock transactions in the future.

Several stock exchanges have created international alliances with the stock exchanges of other countries, which will enable firms to more easily cross-list their shares among various stock markets. This allows investors easier and cheaper access to foreign stocks.

**Reduction in Information Costs**

The Internet provides investors with access to much information about foreign stocks, enabling them to make more informed decisions without having to purchase information about these stocks. Consequently, investors should be more comfortable assessing foreign stocks. Although differences in accounting rules may still limit the degree to which financial data about foreign companies can be interpreted or compared to firms in other countries, there is some momentum toward making accounting standards uniform across some countries.

**Exchange Rate Risk**

When investing in a foreign stock that is denominated in a foreign currency, investors are subject to the possibility that the currency denoting the stock may depreciate against the investor’s currency over time.

The potential for a major decline in the stock’s value simply because of a large degree of depreciation is more likely for emerging markets, such as Indonesia or Russia, where the local currency can change by 10 percent or more on a single day.
INTERNATIONAL STOCK DIVERSIFICATION

A substantial amount of research has demonstrated that investors in stocks can benefit by diversifying internationally. The stocks of most firms are highly influenced by the countries where those firms reside (although some firms are more vulnerable to economic conditions than others).

Since stock markets partially reflect the current and/or forecasted state of their countries’ economies, they do not move in tandem. Thus, particular stocks of the various markets are not expected to be highly correlated. This contrasts with a purely domestic portfolio, in which most stocks often move in the same direction and by a somewhat similar magnitude.

To assess how countries’ stock markets move relative to one another, correlation coefficients of monthly stock market returns (from a U.S. investor’s perspective) are shown for some countries over the 1992–1998 period in Exhibit 3A.1. Some pairs of indexes, such as France/Germany, exhibit relatively high correlations. Nevertheless, most stock index correlations shown in the exhibit are less than .50. Consequently, investors should be able to reduce variability in portfolio returns by diversifying among stocks from several countries.

Limitations of International Diversification

In general, correlations between stock indexes have been higher in recent years than they were several years ago. The general increase in correlations among stock market returns may have implications for MNCs that attempt to diversify internationally. To the extent that stock prices in each market reflect anticipated earnings, the increased correlations may suggest that more highly correlated anticipated earnings are expected among countries. Thus, the potential risk-reduction benefits to an MNC that diversifies its business may be limited.

Exhibit 3A.2 shows how correlations between the returns of some markets (from a U.S. investor’s perspective) changed between the early and later 1990s. For example, the correlation coefficient between stock returns of the U.S. and Canadian stock markets was .47 for the 1992–1994 period but .86 during the 1995–1998 period. The correlations for some other pairs of stock markets declined over time, however. Although it is difficult to generalize how stock market correlations will change in the future, it is safe to say that some correlations will change over time, so the benefits of diversifying among stocks of different countries will change as well.

Exhibit 3A.1

<table>
<thead>
<tr>
<th></th>
<th>U.S.</th>
<th>Canada</th>
<th>France</th>
<th>Germany</th>
<th>Japan</th>
<th>Mexico</th>
<th>New Zealand</th>
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<td>France</td>
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<tr>
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<tr>
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</tr>
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<td>0.43</td>
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</table>
Exhibit 3A.2
Comparison of Stock Market Correlations during Two Subperiods

<table>
<thead>
<tr>
<th>Subperiod</th>
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</tr>
<tr>
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<td>0.16</td>
<td>0.00</td>
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</tr>
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<td>0.63</td>
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<td>0.51</td>
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</tr>
<tr>
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<td>0.39</td>
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<tr>
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<td>0.39</td>
<td>0.47</td>
<td>0.37</td>
<td>0.47</td>
</tr>
</tbody>
</table>

Subperiod 1 represents monthly market returns from January 1992 to December 1994. Subperiod 2 represents monthly returns from January 1995 to September 1998. All market index returns are from a U.S. investor's perspective.

Source: Dow Jones Country Indices.

HTTP:// ONLINE APPLICATION Stock Market Performance Charts showing recent stock market performance for each market can be found at http://finance.yahoo.com/m2?u.

The prevailing stock index level is shown for each country, as well as the performance of each market during the previous day. For some markets, you can assess the performance over the last year by clicking on Chart next to the country's name.
One reason for the increased correlations among stock market returns is increased integration of business between countries. Increased integration results in more intercountry trade flows and capital flows, which causes each country to have more influence on other countries. In particular, many European countries have become more integrated as regulations have been standardized throughout Europe to facilitate trade between countries. In addition, the adoption of the euro has removed exchange rate risk for trade between participating countries.

The conversion to the euro also allows portfolio managers in European countries to invest in stocks of other participating European countries without concern for exchange rate risk, because these stocks are also denominated in euros. This
facilitates a more regional approach for European investors, who are not restricted to stocks within their respective countries.

Since some stock market correlations may become more pronounced during a crisis, international diversification will not necessarily be as effective during a downturn as it is during more favorable conditions. Two events that had an adverse effect on many markets are the 1987 crash and the Asian crisis, which are discussed next.

**Market Movements during the 1987 Crash.** Further evidence on the relationships between stock markets is obtained by assessing market movements during the stock market crash in October 1987. Exhibit 3A.3 shows the stock market movements for four major countries during the crash. While the magnitude of the decline was not exactly the same, all four markets were adversely affected. When institutional investors anticipated a general decline in stocks, they sold some stocks from all markets, instead of just the U.S. market.

Many stock markets experienced larger declines in prices than U.S. stock markets did. For example, during the month of October 1987, the U.S. market index declined by about 21 percent, while the German market index declined by about 23 percent and the United Kingdom index by 26 percent. The stock market indexes of Australia and Hong Kong decreased by more than 50 percent over this same month.

Some critics have suggested that the institutional forces in the United States (such as computer-assisted trading, specialists, and concurrent trading in stock index futures), along with the strong U.S. influence in the world, caused a worldwide crash. Yet a study by Richard Roll found no evidence that the United States was the sole culprit. Roll shows that during October 1987, countries’ stock indices became more highly correlated than normal, which was likely due to some underlying factor that was capable of disrupting all markets. Even if computerized trading did not precipitate the crash, however, it may have exacerbated it. Roll compared the markets in which computerized trading was prevalent during the 1987 crash (Canada, France, Japan, United Kingdom, United States) to other markets. In local currency terms, the five markets with computerized trading had an average decline of about 21 percent over October 1987, versus a 28 percent average decline for the other markets. This comparison suggests that computerized trading may even have reduced market volatility. Asian markets such as Hong Kong, Malaysia, and Singapore experienced substantial market declines on Black Monday (October 19, 1987) several hours before the U.S. market even opened. In fact, other markets throughout Europe also experienced declines prior to the United States. It appears that the non-U.S. markets could have caused paranoia in the U.S. market, rather than the other way around. Thus, institutional factors such as computerized trading in the United States did not precipitate the worldwide crash.

Roll also assessed the possible impact of liquidity on declines across markets in October 1987. He used market capitalization as a proxy for liquidity, since larger markets are generally perceived as being more liquid. Roll found no statistical relationship between market capitalization and the magnitude of decline across markets. Therefore, liquidity did not influence market performance during the crash.

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Market Movements during the Asian Crisis. In the summer of 1997, Thailand experienced severe economic problems, which were followed by economic downturns in several other Asian countries. Investors revalued stocks downward because of weakened economic conditions, more political uncertainty, and a lack of confidence that the problems would be resolved. The effects during the first year of the Asian crisis are summarized in Exhibit 3A.4. This crisis demonstrated how quickly stock prices could adjust to changing conditions and how adverse market conditions could spread across countries. Thus, diversification across Asia did not effectively insulate investors during the Asian crisis. Diversification across all continents would have been a more effective method of diversification during the crisis.

Although there has not been another world stock market crash since 1987, there have been several mini-crashes. For example, on August 27, 1998 (referred to as “Bloody Thursday”), Russian stock and currency values declined abruptly in response to severe financial problems in Russia, and most stock markets around the world experienced losses on that day. U.S. stocks declined by more than 4 percent on this day. The adverse effects extended beyond stocks that would be directly affected by financial problems in Russia as paranoia caused investors to sell stocks across all markets due to fears that all stocks might be overvalued.

In response to the September 11, 2001, terrorist attacks on the United States, many stock markets experienced declines of more than 10 percent over the following week. Diversification among markets was not very effective in reducing risk in this case.

Valuation of Foreign Stocks

When investors consider investing in foreign stocks, they need methods for valuing those stocks. One possibility is to use the dividend discount model with an adjustment to account for expected exchange rate movements. Foreign stocks pay dividends in the currency in which they are denominated. Thus, the cash flow per period to U.S. investors is the dividend (denominated in the foreign currency) multiplied by the value of that foreign currency in dollars. The dividend can nor-
nally be forecasted with more accuracy than the value of the foreign currency. Because of exchange rate uncertainty, the value of the foreign stock from a U.S. investor's perspective is subject to much uncertainty.

An alternative method of valuing foreign stocks is to apply price-earnings ratios. The expected earnings per share of the foreign firm are multiplied by the appropriate price-earnings ratio (based on the firm's risk and industry) to determine the appropriate price of the firm's stock. Although this method is easy to use, it is subject to some limitations when applied to valuing foreign stocks. The price-earnings ratio for a given industry may change continuously in some foreign markets, especially when the industry is composed of just a few firms. Thus, it is difficult to determine the proper price-earnings ratio that should be applied to a specific foreign firm. In addition, the price-earnings ratio for any particular industry may need to be adjusted for the firm's country, since reported earnings can be influenced by the firm's accounting guidelines and tax laws. Furthermore, even if U.S. investors are comfortable with their estimate of the proper price-earnings ratio, the value derived by this method is denominated in the local foreign currency (since the estimated earnings are denominated in that currency). Therefore, U.S. investors would still need to consider exchange rate effects. Even if the stock is undervalued in the foreign country, it may not necessarily generate a reasonable return for U.S. investors if the foreign currency depreciates against the dollar.

A third method of valuing foreign stocks is to first focus on the country's macroeconomic conditions. Once these conditions are assessed, any firm within that country can be valued based on its sensitivity to the macroeconomic conditions. This method tends to allocate funds to stocks in countries that are expected to experience strong economic conditions and is less focused on searching for individual stocks within a country that may be undervalued.

Some investors combine two or more methods when selecting foreign stocks. For example, they may first assess the macroeconomic conditions of all countries to screen out those countries that are expected to experience poor conditions in the future. Then, they use other methods such as the dividend discount model or the price-earnings method to value specific firms within the countries that are appealing.

**Methods Used to Invest Internationally**

For investors attempting international stock diversification, five common approaches are available:

- Direct purchases of foreign stocks
- Investment in MNC stocks
- American depository receipts (ADRs)
- World Equity Benchmark Shares (WEBS)
- International mutual funds (IMFs)

Each approach is discussed in turn.

**Direct Purchases of Foreign Stocks.** Foreign stocks can be purchased on foreign stock exchanges. This requires the services of brokerage firms that can contact floor brokers who work on the foreign stock exchange of concern. However, this approach is inefficient because of market imperfections such as insufficient information, transaction costs, and tax differentials among countries.
An alternative method of investing directly in foreign stocks is to purchase stocks of foreign companies that are sold on the local stock exchange. In the United States, for example, Royal Dutch Shell (of the Netherlands), Sony (of Japan), and many other foreign stocks are sold on U.S. stock exchanges. Because the number of foreign stocks listed on any local stock exchange is typically quite limited, this method by itself may not be adequate to achieve the full benefits of international diversification.

**Investment in MNC Stocks.** The operations of an MNC represent international diversification. Like an investor with a well-managed stock portfolio, an MNC can reduce risk (variability in net cash flows) by diversifying sales not only among industries but also among countries. In this sense, the MNC as a single firm can achieve stability similar to that of an internationally diversified stock portfolio.

If MNC stocks behave like an international stock portfolio, then they should be sensitive to the stock markets of the various countries in which they operate. The sensitivity of returns of MNCs based in a particular country to specific international stock markets can be measured as:

\[ R_{MNC} = a_0 + a_1 R_L + b_1 R_{I_1} + b_2 R_{I_2} + \ldots + b_n R_{I_n} + u, \]

where \( R_{MNC} \) is the average return on a portfolio of MNCs from the same country, \( a_0 \) is the intercept, \( R_L \) is the return on the local stock market, \( R_{I_1} \) through \( R_{I_n} \) are returns on foreign stock indices, and \( u \) is an error term. The regression coefficient \( a_1 \) measures the sensitivity of MNC returns to their local stock market, while coefficients \( b_1 \) through \( b_n \) measure the sensitivity of MNC returns to the various foreign stock markets. Studies have applied the time series regression model specified here and found that MNCs based in a particular country were typically affected only by their respective local stock markets and were not affected by other stock market movements. This method does not achieve diversification benefits.

**American Depository Receipts.** Another approach is to purchase American depository receipts (ADRs), which are certificates representing ownership of foreign stocks. More than 1,000 ADRs are available in the United States, primarily traded on the over-the-counter (OTC) stock market. Because most of these ADRs are not actively traded, their prices typically are not reported on a consistent basis. This may change over time, however, as they are becoming increasingly popular.

An investment in ADRs may be an adequate substitute for direct investment in foreign stocks. However, the limited number of ADRs available and the relatively high transaction costs may encourage some investors to use an alternative approach.

**World Equity Benchmark Shares.** Although investors have closely monitored international stock indexes for years, they were typically unable to invest directly in these indexes. The index was simply a measure of performance for a set of stocks but was not traded. World equity benchmark shares (WEBS) represent indexes that reflect composites of stocks for particular countries; they were created to allow investors to invest directly in a stock index representing any one of several countries. They are also referred to as iShares. Investors can purchase ETFs if they want to invest in an index representing a particular stock market.
International Mutual Funds. A final approach to consider is purchasing shares of international mutual funds (IMFs), which are portfolios of stocks from various countries. Several investment firms, such as Fidelity, Vanguard, and Merrill Lynch, have constructed IMFs for their customers. Like domestic mutual funds, IMFs are popular due to (1) the low minimum investment necessary to participate in the funds, (2) the presumed expertise of the portfolio managers, and (3) the high degree of diversification achieved by the portfolios' inclusion of several stocks. Many investors believe an IMF can better reduce risk than a purely domestic mutual fund because the IMF includes foreign securities. An IMF represents a prepackaged portfolio, so investors who use it do not need to construct their own portfolios. Although some investors prefer to construct their own portfolios, the existence of numerous IMFs on the market today allows investors to select the one that most closely resembles the type of portfolio they would have constructed on their
Moreover, some investors feel more comfortable with a professional manager managing the international portfolio.

**Exchange Rate Risk of Foreign Stocks**

As the foreign currency denominating a foreign stock appreciates, the return to the investor is enhanced. If the foreign currency depreciates, however, the return is reduced. The volatility of exchange rates causes returns on foreign stocks to be volatile as well.

**Reducing Exchange Rate Risk of Foreign Stocks.** The exchange rate risk resulting from foreign stock holdings can be reduced by diversification among stocks of different countries. For example, a U.S. investor can reduce exchange rate risk by spreading whatever funds are to be used for foreign investments across various non-U.S. countries. If correlations between foreign currency movements (against the U.S. dollar) are low or negative, exchange rate risk can be effectively reduced through diversification.

Many foreign currencies move in tandem against the dollar, especially the European currencies (including the euro). Thus, if one of these currencies depreciates substantially against the dollar, the others will as well, and all foreign stocks denominated in these currencies will be adversely affected to a similar degree. Investors would achieve more effective diversification of currencies by spreading the foreign investment across continents.

Another method of reducing exchange rate risk is to take short positions in the foreign currencies denominating the foreign stocks. For example, a U.S. investor holding Mexican stocks who expects the stocks to be worth 10 million Mexican pesos one year from now could sell forward contracts (or futures contracts) representing 10 million pesos. The stocks could be liquidated at that time, and the pesos could be exchanged for dollars at a locked-in price.

Although hedging the exchange rate risk of an international stock portfolio can be effective, it has three limitations. First, the number of foreign currency units to be converted to dollars at the end of the investment horizon is unknown. If the units received from liquidating the foreign stocks are more (less) than the amount hedged, the investor has a net long (short) position in that foreign currency, and the return will be unfavorably affected by its depreciation (appreciation). Nevertheless, though the hedge may not be perfect for this reason, investors normally should be able to hedge most of their exchange rate risk.

A second limitation of hedging exchange rate risk is that the investors may decide to retain the foreign stocks beyond the initially planned investment horizon. Of course, they can create another short position after the initial short position is terminated. If they ever decide to liquidate the foreign stocks prior to the forward delivery date, the hedge will be less effective. They could use the proceeds to invest in foreign money market securities denominated in that foreign currency in order to postpone conversion to dollars until the forward delivery date. But this prevents them from using the funds for other opportunities until that delivery date.

A third limitation of hedging is that forward rates for some currencies may not exist or may exhibit a large discount. This limitation generally does not apply to the widely traded currencies.