# CHAPTER 19

## *International Finance and Investments*

*Investing overseas adds an international flavor to your portfolio. You can invest in an Argentine telephone company, an Italian auto company, or a Japanese electronics company as easily as you can invest in a U.S. book publishing company. Your overseas investments can increase your portfolio's diversification, but they also add a new risk element - you have to watch out for adverse exchange rate movements.*

The rapid growth of global financial markets has made a knowledge of international finance and investments more important than ever before. Foreign currency markets are by far the most active markets in the world with more than $1 trillion of currency transactions occurring daily among commercial banks. In comparison, daily trading on the New York Stock Exchange is only a relatively small fraction of that amount.

Despite the increasing integration of international financial markets, almost all countries maintain their own legal system and central bank, and they pursue their own fiscal and monetary policies. Moreover, global economic and political structures are evolving rapidly in directions that are often unpredictable. The immediate implication for investors is that investments in other countries have unique risk and return characteristics that must be dealt with. Coping with the international investment environment is a challenging task for money managers everywhere. Nevertheless, despite the difficulties involved, many international investment managers have succeeded brilliantly.

The purpose of this chapter is to familiarize you with some of the most important aspects of international finance and investments. Although reading this chapter does not guarantee that you will become a brilliant international investor, it is at least a first step. Perhaps the most important thing to realize before you begin your journey is that all that you already know about investments generally applies to international investments. International investors around the world all face similar problems and often adopt similar solutions that differ only in the details. The more you learn about international finance and investments, the more you will come to realize this. *Bon voyage*!

### 19.1 Currency Exchange Rates

The first salient fact distinguishing international investments from investments generally is that almost all countries maintain their own financial system and issue their own currency. The Mexican peso, Canadian dollar, Japanese yen, and British pound are all well-known currencies. However, the Swedish krona, Portuguese escudo, Irish punt, and Korean won are lesser known currencies even among world travelers.

A country may not have a currency of its own but instead use the currency of a neighbor. As examples of this practice, Liechtenstein uses the Swiss franc, Monaco uses the French franc, and San Marino uses the Italian lira. However, such examples are rare and typically occur only for very small countries.

Sometimes a group of countries agrees to use a common currency. The euro is a spectacular example. In January 1999, the 11 countries that compose the European Economic and Monetary Union (EMU) officially adopted the euro as a common currency. At first, the euro dollar will be used

as a currency for securities transactions, but over a period of several years it will replace the individual currencies of these 11 countries completely.

(*margin def.* **exchange rate** The price of a country's currency stated in units of another country's currency; e.g., the exchange rate of U.S. dollars for British pounds.)

An **exchange rate** is the price of a country's currency stated in units of another country's currency. Notice, however, that between any two currencies we can state two exchange rates. The exchange rate of U.S. dollars for British pounds might be stated as 1.55 dollars per pound. Alternatively, the exchange rate of British pounds for U.S. dollars may be stated as .645 pounds per dollar, since .645 = 1/1.55. Both exchange rates actually say the same thing, which is the value of U.S. dollars and British pounds relative to each other. The fact that an exchange rate between any two currencies can be stated in two ways is something you may already know from personal travel experiences.
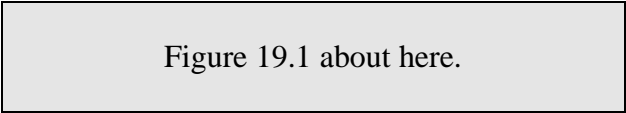
Figure 19.1 about here.

Most major currencies are freely traded in world currency markets, where their exchange rates are determined by the economic forces of supply and demand. These exchange rates are published daily in the financial press. Figure 19.1 presents a sample "Currency Trading" column from the *Wall Street Journal*. This column reports exchange rates between the major world currencies for transactions among New York City commercial banks. Notice that these exchange rates are reported in two ways: first as the U.S. dollar price of a foreign currency, and second as a foreign currency price of the U.S. dollar. For example, the U.S. dollar price of the euro is reported as 1.088, while the

euro price of the U.S. dollar is reported as .9184. Of course both quoted rates present the same information, which is the relative value of U.S. dollars and euros.

> Figure 19.2 about here.

A more detailed listing of currency exchange rates is published weekly in the *Wall Street Journal*. Figure 19.2 is a sample "World Value of the Dollar" column. Almost all exchange rates listed here are stated as a foreign currency price of the U.S. dollar. However, those currencies marked with an asterisk are stated as a U.S. dollar price of the foreign currency. For example, the United Kingdom has its pound sterling currency marked with an asterisk, indicating an exchange rate stated as a U.S. dollar price of the British pound.

In the United States, we often prefer to state an exchange rate as the U.S. dollar price of a unit of foreign currency. For example, we might state the exchange rate for Canadian dollars as 65 cents, because one Canadian dollar costs about U.S. $.65. However, we often reverse this practice and state an exchange rate as the foreign currency price of a U.S. dollar. For example, we might state the dollar exchange rate with Japanese yen as 121 yen, because 1 U.S. dollar can be bought for 121 yen. The fact that we often flip directions when stating various exchange rates is a common source of confusion for novices of international finance.

> (*margin def.* **cross rate** Exchange rate between two foreign currencies; e.g., for a U.S. resident, a cross rate is the exchange rate between German marks and British pounds.)

Further confusion can arise from the fact that exchange rates are often stated as cross rates. A **cross rate** is an exchange rate between two foreign currencies. For example, from the viewpoint

of a U.S. resident, the exchange rate between German marks and British pounds is a cross rate. Similarly, from the viewpoint of a German resident, the exchange rate between U.S. dollars and British pounds is a cross rate. In this book, we assume the reader is a resident of the United States and that a cross rate is an exchange rate between any two currencies other than the U.S. dollar.

Cross rates among the major world currencies are reported daily in the *Wall Street Journal*'s "Key Currency Cross Rates" box, as shown at the bottom of Figure 19.1. The left -most column of this box lists country names, while the top row lists the names of their currencies. The first column of exchange rates lists foreign currency prices of the U.S. dollar. For example, the exchange rate in the upper left corner is the Canadian dollar price of the U.S. dollar. The bottom row of exchange rates lists U.S. dollar prices of foreign currencies. For example, the exchange rate in the lower right corner is the U.S. dollar price of Canadian dollars. Except for the first column and the bottom row, all other exchange rates are cross rates between foreign currencies.

CHECK THIS

19.1a. Find the "Currency Trading" section in a recent *Wall Street Journal*,. What are the U.S. dollar prices of the British pound, euro, French franc, German mark, and Japanese yen?

19.1b. In a recent *Wall Street Journal*, find the "Key Currency Cross Rates" box. What are the British pound prices of the Canadian dollar, euro, and Japanese yen? What are the Japanese yen prices of the British pound, Canadian dollar, and the euro?

(*margin def.* **exchange rate appreciation** Increase in the value of one currency relative to another currency. *Exchange rate depreciation* occurs when one currency decreases in value relative to another currency.)

## *19.2 Exchange Rate Changes*

In discussions of international financial markets, we often hear the term **exchange rate appreciation** - and its apparent opposite *exchange rate depreciation*. Be forewarned, these terms are potentially confusing because an appreciation of, say, the British pound against the U.S. dollar is simultaneously a depreciation of the U.S. dollar against the British pound, and vice versa. Furthermore, the exchange rate between U.S. dollars and British pounds can be stated as either a dollar price of pounds or a pound price of dollars. To avoid confusing appreciation and depreciation, observe the rule that when the dollar price of pounds goes down this is exchange rate appreciation, and when the dollar price of pounds goes up this is exchange rate depreciation. Even better, state a decrease in the dollar price of pounds as a dollar appreciation and an increase in the dollar price of pounds as a dollar depreciation.

Now suppose the exchange rate of U.S. dollars for euros is originally U.S. $1.10 per euro, which then changes to U.S. $1.05 per euro. This is an example of exchange rate appreciation because we are stating the exchange rate as the U.S. dollar price of euros and euros became cheaper when bought with U.S. dollars. Of course, it's clearer to say that the U.S. dollar appreciated against the euro, or equivalently, that the euro depreciated against the U.S. dollar. As another example, suppose the exchange rate of Japanese yen for U.S. dollars, originally ¥121 per $1, changes to ¥116 per $1. This is best stated as a dollar depreciation, but it is equivalently stated as a yen appreciation since the yen became more expensive when bought with U.S. dollars.

Experienced international investors know that the uncertainty of exchange rates appreciating or depreciating is an important source of risk. For example, suppose you invest in British gilts with a current value of £1 million. Gilts are bonds issued by the government of England and are denominated in British pounds. Assuming an original exchange rate of $1.50 per pound, gilts with a value of £1 million have a dollar value of $1.5 million. Now suppose that six months later these gilts have the same value in pounds, that is, £1 million, but the dollar depreciated to $1.60 per pound. In this case, £1 million in gilts can be sold and converted into $1.6 million, thereby yielding a $100,000 profit on the dollar depreciation. Alternatively, suppose that the dollar appreciated against the pound to $1.40 per pound. In this case, £1 million in gilts can be converted back into only $1.4 million, thereby yielding a $100,000 loss on the dollar appreciation. In international investments, the uncertainty associated with exchange rate movements can produce considerable investment risk.

> (*margin def.* **exchange rate risk** The risk that an investment denominated in a foreign currency will change in value because of unpredicted changes in exchange rates. Also called *currency risk*.)

Since exchange rate changes are largely unpredictable, holding assets denominated in a foreign currency involves **exchange rate risk**, or *currency risk*. From the standpoint of a U.S. investor, appreciation of the dollar against a foreign currency causes a decrease in value of an investment denominated in the foreign currency. Similarly, depreciation of the dollar against a foreign currency causes an increase in value of an investment denominated in the foreign currency.

To gain further insight into how exchange rate changes can affect investment returns, suppose that one year ago, when a single dollar cost 1.5 Deutsche marks (abbreviated DM), you purchased German bunds for DM15 million. As you might guess, bund is German for bond. This means the German bunds originally cost $10 million, that is, DM15 million/1.5. Now one year later, the value

of the bunds is DM18 million and a dollar costs 1.8 marks. In this case, the mark value of the bunds increased by 20 percent, but the mark depreciated by 20 percent also. As a result, your total investment return is zero because the bunds can be converted back into only $10 million, that is, DM18 million/1.8. If instead the mark appreciated 20 percent to DM1.2 per dollar, your total investment return would be 50 percent since the bunds could be converted into $15 million, that is, DM18 million/1.2. As these examples suggest, exchange rate changes can have a dramatic effect on investments denominated in foreign currencies. Experienced international investors are well aware of this fact. You should be too!

CHECK THIS

19.2a.  The cross rate of francs for pounds changes from 9.5 to 10.2. Which currency appreciated and which currency depreciated?

19.2b.  The cross rate of yen for francs changes from 19 to 16. Which currency appreciated and which currency depreciated?

19.2c.  Suppose you buy German bunds and subsequently the dollar appreciates 10 percent against the mark. Did the dollar appreciation increase or decrease the dollar value of your investment?

19.2d.  Suppose you buy French OATs (*Obligations Assimilables du Tresor*, Treasury obligations) and subsequently the dollar depreciates 10 percent against the franc. Did the dollar depreciation increase or decrease the dollar value of your investment?

19.2e.  Suppose you purchased Japanese securities for ¥100 million one year ago when a dollar cost

¥100. What is your total investment return (based on U.S. dollars) if the value of the

securities is now ¥110 million and a dollar now costs ¥110? What is your return if a dollar

now costs ¥90 instead?

(*margin def.* **triangular arbitrage** A round-trip sequence of three currency
transactions at exchange rates that yield an arbitrage profit; e.g., dollars buy pounds,
pounds buy francs, francs buy dollars.)

## 19.3 Triangular Arbitrage

Exchange rates among freely traded currencies follow a fundamental relationship referred to

as **triangular arbitrage**. Actually, a more accurate description would be "no triangular arbitrage,"

since it is the general absence of triangular arbitrage opportunities that characterizes exchange rates

determined in competitive currency markets.

As an example of what is meant by a triangular arbitrage, suppose that you observe the

following three exchange rates among dollars, pounds and francs:

$1.5 / £1,      £.13 / Fr1,     Fr5 / $1.

Next, suppose that you perform the following sequence of transactions beginning with a cash amount

of $1,000:

1. With $1,000, buy £666.67 at $1.5 per pound.

2. With £666.67, buy ƒ5,128.21 at £0.13 per franc.

3. With Fr1,025.64, buy $1,025.64 at Fr5 per dollar.

*Voila*! You began with $1,000 but through the three transactions you end up with $1,025.46! This

is an arbitrage profit of $25.46. If $25.46 seems like a small amount, consider performing the same

sequence of transactions instead beginning with $1,000,000. In this case, your arbitrage profit is $25,460 - not bad for a few minutes work! This is an example of triangular arbitrage.

Unfortunately, triangular arbitrage opportunities are rare in competitive currency markets. Certainly, if triangular arbitrage were possible on a regular basis, then everyone would be doing it. But, in fact, currency dealers trade only at currency prices that do not allow triangular arbitrage, since they are the ones who would lose money to the triangular arbitragers. Indeed, to avoid such mistakes the computers used by currency dealers are programmed to prevent entering an exchange rate that allows triangular arbitrage.

At this point knowing that triangular arbitrage is implausible, you might wonder why you should care to learn about it. This is a legitimate question. The answer is that the absence of triangular arbitrage imposes a strong restriction on exchange rate structures. If at some future date you must deal with multiple exchange rates, you will need to understand these structures.

If triangular arbitrage opportunities existed, they would be easy to identify. You can determine whether a sequence of three exchange rates allows triangular arbitrage by simply calculating the product of the three rates that represent transactions making a round trip back to the starting currency. If the product is not equal to 1, then triangular arbitrage is possible. But if the product is equal to 1, triangular arbitrage is not possible.

For example, the no-triangular-arbitrage condition for the three exchange rates mentioned earlier is formally stated as follows:

$$S(\$/\pounds) \times S(\pounds/f) \times S(f/\$) \ = \ 1$$

where $S$ is the current exchange rate, and the three exchange rates are:

| $S(\$/£)$ | Dollar price of the pound |
|---|---|
| $S(£/Fr)$ | Pound price of the franc |
| $S(Fr/\$)$ | Franc price of the dollar |

Using the numerical values above, the product of the three exchange rates is calculated as

$$1.5 \times .13 \times 5 = .975$$

This product is not equal to 1, and therefore an arbitrage opportunity exists for these three exchange rates. But if the franc price of dollars was 5.13, then the product of the three exchange rates would be

$$1.5 \times .13 \times 5.13 = 1.000.$$

Since this product is equal to 1, no arbitrage opportunity exists for these three exchange rates.

CHECK THIS

19.3a. From a recent *Wall Street Journal*, find the dollar price of pounds, the pound price of francs, and the franc price of dollars. Check to see if the product of these three exchange rates is equal to 1?

19.3b. From a recent *Wall Street Journal*, obtain the dollar price of marks, the mark price of yen, and the yen price of dollars. Check to see if the product of these three exchange rates is equal to 1?

### *19.4 Forward Currency Contracts*

Exchange rate risk is a real concern for investors holding securities denominated in more than

one currency. Suppose that you are a portfolio manager and have purchased commercial paper issued

by a British company that will pay £10 million in six months. At the current exchange rate of $1.50

per pound, this payment can be converted into $15 million. However, you are concerned that the

pound might depreciate against the dollar over the next six months. If, for example, the exchange rate

depreciates to, say, $1.40 per pound, the £10 million payment could be converted into only

$14 million. This represents a $1 million exchange rate loss. Of course, it is possible that the exchange

rate could appreciate, in which case you would realize an exchange rate gain.

> (*margin def.* **forward currency contract** An agreement to transact a currency
> exchange on a future date at a prespecified exchange rate.)

> (*margin def.* **forward exchange rate** A prespecified exchange rate for a future
> currency exchange.)

Seeing the possibilities, you are inclined to not speculate on an exchange rate change and

therefore decide to hedge the transaction with a **forward currency contract**. Forward currency

contracts are widely used by international investors to hedge exchange rate risk. A forward currency

contract is an agreement to transact an exchange of currencies on a future date at a prespecified

**forward exchange rate**. International commercial banks are major dealers in forward currency

contracts. Thus, if you decide to hedge exchange rate risk with a forward currency contract most

likely you will enter into a forward contract with a commercial bank offering this service.

For your particular hedging problem, you wish to set an exchange rate today at which you can

convert the £10 million payment into U.S. dollars six months from now. Suppose your bank agrees

to a forward contract to buy £10 million from you in six months at a forward exchange rate of $1.55

per pound. This forward contract sets a dollar value for your pound payment of $15.5 million.

As another example, suppose you buy a block of shares in a French company for Fr50 million.

You believe the franc value of your investment will rise in the next six months, but you are concerned

that the franc will depreciate, thereby reducing or even eliminating your investment gains. To avoid

currency risk you enter into a forward contract to sell Fr50 million in six months at a forward rate of

Fr5.2 per dollar. This contract guarantees that you can sell Fr50 million for about $9.6 million,

thereby removing most of the currency risk from your investment.

CHECK THIS

19.4a.  You buy Japanese notes paying ¥700 million at maturity in one year. Explain how you would

hedge the currency risk of this payment assuming a forward rate of ¥100 per dollar.

(*margin def.* **spot exchange rate** An exchange rate for an immediate currency exchange.)

(*margin def.* **interest rate parity** A relationship between interest rates in two countries and spot and forward exchange rates between the two countries' currencies.)

*19.5 Interest Rate Parity*

**Interest rate parity** specifies a fundamental relationship between the interest rates in two

countries and the forward and **spot exchange rates** of the two countries' currencies. The interest rate

parity condition is based on the fundamental principle that two risk-free investments held over the

same time period should have the same rate of return. To illustrate the interest rate parity condition,

suppose that you can choose between a risk-free investment denominated in U.S. dollars and a risk

free investment denominated in British pounds where currency risk is eliminated by the use of a

forward currency contract. Since both investment strategies are risk-free, in competitive capital

markets both investments should offer the same risk-free return.

The structure of interest rate parity between dollars and pounds is stated formally by the

equation

$$(1 + r(\$))^T \quad = \quad (1 + r(\pounds))^T \times \frac{F_T(\$/\pounds)}{S(\$/\pounds)}$$

where $r(\$)$      =      Risk-free interest rate for U.S. dollars

      $r(\pounds)$      =      Risk-free interest rate for British pounds

      $S(\$/\pounds)$      =      Spot exchange rate stated as a dollar price of the British pound

      $F_T(\$/\pounds)$      =      Forward exchange rate for delivery $T$ years from now

This equation may look intimidating, but it is in fact simple. The left side of the equation states the

future value of a one-dollar investment earning the U.S. interest rate for $T$ years. The right side of the

equation states the future value of a one-dollar investment earning the interest rate for British pounds,

where the investment is first converted into pounds at the spot exchange rate and later converted back

to dollars at the forward exchange rate.

As a numerical example, suppose the dollar interest rate is $r(\$) = 5$ percent for a one-year

investment, that is, $T = 1$. This means that a $1,000 investment will be worth $1,000×1.05 = $1,050

one year from now. Also suppose that the pound interest rate is $r(\pounds) = 7$ percent and the spot

exchange rate of dollars for pounds is $S(\$/\pounds) = 1.5$. This means that $1,000 can be converted into

$1,000/1.5 = £666.667 today and after earning interest will be worth £666.667×1.07 = £713.333

one year from now. Currency risk is eliminated with a forward contract to convert £713.333 back

into dollars one year from now. The unique one-year forward rate that eliminates currency risk and

satisfies interest rate parity is calculated as follows:

$$F_1(\$/£) = \frac{(1 + r(\$)) \times S(\$/£)}{1 + r(£)}$$

$$= \frac{1.05 \times 1.5}{1.07}$$

$$= 1.472$$

In this case, a one-year forward rate of $F_1(\$/£) = 1.472$ will convert £713.333 back into \$1,050,

since $1.472 \times £713.333 = \$1,050$. Any other forward rate produces a different rate of return for the

two risk-free investment strategies.

As another example, suppose the dollar interest rate is $r(\$) = 4$ percent for a six-month

investment, that is, $T = 1/2$. Thus \$1,000 compounds to $\$1,000 \times 1.04^{½} = \$1,019.80$ six months from

now. Also suppose the six-month pound interest rate is $r(£) = 7$ percent and the spot exchange rate

is $S(\$/£) = 1.5$, meaning that converting \$1,000 into  $\$1,000/1.5 = £666.667$ today and earning

interest for six months yields  $£666.667 \times 1.07 = £689.606$. The appropriate six-month forward rate

is calculated as

$$F_{1/2}(\$/£) = \left(\frac{1 + r(\$)}{1 + r(£)}\right)^{1/2} \times S(\$/£)$$

$$= \left(\frac{1.04}{1.07}\right)^{1/2} \times 1.5$$

$$= 1.479$$

Only this six-month forward rate of $F_{\frac{1}{2}}(\$/\pounds) = 1.479$ will convert £689.606 back into $1,019.80. Any

other forward rate produces a different rate of return for the two risk-free investment strategies.

Of course, if two different risk-free investment strategies offer different returns, the choice

is simple - select the strategy with the highest return. However, interest rates and exchange rates set

by international banks are extremely competitive and do not allow for significant differences in risk-

free returns. Thus, at least for commercial bank transactions, interest rate parity holds almost exactly.


CHECK THIS

19.5a.  Suppose the spot rate of dollars for marks is $S(\$/DM) = 1.6$ and one-year interest rates are

   $r(\$) = 7\%$ and $r(DM) = 3\%$. What one-year forward rate satisfies the interest rate parity

   condition?

19.5b.  Suppose the spot rate of yen for dollars is $S(\yen/\$) = 100$ and one-year interest rates are

   $r(\$) = 7\%$ and $r(\yen) = 5\ \pounds 666.667\%$. What one-year forward rate satisfies the interest rate

   parity condition? Hint: when the exchange rate is stated as the foreign currency price of the

   dollar, say, the yen/dollar rate, the interest rate parity equation is stated as

$$(1 + r(\$))^T \;=\; (1 + r(\yen))^T \times \frac{S(\yen/\$)}{F_T(\yen/\$)}$$

   since $S(\yen/\$) = 1\ /\ S(\$/\yen)$ and $F(\yen/\$) = 1\ /\ F(\$/\yen)$.

(*marg. def.* **purchasing power parity** Theoretical relationship linking rates of inflation in different countries and exchange rate changes; e.g., above-average inflation leads to currency depreciation, and vice versa.)

### *19.6 Purchasing Power Parity*

The absence of triangular exchange rate arbitrage and the interest rate parity relationship described earlier both have immediate importance for international investors since they describe relationships that almost always hold exactly. An exchange rate relationship that does not always hold exactly, but which is important nonetheless, is **purchasing power parity**. Purchasing power parity asserts that countries with above-average rates of inflation will typically experience a depreciation of their currency. Likewise, countries with below-average inflation rates will generally experience currency appreciation. For example, if the United States experiences 3 percent inflation and Canada experiences 7 percent inflation, then purchasing power parity asserts that we should expect to see the Canadian dollar depreciate against the U.S. dollar by about 4 percent, which is the difference between the Canadian and U.S. inflation rates. Similarly, if over the same period Mexico experiences 20 percent inflation, then we should expect to see the Mexican peso depreciate against the U.S. dollar by 17 percent and against the Canadian dollar by 13 percent.

The link between inflation rates and exchange rates asserted by purchasing power parity has been known to international economists for several centuries. However, it is a simple fact that purchasing power parity does not always hold exactly in the real world. Two countries with almost the same inflation rates may, and often do, experience significant changes in exchange rates between their two currencies. This is contrary to the predictions of purchasing power parity. Indeed, during periods of departure from purchasing power parity we frequently hear advice like "now would be a good time to take an overseas vacation because the dollar is strong," or conversely that "now would

be a good time to forgo an overseas vacation because the dollar is weak." This does not mean, however, that purchasing power parity is a concept without practical usefulness. Quite the contrary, it is well known that purchasing power parity holds fairly well in the long run, say, three to five years. In the short run, say, one year or less, purchasing power parity is less reliable as a predictor of exchange rate changes.

For international investors selecting long-term international investments, deviations from purchasing power parity may provide timely opportunities to buy or sell securities denominated in foreign currencies. For example, a dollar that is strong against the Japanese yen may suggest that the time is right to buy Japanese stocks and bonds. Suppose that over the last six months the yen depreciated against the dollar by 20 percent while Japanese inflation was about the same as United States inflation. This might be a good time to take a vacation in Japan or to buy Japanese stocks and bonds, since the dollar prices are about 20 percent cheaper than they would be had the yen not depreciated against the dollar. Conversely, suppose that the yen appreciated against the dollar by 20 percent. This might be a bad time to vacation in Japan but could be a good time to sell Japanese stocks and bonds since their dollar prices are about 20 percent higher than they would be had the yen not depreciated. Of course, the savvy international investor would not depend entirely on deviations from purchasing power parity to make investment decisions. But such considerations can be important, especially for long-term investment decisions.

CHECK THIS

19.6a. Suppose the Conch Republic Bank offers 50 percent annual interest on five-year certificates of deposit denominated in conch shells. What does this suggest about future inflation in the Conch Republic and future changes in exchange rates for conch shells.


### 19.7 International Diversification

The most important reason to invest internationally is to diversify your portfolio. International investments provide excellent opportunities to broaden the base of securities available for inclusion in a portfolio. By diversifying a portfolio across a broader base of securities, the overall risk of the portfolio can be reduced without affecting the expected returns of the portfolio.

Experienced international investors agree that allocating some portion of a portfolio to a selection of international investments is a smart move. There is disagreement, however, as to how large that allocation should be. Professional money managers commonly suggest allocations ranging from about 10 percent to 60 percent of a portfolio to international investments. This wide range clearly reflects how subjective opinion on this important issue is. In fact, the international allocation decision will always be a subjective matter, depending to some degree on investor sentiment concerning world safety. For example, the history of world capital markets over the last 50 years might suggest a 60 percent allocation to international investments. But an investor looking back at the last 100 years might feel quite uncomfortable with even a 10 percent allocation. Recall that in the first 50 years of the twentieth century, the capital markets of Europe and Japan were devastated by war - in some cases twice! Will it happen again? We don't know. It might be prudent, however, for U.S. residents to keep at least half of their investment portfolio in U.S. investments.

After deciding on a specific portfolio allocation to international investments, the next step is to decide where to invest internationally. Each geographic region - Europe, Asia, Africa, South America, and so on - has its proponents, as do many individual countries. As a general rule, U.S. investors can find the greatest opportunities for risk-reducing diversification in those countries with stock market returns that are least correlated with U.S. stock market returns. A U.S. investor will find greater opportunities for risk-reducing international diversification by investing in, say, Chile or Malaysia, than in Canada or Mexico. This is because the economies of Canada and Mexico are more closely linked to the United States economy than are the economies of Chile and Malaysia. Thus, Canadian and Mexican stock market returns are more highly correlated with U.S. stock market returns than are Malaysian and Chilean stock market returns.

Discussions of international diversification often make use of the statistical concept of correlation. In the context of these discussions, correlation measures the degree to which two stock markets tend to move together. Correlations are reported as a number between +1.0 and -1.0. A correlation of +1.0 indicates perfectly synchronized movements, while a correlation of -1.0 indicates perfectly synchronized movements in opposite directions. A correlation of zero indicates that the two markets move independently of each other. As rules of thumb, correlations below about .25 suggest good opportunities for risk-reducing diversification, whereas correlations above .50 indicate limited opportunities for risk-reducing diversification.

Figure 19.3 about here.

To illustrate why correlations matter, consider how portfolio risk declines as we diversify across world stock markets. Suppose we invest equal shares of our portfolio in each of a number of country stock market indexes, where all pairs of country indexes have the same correlation. Figure 19.3 shows how portfolio risk declines as the number of country indexes increases from 1 to 50 indexes for various hypothetical correlation values. In Figure 19.3, the horizontal axis measures the number of country indexes represented in the portfolio. The vertical axis is standardized such that the risk of investing in only a single index is equal to 1. The curved lines show how portfolio risk as a fraction of the risk of a single index portfolio declines as the number of indexes in the portfolio increases. Notice that each correlation determines a lower limit to risk-reducing diversification. This limit represents world systematic risk that cannot be removed from a portfolio by further diversification. Notice also that no matter which correlation we look at, most of the benefits of diversification are obtained with as few as 10 country indexes in the portfolio. Taken together, these two observations illustrate that good international diversification can be achieved by investing in a relatively small number of countries with low correlations. Conversely, good international diversification cannot be achieved by investing in a large number of highly correlated stock markets.

Unfortunately, most correlations between international stock market indexes are greater than .50, suggesting limited international diversification opportunities. Table 19.1 presents sample correlations between selected foreign stock market indexes and the U.S. Standard and Poor's 500 Index over the period 1990 through 1995.

**Table 19.1 Foreign Stock Market Correlations with S&P 500 Index**

| Austria | .72 | Hong Kong | .85 | South Africa | .75 |
|---------|-----|-----------|-----|--------------|-----|
| France | .76 | Italy | -.36 | England | .89 |
| Germany | .70 | Japan | .23 | | |

Notice that most of these correlations are greater than .70, indicating somewhat limited opportunities for risk-reducing diversification in these countries. However, the correlation with Japan is fairly small, suggesting good risk-reducing opportunities. The correlation for Italy is actually negative suggesting even better diversification opportunities. While it is true that other factors should be considered, these correlations strongly suggest including Japan and Italy in a well-diversified international portfolio.

Investment Updates

Unfortunately, most U.S. investors tend to ignore correlations when making international diversification decisions and actually tend to invest in countries with high correlations with U.S. stock markets. For example, about 20 percent of U.S. investments abroad are allocated to British stock markets, which are highly correlated with U.S. stock markets. The nearby Investment Updates box presents an article from the *Wall Street Journal* that discusses the results of a survey of portfolio allocations to overseas investments made by U.S. institutional investors. The survey reports that these institutional investors over-allocate to high-correlation countries and under-allocate to low-correlation countries, thereby forgoing much of the benefit of international diversification.

While international diversification will continue to reduce investors' risk, other benefits are likely to diminish in the future. This is because international stock market indexes are becoming more

highly correlated.as international economies steadily become more integrated. The second nearby Investment Updates box presents an article published in the *Wall Street Journal* that discusses some of the problems associated with international investments and portfolio diversification.

<div style="border:1px solid black; background:#e0e0e0; text-align:center;">

Investment Updates

</div>

Offsetting the reduced benefits of international diversification is the much increased ease of investing internationally. At one time international investments entailed substantial transaction costs because few foreign securities actually traded in U.S. financial markets. Today, several thousand foreign securities are traded in U.S. financial markets.

CHECK THIS

19.7a. How do correlations among world financial markets affect international diversification opportunities?

19.7b. What is a typical correlation between United States and European financial markets?

> (*marg. def.* **American Depository Receipts (ADRs)** Shares issued as a claim on foreign company stock shares held in a trust. ADRs trade in U.S. stock markets for the convenience of American investors.)

### *19.8 American Depository Receipts (ADRs)*

United States investors can invest in a large number of foreign companies through the purchase of **American Depository Receipts**, which are often simply called ADRs. ADRs represent foreign stock shares held in a local custodial account, where each ADR is equivalent to a certain number of shares of the underlying foreign company's stock. Several well-known banks serve as local custodians for ADR issues, including Citibank, Bank of New York, and Morgan Guarantee Trust Company of New York. ADRs are a convenient way to invest in foreign companies, since ADR shares trade on U.S. stock exchanges or on Nasdaq. As a practical matter, the purchase of ADR shares is economically equivalent to owning the original underlying stock shares. We next discuss some significant details.

The two main types of ADRs are sponsored and unsponsored. Some older ADR issues are unsponsored, which simply means that the ADR issue was originally created without the explicit approval of the underlying foreign company. Since 1983, Securities and Exchange Commission rules require that all new ADR issues be sponsored by the foreign company.

There are three types of sponsored ADRs. Level I ADRs are not allowed to trade on a U.S. stock exchange because the underlying company does not provide detailed financial information to investors. Instead, they trade among brokers and dealers in the over-the-counter market. More than half of all ADRs circulating in the United States are Level I ADRs. Unless you are comfortable investing in a company unwilling to provide detailed financial information about itself, it may be best to avoid this type of ADR.

In contrast, foreign companies sponsoring Level II ADRs provide investors annual reports written in English, reporting financial information in the same format as U.S. companies. Consequently, Level II ADRs are allowed to trade on Nasdaq or on any of the organized stock exchanges in the United States. No new stock shares are issued to create a Level II ADR issue. Instead, a Level II ADR issue is created when a securities firm purchases a block of foreign company shares in an overseas market to hold in a trust and then issues ADRs representing claims on the foreign shares.

A Level III ADR issue is created when the foreign company issues new stock shares to be used as the basis for the new ADR issue. In this case, the company must satisfy requirements set by the SEC for an initial public offering. All Level II and Level III ADRs have prices stated in U.S. dollars and pay dividends in U.S. dollars.

Sometimes a popular foreign company will have more than one ADR issue trading in U.S. stock markets. For example, Telephonos de Mexico, often simply called TelMex, has one ADR issue traded on the NYSE under the ticker symbol TMX and has another ADR issue traded on Nasdaq under the ticker symbol TFONY. Each TFONY ADR represents a single share of TelMex, whereas each TMX ADR represents 20 shares of TelMex. Thus TMX ADR shares cost about 20 times as much as TFONY ADR shares. Of course, Telephonos de Mexico stock shares also trade on the Mexican stock market, but these Mexican shares can only be owned by Mexican nationals.

CHECK THIS

19.8a.  What are sponsored ADRs? What are unsponsored ADRs?

19.8b.  What are Level I ADRs and where are they traded?

19.8c.  What is the difference between Level II ADRs and Level III ADRs?


(*marg. def.* **World Equity Benchmark Shares (WEBS)** Depository trust shares, where the trust contains a basket of foreign company stock shares representative of a particular national stock market.)

*19.9 World Equity Benchmark Shares*

American investors interested in investing internationally, without picking individual foreign company stocks can instead purchase World Equity Benchmark Shares, commonly called WEBS. WEBS represent depository shares held in a trust, where the trust is composed of a basket of stocks from a specific country. WEBS trade on the American Stock Exchange under their own ticker symbols. For example, Japan WEBS trade under the ticker symbol EWJ and are shares in a trust of Japanese stocks representative of the Japanese stock market. Investing in EWJ shares is similar to investing in a Japanese index mutual fund. Unlike mutual fund shares, however, WEBS can be sold short or traded on margin just like common stocks.

WEBS typically reflect about 60 percent of the capitalization of a country's stock market. Thus they provide investment results that correspond to the aggregate performance of shares in the larger publicly traded companies in specific country markets. Countries for which WEBS are available for trading and their AMEX ticker symbols are listed in Table 19.2.

**Table 19.2 WEBS on the AMEX**

| | |
|---|---|
| Australia (EWA) | Malaysia (EWM) |
| Austria (EWO) | Mexico (EWW) |
| Belgium (EWK) | Netherlands (EWN) |
| Canada (EWC) | Singapore (EWS) |
| France (EWQ) | Spain (EWP) |
| Germany (EWG) | Sweden (EWD) |
| Hong Kong (EWH) | Switzerland (EWL) |
| Italy (EWI) | United Kingdom (EWU) |
| Japan (EWJ) | |

WEBS allow investors to construct an international stock portfolio without the need to purchase stocks of individual companies. For example, an aggressive international investor may wish to place, say, 15 percent of her portfolio in Japan, 5 percent in Germany, and 10 percent in Italy. By using WEBS, she can achieve exactly the proportions desired. Furthermore, changing these proportions at a later date is no more trouble than buying and selling individual common stocks.

CHECK THIS

19.9a.  What are WEBS and where are they traded?

19.9b.  How might WEBS be useful to an investor?

## *19.10 Summary and Conclusions*

Almost all countries issue their own national currency and maintain their own fiscal and monetary policies. So long as countries maintain separate monetary identities, international finance will continue to be an important body of knowledge for international investors and money managers. This chapter discusses the following topics within this body of knowledge.

1.  Currency markets are the most active markets in the world with over $1 trillion of currency transactions occurring daily. An exchange rate is the price of one country's currency in terms of another country's currency. An exchange rate can also be stated as a cross rate, which is an exchange rate between two foreign currencies.

2.  The terms exchange rate appreciation and exchange rate depreciation occur simultaneously, so follow this rule: For the U.S. dollar price of euros, exchange rate appreciation means that euros are less expensive when bought with U.S. dollars. But for the euro price of U.S. dollars, exchange rate appreciation means that euros are more expensive when bought with U.S. dollars.

3.  The uncertainty of exchange rates appreciating or depreciating is called exchange rate risk or currency risk. If you invest in British gilts denominated in British pounds and these gilts later have the same pound value but the dollar has depreciated against the pound, then you have realized a dollar profit on the depreciation. Alternatively, if the dollar appreciated against the pound you would realize a dollar loss on the appreciation.

4.  Forward currency contracts - agreements to exchange currencies on a future date at a prespecified forward exchange rate - are widely used to hedge exchange rate risks.

5.  Exchange rates follow a fundamental relationship determined by an absence of triangular arbitrage. This relationship implies that the product of three exchange rates is equal to1:

6.  Interest rate parity specifies a fundamental relationship between interest rates in two countries and their currencies' spot and forward exchange rates. The structure of interest rate parity between dollars and pounds is stated by this equation:

$$(1 + r(\$))^T \;\; = \;\; (1 + r(\pounds))^T \times \frac{F_T(\$/\pounds)}{S(\$/\pounds)}$$

Interest rate parity holds almost exactly for interest rates and exchange rates quoted by commercial banks.

7.     Purchasing power parity asserts that countries with above-average inflation experience currency depreciation and countries with below-average inflation experience currency appreciation. Purchasing power parity is not a reliable exchange rate predictor in the short run, but it holds reasonably well in the long run.

8.     The most important reason to invest internationally is enhanced portfolio diversification. Discussions of diversification use the statistical concept of correlation, where correlations below .25 suggest good diversification opportunities, while correlations above .50 indicate limited diversification opportunities.

9.     U.S. investors can invest in many foreign companies through the purchase of ADRs, which represent depository shares held in trust. ADR shares typically trade on a stock exchange or on Nasdaq and are economically equivalent to owning the underlying foreign stock shares.

10.    U.S. investors not wishing to pick individual foreign company stocks can purchase WEBS. WEBS represent depository shares held in a trust, where the trust is composed of a basket of stocks from a specific country. WEBS trade on the American Stock Exchange.

*Key Terms*

| | |
|---|---|
| **exchange rate** | **exchange rate risk** |
| **spot exchange rate** | **currency risk** |
| **forward exchange rate** | **triangular arbitrage** |
| **cross rate** | **forward currency contract** |
| **exchange rate appreciation** | **interest rate parity** |
| **exchange rate depreciation** | **purchasing power parity** |

**American Depository Receipts (ADRs)**

**World Equity Benchmark Shares (WEBS)**

## *Get Real!*

This chapter covered some international aspects of investing. In general, the case for international diversification is a strong one. However, in recent years, international diversification would have been a significant drag on the performance of a U.S. investor's stock portfolio. In broader terms, the extent to which an investor should diversify internationally is an open question. Theoretical considerations suggest enormous benefits, but are the benefits real or theoretical? Only time and study will tell.

One important thing to keep in mind about international investing is that exchange rate risk really does matter. Even if a particular market or stock does well measured in its home currency, the gain or loss experienced by a U.S. investor will depend on what happens to the exchange rate as well. An unfavorable exchange rate movement can turn a gain into a loss (or vice versa). Here is a question to ponder: If you own securities denominated in non-U.S. currencies, would you benefit from a strengthening or a weakening of the dollar? It may seem counterintuitive at first, but the answer is you would benefit from a weakening of the dollar. The reason: if the dollar weakens, each unit of foreign currency you receive from your investment will get you more dollars.

For now, it is important to gain some experience with international investing. There are a three fairly straightforward ways to do this. First, purchasing ADRs is the most direct means of investing in non-U.S. companies, so choose a few (from different countries) for your portfolio. Second, use the web to investigate WEBS. Try the American stock exchange at www.amex.com. These are country-specific baskets of stocks that are traded in the United States; they provide an easy and inexpensive way to invest in specific countries. Buy several of these. Finally, from many chapters ago, we know that some mutual funds specialize in international investing. Try investing in a few "emerging markets" funds or single-country funds specializing in less developed countries to experience some of the tremendous volatility that such markets sometimes display.

# *STOCK-TRAK FAST TRACK*

## *TRADING FOREIGN COMPANY STOCKS WITH STOCK-TRAK*

Hundreds of foreign company stocks are listed for trading in the United States. All of the foreign stocks listed on the NYSE, AMEX, or Nasdaq can be traded through your Stock-Trak account. You can view lists of these foreign company stocks by referring to the websites of the NYSE (www.nyse.com) and combined Nasdaq-AMEX (www.nasdaq-amex.com). The names and ticker symbols for some of the hundreds of foreign stocks listed on these websites are found in Table ST1.

**Table ST1 Foreign Stock Listings**

| **NYSE Foreign Company Stocks** | **Nasdaq Foreign Company Stocks** |
| --- | --- |
| Telefonica de Argentina (TAR) | Banco de Galicia y Buenos Aires (BGALY) |
| National Australia Bank (NAB) | Atlas Pacific (APCFY) |
| British Steel (BST) | British Biotech (BBIOY) |
| Laboratorio Chile (LBC) | Compania Cervacerias Unidas (CCUUY) |
| Deutsche Telokom (DT) | Realax Software (RLAXY) |
| Hellenic Telecom (OTE) | Royal Olympic Cruise Lines (ROCLF) |
| Brilliance China Automotive (CBA) | Nam Tai Electronics (NTAIF) |
| Allied Irish Banks (AIB) | Hibernia Foods (HIBNY) |
| Blue-Square Israel (BSI) | Better Online Solutions (BOSCF) |
| Hitachi (HIT) | Japan Air Lines (JAPNY) |
| Royal Dutch Petroleum (RD) | Sapiens International (SPNSF) |
| New Zealand Telecom (NZT) | Tranz Rail Holdings (TNZR) |

STOCK-TRAK EXERCISES

1.      Explore the NYSE (www.nyse.com) and combined Nasdaq-AMEX (www.nasdaq-amex.com) websites and find their listings of foreign company stocks.

2.      Notice that the Nasdaq ticker symbols for foreign company stocks normally have five letters, where the last letter is either a Y or an F. The Y indicates that they are ADR shares, while the F simply indicates that they are non-ADR foreign company shares.

## *TRADING FOREIGN CURRENCY FUTURES WITH STOCK-TRAK*

Currency futures are widely used to trade on exchange rate movements. The most popular currency futures contracts are those based on exchange rates between the U.S. dollar and several major world currencies. Stock-Trak allows you to trade currency futures for these exchange rates. To trade currency futures with Stock-Trak, you need only select the desired exchange rate and the number of futures contracts. However, before trading currency futures, you should review the Stock-Trak exercises for commodity futures found in Chapter 16.

You will need to know the appropriate ticker symbols for the exchange rate you wish to trade. Table ST2 lists the contract sizes and ticker symbols for exchange rate futures between the U.S. dollar and selected world currencies.

| Table ST2 Futures Contract Size and Tickers for Selected Currencies | | | |
|---|---|---|---|
| **Currency** | **Ticker** | **Currency** | **Ticker** |
| Australian dollar ($100,000) | AD | French franc (*Fr*250,000) | FF |
| British pound (£62,500) | BP | Japanese yen (¥12.5 million) | JY |
| Canadian dollar ($100,000) | CD | Swiss franc (*SFr*125,000) | SF |
| German Mark (*DM*125,000) | DM | Mexican peso (Pe500,000) | MP |

Currency futures tickers also have two-character extensions denoting the contract expiration date. These are the same codes used with commodity futures, where the first character is a letter representing the expiration month, and the second character is a number representing the expiration year. To refresh your memory, futures ticker extensions for contracts expiring in 1999 are specified in Table ST3.

| Table ST3 Futures Ticker Extension Codes | | | |
|---|---|---|---|
| (1999 Expirations) | | | |
| **Expiration Month** | **Code** | **Expiration Month** | |
| January | F9 | July | N9 |
| February | G9 | August | Q9 |
| March | H9 | September | U9 |
| April | J9 | October | V9 |
| May | K9 | November | X9 |
| June | M9 | December | Z9 |

For example, orders to go long 5 Australian dollar June 1999 futures contracts and go short 3 Deutsche mark December 2000 futures contracts are abbreviated as

Buy 5 AD-M9 contracts

Sell 3 DM-Z0 contracts

Going long implies buying the foreign currency and going short implies selling the foreign currency. The futures price specifies the price paid on delivery at contract expiration. Detailed contract specifications for currency futures are available at the Chicago Mercantile Exchange (CME) website (www.cme.com).

STOCK-TRAK EXERCISE

1.      What are the complete tickers for the following currency futures contracts: British pound March 1999, Japanese yen September 2001, Mexican peso June 2000?

# Chapter 19
# International Finance and Investments
Questions and Problems

*Review Problems and Self-Test*

1. **Cross Rates**  Suppose the U.S. dollar/British pound exchange rate is $1.50 = £1, and the Japanese yen/U.S. dollar exchange rate is ¥120 = $1. What is the implied yen/pound exchange rate?

2. **Interest Rate Parity**  Suppose that the interest rate on one-year risk-free investments in the U.S. is 6 percent. The U.S. dollar/Swiss franc exchange rate is $1 = SF 1.50. The one-year forward exchange rate is $1 = SF 1.52. In the absence of arbitrage, what is the risk-free interest rate in Switzerland?

*Answers to Self-Test Problems*

1. One pound will buy you $1.50. One dollar will buy you ¥120, so £1 will buy $1.50 × 120 = ¥180. The cross rate is ¥180 per pound.

2. Interest rate parity requires that:

$$(1 + r(\$))^T \quad = \quad (1 + r(SF))^T \times \frac{F_T(\$/SF)}{S(\$/SF)}$$

Noting that $T = 1$ and filling in the other numbers, we get

$$1.06 \quad = \quad (1 + r(SF)) \times \frac{(1/1.52)}{(1/1.50)}$$

The only thing that's a little tricky here is that we had to invert the exchange rates because they are quoted in dollars per franc in the formula while the question quotes them in francs per dollar. Solving for the Swiss interest rate, $r(SF)$, we get $1.06 \times (1.52/1.50) - 1 = 7.41\%$.

*Test Your IQ (Investment Quotient)*

1.      **Exchange Rates**   The U.S. dollar price of British pounds is $1.50, and the British pound price of French francs is £.5. Assuming an absence of triangular arbitrage, what is the franc price of dollars?

   a.      Fr 3.0
   b.      Fr .333
   c.      Fr 1.333
   d.      Fr .75

2.      **Exchange Rates**   The U.S. dollar price of British pounds is $1.50, and the British pound price of Deutsche marks is £2. Assuming an absence of triangular arbitrage, what is the mark price of dollars?

   a.      DM 3
   b.      DM .333
   c.      DM 1.333
   d.      DM .75

3.      **Exchange Rates**   You purchased British securities for £2,000 one year ago when the pound cost $1.50. What is your total return (based on U.S. dollars) if the value of the securities is now £2,400 and the pound is still worth $1.50?

   a.      16.7 percent
   b.      20.0 percent
   c.      28.6 percent
   d.      40.0 percent

4.      **Exchange Rates**   You purchased British securities for £2,000 one year ago when the pound cost $1.50. What is your total return (based on U.S. dollars) if the value of the securities is still £2,000 and the pound is now worth $1.75?

   a.      16.7 percent
   b.      20.0 percent
   c.      28.6 percent
   d.      40.0 percent

5.  **Exchange Rates**   You purchased British securities for £2,000 one year ago when the pound cost $1.50. What is your total return (based on U.S. dollars) if the value of the securities is now £2,400 and the pound is now worth $1.75?

    a.   16.7 percent
    b.   20.0 percent
    c.   28.6 percent
    d.   40.0 percent

6.  **Interest Rate Parity**   Risk-free interest rates for one-year deposits in the United States and England are 5 percent and 10 percent, respectively. The spot price of British pounds is $1.47. Which one-year forward price of pounds best satisfies interest rate parity?

    a.   $1.40
    b.   $1.45
    c.   $1.50
    d.   $1.54

7.  **International Diversification**   Why is investing internationally desirable? (*1988 CFA exam*)

    a.   there is a direct relationship between the value of the U.S. dollar and U.S. stock market returns
    b.   foreign currencies are more stable than the U.S. dollar
    c.   investors benefit from the increased diversification
    d.   foreign stocks pay higher dividends

8.  **International Diversification**    A U.S. equity money manager wishing to acquire the greatest benefit from international diversification should do which of the following: (*1993 CFA exam*)

    I. Invest directly in foreign stocks
    II. Invest in U.S. multinational firms
    III. Short sell foreign stocks

    a.   I only
    b.   II only
    c.   II and III
    d.   I and II

9.  **International Diversification**  Why is international diversification of equity portfolios desirable for U.S. investors? (*1989 CFA exam*)

I. foreign stocks offer U.S. investors substantial tax advantages
II. foreign stocks offer opportunities for U.S. investors to protect themselves against a decline in the value of the dollar relative to foreign currencies
III. increasing internationalization of the world economy leads to greater correlation in returns among U.S. and foreign common stocks
IV. portfolio risk is reduced

a.  I and IV only
b.  II and III only
c.  II and IV only
d.  III and IV only

10.  **International Diversification**  The correlation coefficient between the returns on a broad index of U.S. stocks and the returns on stock indexes of other industrialized countries are mostly _____, and the correlation coefficient between the returns on various diversified portfolios of U.S. stocks are mostly _____. (*1992 CFA exam*)

a.  less than .8; greater than .8
b.  greater than .8; less than .8
c.  less than 0; greater than 0
d.  greater than 0; less than 0

11.  **Currency Risk**  A U.S. investor in foreign government bonds is most likely to want to hedge against

a.  depreciation of the U.S. dollar
b.  appreciation of the U.S. dollar
c.  default risk
d.  taxation

12.  **Currency Risk**  A U.S. investor in British gilts (government bonds) can hedge against depreciation of the pound by

a.  buying pounds in the forward market
b.  selling pounds in the forward market
c.  buying pounds in the spot market
d.  depositing U.S. dollars in a London bank

13. **Currency Risk**   An investor in common stocks of companies in a foreign country may wish to hedge against _____ of the investor's home currency and can do so by _____ the foreign currency in the forward market. (*1992 CFA exam*)

    a.    depreciation; selling
    b.    appreciation; purchasing
    c.    appreciation; selling
    d.    depreciation; purchasing

14. **American Depository Receipts**   Which of the following most accurately describes American Depository Receipts?

    a.    depository shares of foreign company stocks traded in foreign markets
    b.    depository shares of American company stocks traded in U.S. markets
    c.    depository shares of foreign company stocks traded in U.S. markets
    d.    depository shares of American company stocks traded in foreign markets

15. **American Depository Receipts**   Which type of unsponsored ADR does not trade on U.S. stock exchanges, but instead trades in the over-the-counter market?

    a.    Level I
    b.    Level II
    c.    Level III
    d.    Level IV

*Questions and Problems*

<u>Core Questions</u>

1.     **Exchange Rates**   Take a look back at Figure 19.2 to answer the following questions:

     a.     If you have $100, how many Italian lira can you get?
     b.     How much is one lira worth?
     c.     If you have Lit 5 million (Lit stands for Italian lira), how many dollars do you have?

2.     **Exchange Rates**   Take a look back at Figure 19.2 to answer the following questions:

     a.     Which is worth more, a New Zealand dollar or a Singapore dollar?
     b.     Which is worth more, a Mexican peso or a Chilean peso?
     c.     Per unit, what is the most valuable currency listed? The least valuable?

3.     **Cross Rates**   Use the information in Figure 19.2 to answer the following questions:

     a.     Which would you rather have, $100 or £100? Why?
     b.     Which would you rather have, Fr 100 or £100? Why?
     c.     What is the cross rate for French francs in terms of British pounds? For pounds in terms of francs?

4.     **Interest Rate Parity**   Suppose that the interest rate on one-year risk-free investments in the United States is 4 percent. The Japanese yen/U.S. dollar exchange rate is ¥1 = $.008. The one-year forward exchange rate is ¥1 = $.0078. In the absence of arbitrage, what is the risk-free interest rate in Japan?

5.     **International Investing**   Suppose you buy shares in a mutual fund that tracks the overall stock market in South Korea. What impact does the exchange rate have on your return from this investment?

6.     **Exchange Rate Changes**   What does it mean for one currency to strengthen or appreciate relative to another? If a currency does appreciate in value, what happens to the exchange rate?

7.     **Exchange Rate Changes**   Suppose the yen/dollar exchange rate changes from ¥110 to ¥105. Has the yen appreciated or depreciated relative to the dollar? Why?

8.     **International Investing**   It is often argued that international investing offers significant benefits to U.S. investors. Why?

9.    **International Risks**   Investing internationally introduces another element of risk because of exchange rates. Explain.

10.   **Interest Rate Parity**   Suppose that the interest rate on one-year risk-free investments in the United States is 5 percent. The German mark/U.S. dollar exchange rate is DM 1 = $.50. If the risk-free rate in Germany is 4 percent, what is the one-year forward exchange rate?

Intermediate Questions

11.   **Exchange Rate Changes**   Over the week covered in Figure 19.2, did the Greek drachma appreciate or depreciate relative to the dollar? What about the British pound?

12.   **Exchange Rate Changes**   In the previous question, did the drachma appreciate or depreciate relative to the pound?

13.   **Triangular Arbitrage**   Suppose the dollar/French franc exchange rate is $1 = Fr 6 and the dollar/Swiss franc exchange rate is $1 = SFr 1.5. Further, the Swiss franc/French franc cross rate is quoted at Fr 5 = SFr 1. Is there an arbitrage here? How much can you make in a single round trip if you begin with $100? Explain step by step the necessary transactions.

14.   **Interest Rate Parity**   Suppose that the annual interest rate on 90-day T-bills in the United States is 6 percent. The Japanese yen/U.S. dollar exchange rate is ¥1 = $.007. The 90-day forward exchange rate is ¥1 = $.00705. In the absence of arbitrage, what is the 90-day risk-free interest rate in Japan?

15.   **International Investing**   Suppose you invest $10,000 in Korean stocks. At the time you make the investment, the U.S. dollar/South Korean won exchange rate is W1 = $.01. Over the next year, the value of your investment, measured in won, increases 60 percent. However, the exchange rate falls to W1 = $.008. What was the return on your investment in dollars?

16.   **International Investing**   Suppose you invest $200,000 in Belgian stocks. At the time you make the investment, the Belgian franc/U.S. dollar exchange rate is BFr 40 = $1. Over the next year, the value of your investment, measured in francs, increases 10 percent, and the exchange rises to BFr 42 = $1. What was the return on your investment in dollars?

17.   **Interest Rates**   Our discussion of interest rate parity clearly implies that different countries will generally have different risk-free rates, but how is it possible for two risk-free rates to exist at the same time?

18.   **Purchasing Power Parity**   Suppose the U.S. dollar/Canadian dollar exchange rate is U.S.$.80/Can$1. If the rate of inflation in Canada is 6 percent compared to 4 percent in the United States, what do you predict will happen to the exchange rate. Why?

**19.**     **International Diversification**     In the late 1990s, the U.S. stock market significantly outperformed most of the other major stock markets. Because of this, some market strategists argued that U.S. investors should invest exclusively in the United States. Evaluate this argument.

**20.**     **International Diversification**     Is it possible to diversify a stock portfolio internationally without purchasing foreign-listed stocks or ADRs? (Hint: Yes, to a certain extent.) How?

## Chapter 19
## International Finance and Investments
Answers and Solutions

*Answers to Multiple Choice Questions*

| | |
|---|---|
| 1. | C |
| 2. | B |
| 3. | B |
| 4. | A |
| 5. | D |
| 6. | D |
| 7. | C |
| 8. | A |
| 9. | C |
| 10. | A |
| 11. | B |
| 12. | B |
| 13. | C |
| 14. | C |
| 15. | A |

*Answers to Questions and Problems*

Core Questions

1.  a.  The most recent exchange rate shown is 1785.35, so $100 will get you Lit 178,535.
    b.  One lira is worth 1/1785.35 = $.00056.
    c.  You have 5 million/1785.35 = $2,800.57.

2.  a.  A New Zealand dollar is worth 1/1.5287 = $.654. A Singapore dollar is worth 1/1.47 = $.68, or a few cents more.
    b.  There are two rates for the Chilean dollar, but both are much larger than the exchange rate for the Mexican peso, so the Mexican peso is worth more.
    c.  The least valuable is the Angolan kwanza at almost 200,000 per dollar. The most value is Kuwaiti dinar at about .3 per dollar.

**3.**  a.  £100 is worth about $166.62 (notice that the UK exchange rate quote is in terms of dollars per pound).

b.  French francs are quoted at about FF 6. So, 100 francs are worth about $17, whereas from just above, £100 is worth about $167.

c.  From part b., a franc is worth $17/$167 = .1018 pounds. A pound is worth $167/$17 = 9.8 francs.

**4.**  Interest rate parity requires that:

$$(1 + r(\$))^T = (1 + r(\yen))^T \times \frac{F_T(\$/\yen)}{S(\$/\yen)}$$

Noting that $T = 1$ and filling in the other numbers, we get:

$$1.04 = (1 + r(\yen)) \times \frac{(.0078)}{(.008)}$$

Solving for the Japanese interest rate, $r(\yen)$, we get $1.04 \times (.008/.0078) - 1 = 6.67\%$.

**5.**  If the exchange rate, expressed in won per dollar, rises, your return measured in dollars will be diminished because each won will convert to fewer dollars and vice versa.

**6.**  Suppose the U.S. dollar strengthens relative to the Canadian dollar. This means a U.S. dollar is worth more Canadian dollars. In other words, Canadian dollars become cheaper to buy. If the exchange rate is expressed as Canadian dollars per U.S. dollar, the exchange rate will rise because it takes more Canadian dollars to buy a U.S. dollar.

**7.**  It takes fewer yen to buy a dollar, so the yen has appreciated.

**8.**  The primary benefit is diversification. Because stock markets are not perfectly correlated, there is a theoretical benefit to diversifying among them.

**9.**  Exchange rate changes can amplify or dampen gains and losses from international investing. Unfavorable exchange rate movements can convert gains to losses, and vice versa. As a result, exchange rates may act to increase or decrease risk, depending on the correlation between the exchange rate and market returns. Whether this risk is diversifiable or systematic appears to be an open question.

**10.**    Interest rate parity requires that:

$$(1 + r(\$))^T \;\; = \;\; (1 + r(DM))^T \times \frac{F_T(\$/DM)}{S(\$/DM)}$$

Noting that $T = 1$ and filling in the other numbers, we get:

$$1.05 \;\; = \;\; (1.04) \times \frac{F(\$/DM)}{.5}$$

Solving for the forward rate, we get $1.05 \times (.5/1.04) = .505$ \$/DM.

Intermediate Questions

**11.**    The exchange rate for the drachma rose from about 283 to about 287, so the drachma weakened (it takes more drachma to buy one dollar). The exchange rate for the pound fell from 1.6705 to 1.6662. Remembering the pound is quoted as dollars per pound, the pound weakened (it takes fewer dollars to purchase a pound).

**12.**    The cross rate moved from $283/(1/1.6705) = 472.75$ drachma per pound to $287/(1/1.6662)$ $= 478.20$, so it takes more drachma to buy a pound. The drachma depreciated relative to the pound.

**13.**    There is definitely an arbitrage. The cross rate should be $6/1.5 = 4$, or four French francs per Swiss franc. Now, the cross rate is quoted at FF 5 = SF 1, so we want to use Swiss francs to buy French francs because we get 5 instead of 4. So, we first convert \$100 to SF 150. We then convert SF 150 to FF 750 at the quoted cross rate. Finally, we convert FF 750 to  \$125. Not bad!

**14.**    Interest rate parity requires that:

$$(1 + r(\$))^T \;\; = \;\; (1 + r(¥))^T \times \frac{F_T(\$/¥)}{S(\$/¥)}$$

Noting that $T = 90/365$, or about .25, and filling in the other numbers, we get:

$$1.06^{.25} \;\; = \;\; (1 + r(¥))^{.25} \times \frac{(.0071)}{(.007)}$$

Solving for the Japanese interest rate, $r(¥)$, we get $[1.06^{.25} \times (.007/.00705)]^4 - 1 = 3.02\%$.

**15.**     Your $10,000 converts to 1 million won. Your won investment grows to 1.6 million won. When you exchange back to dollars, each won is worth $.008, so you get $12,800. Your return was thus 28 percent measured in dollars.

**16.**     Your $200,000 converts to 8 million francs. Your franc investment grows to 8.8 million francs. When you exchange back to dollars, you get 8.8 million/42 = $209,523.81. Your return was thus 4.76 percent measured in dollars.

**17.**     If two countries have different inflation rates, then the nominal risk-free rates in the two countries are likely to be different. They may have different real rates as well, but the difference is not likely to be very large.

**18.**     The Canadian rate of inflation is higher, so we expect the Canadian dollar to lose value relative to the U.S. dollar. More precisely, because the inflation differential is 2 percent, the value of a Canadian dollar should decline by 2 percent relative to the U.S. dollar. The exchange rate, which is expressed as U.S. dollars per Canadian dollar should fall because the Canadian dollar will get cheaper.

**19.**     In any diversified portfolio, some sector(s) will typically perform well while others do not. That's precisely why diversification works. As a result, it will almost always turn out that, after the fact, we would have been better off without some of positions. The argument here essentially make the case that investors should only keep after-the-fact "winners" in their portfolios. Such a strategy would lead to a lack of diversification.

**20.**     Many U.S. companies actually derive a majority of their profits from international operations (Coke is a notable example). Investing in such companies provides a very straightforward means of diversifying internationally.

# Figure 19.1 (WSJ 3/4/99)

# CURRENCY TRADING

## EXCHANGE RATES

The New York foreign exchange mid-range rates below apply to trading among banks in amounts of $1 million and more, as quoted at 4 p.m. Eastern time by Telerate and other sources. Retail transactions provide fewer units of foreign currency per dollar. Rates for the 11 Euro currency countries are derived from the latest dollar-euro rate using the exchange ratios set 1/1/99.

| Country | U.S. $ equiv. | | Currency per U.S. $ | |
|---|---|---|---|---|
| | Wed | Tue | Wed | Tue |
| Argentina (Peso) | 1.0002 | 1.0002 | .9998 | .9998 |
| Australia (Dollar) | .6217 | .6227 | 1.6086 | 1.6060 |
| Austria (Schilling) | .07913 | .07947 | 12.638 | 12.584 |
| Bahrain (Dinar) | 2.6525 | 2.6386 | .3770 | .3790 |
| Belgium (Franc) | .02699 | .02711 | 37.050 | 36.891 |
| Brazil (Real) | .4673 | .4630 | 2.1400 | 2.1600 |
| Britain (Pound) | 1.6138 | 1.6160 | .6197 | .6188 |
| 1-month forward | 1.6129 | 1.6152 | .6200 | .6191 |
| 3-months forward | 1.6121 | 1.6146 | .6203 | .6193 |
| 6-months forward | 1.6122 | 1.6151 | .6203 | .6192 |
| Canada (Dollar) | .6551 | .6570 | 1.5265 | 1.5220 |
| 1-month forward | .6550 | .6570 | 1.5267 | 1.5222 |
| 3-months forward | .6550 | .6569 | 1.5268 | 1.5223 |
| 6-months forward | .6550 | .6567 | 1.5268 | 1.5226 |
| Chile (Peso) | .002002 | .001989 | 499.45 | 502.65 |
| China (Renminbi) | .1208 | .1208 | 8.2789 | 8.2789 |
| Colombia (Peso) | .0006419 | .0006409 | 1557.94 | 1560.40 |
| Czech. Rep. (Koruna) ... | | | | |
| Commercial rate | .02897 | .02906 | 34.518 | 34.414 |
| Denmark (Krone) | .1464 | .1471 | 6.8285 | 6.7995 |
| Ecuador (Sucre) | | | | |
| Floating rate | .0001002 | .0001002 | 9984.50 | 9984.50 |
| Finland (Markka) | .1831 | .1839 | 5.4608 | 5.4373 |
| France (Franc) | .1660 | .1667 | 6.0246 | 5.9987 |
| 1-month forward | .1663 | .1670 | 6.0148 | 5.9889 |
| 3-months forward | .1668 | .1675 | 5.9961 | 5.9702 |
| 6-months forward | .1677 | .1684 | 5.9641 | 5.9382 |
| Germany (Mark) | .5567 | .5591 | 1.7963 | 1.7886 |
| 1-month forward | .5576 | .5600 | 1.7934 | 1.7856 |
| 3-months forward | .5593 | .5618 | 1.7878 | 1.7801 |
| 6-months forward | .5623 | .5648 | 1.7783 | 1.7705 |
| Greece (Drachma) | .003385 | .003396 | 295.38 | 294.51 |
| Hong Kong (Dollar) | .1290 | .1291 | 7.7495 | 7.7477 |
| Hungary (Forint) | .004288 | .004330 | 233.22 | 230.96 |
| India (Rupee) | .02352 | .02352 | 42.515 | 42.515 |
| Indonesia (Rupiah) | .0001125 | .0001127 | 8885.00 | 8870.00 |
| Ireland (Punt) | 1.3826 | 1.3885 | .7233 | .7202 |
| Israel (Shekel) | .2468 | .2470 | 4.0522 | 4.0488 |
| Italy (Lira) | .0005623 | .0005647 | 1778.35 | 1770.71 |
| Japan (Yen) | .008207 | .008317 | 121.84 | 120.23 |
| 1-month forward | .008241 | .008352 | 121.34 | 119.73 |
| 3-months forward | .008311 | .008419 | 120.33 | 118.78 |
| 6-months forward | .008417 | .008532 | 118.81 | 117.21 |
| Jordan (Dinar) | 1.4055 | 1.4045 | .7115 | .7120 |
| Kuwait (Dinar) | 3.2819 | 3.2819 | .3047 | .3047 |
| Lebanon (Pound) | .0006616 | .0006616 | 1511.50 | 1511.50 |
| Malaysia (Ringgit-b) | .2632 | .2632 | 3.8000 | 3.8000 |
| Malta (Lira) | 2.5387 | 2.5419 | .3939 | .3934 |
| Mexico (Peso) | | | | |
| Floating rate | .1005 | .1005 | 9.9475 | 9.9490 |
| Netherland (Guilder) | .4941 | .4962 | 2.0240 | 2.0153 |
| New Zealand (Dollar) | .5278 | .5291 | 1.8947 | 1.8900 |
| Norway (Krone) | .1260 | .1264 | 7.9343 | 7.9108 |
| Pakistan (Rupee) | .01957 | .01952 | 51.110 | 51.235 |
| Peru (new Sol) | .2946 | .2948 | 3.3940 | 3.3925 |
| Philippines (Peso) | .02558 | .02561 | 39.100 | 39.050 |
| Poland (Zloty) | .2516 | .2521 | 3.9745 | 3.9670 |
| Portugal (Escudo) | .005431 | .005454 | 184.13 | 183.34 |
| Russia (Ruble) (a) | .04361 | .04369 | 22.930 | 22.890 |
| Saudi Arabia (Riyal) | .2666 | .2666 | 3.7510 | 3.7506 |
| Singapore (Dollar) | .5754 | .5771 | 1.7380 | 1.7328 |
| Slovak Rep. (Koruna) | .02498 | .02499 | 40.037 | 40.010 |
| South Africa (Rand) | .1603 | .1602 | 6.2400 | 6.2430 |
| South Korea (Won) | .0008135 | .0008168 | 1229.30 | 1224.35 |
| Spain (Peseta) | .006544 | .006572 | 152.82 | 152.16 |
| Sweden (Krona) | .1211 | .1213 | 8.2595 | 8.2440 |
| Switzerland (Franc) | .6849 | .6866 | 1.4601 | 1.4565 |
| 1-month forward | .6871 | .6888 | 1.4555 | 1.4517 |
| 3-months forward | .6913 | .6929 | 1.4466 | 1.4431 |
| 6-months forward | .6978 | .6996 | 1.4331 | 1.4293 |
| Taiwan (Dollar) | .03021 | .03023 | 33.100 | 33.075 |
| Thailand (Baht) | .02654 | .02664 | 37.685 | 37.535 |
| Turkey (Lira) | .00000280 | .00000281 | 357340.00 | 356480.00 |
| United Arab (Dirham) | .2723 | .2700 | 3.6730 | 3.7040 |
| Uruguay (New Peso) | | | | |
| Financial | .09046 | .09095 | 11.055 | 10.995 |
| Venezuela (Bolivar) | .001736 | .001736 | 576.00 | 576.00 |
| | | | | |
| SDR | 1.3599 | 1.3592 | .7353 | .7357 |
| Euro | 1.0888 | 1.0935 | .9184 | .9145 |

Special Drawing Rights (SDR) are based on exchange rates for the U.S., German, British, French, and Japanese currencies. Source: International Monetary Fund.

a-Russian Central Bank rate. Trading band lowered on 8/17/98. b-Government rate.

The Wall Street Journal daily foreign exchange data from 1996 forward may be purchased through the Readers' Reference Service (413) 592-3600.

## Key Currency Cross Rates — Late New York Trading March 3, 1999

| | Dollar | Euro | Pound | SFranc | Guilder | Peso | Yen | Lira | D-Mark | FFranc | CdnDlr |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Canada | 1.5265 | 1.6621 | 2.4635 | 1.0455 | .75420 | .15346 | .01253 | .00086 | .84980 | .25338 | .... |
| France | 6.0246 | 6.5596 | 9.7225 | 4.1262 | 2.9766 | .60564 | .04945 | .00339 | 3.3539 | .... | 3.9467 |
| Germany | 1.7963 | 1.9558 | 2.8989 | 1.2303 | .88750 | .18058 | .01474 | .00101 | .... | .29816 | 1.1767 |
| Italy | 1778.4 | 1936.3 | 2869.9 | 1218.0 | 878.63 | 178.77 | 14.596 | .... | 990.01 | 295.18 | 1165.0 |
| Japan | 121.84 | 132.66 | 196.63 | 83.446 | 60.198 | 12.248 | .... | .06851 | 67.828 | 20.224 | 79.817 |
| Mexico | 9.9475 | 10.831 | 16.053 | 6.8129 | 4.9148 | .... | .08164 | .00559 | 5.5378 | 1.6511 | 6.5165 |
| Netherlands | 2.0240 | 2.2037 | 3.2663 | 1.3862 | .... | .20347 | .01661 | .00114 | 1.1268 | .33596 | 1.3259 |
| Switzerland | 1.4601 | 1.5898 | 2.3563 | .... | .72139 | .14678 | .01198 | .00082 | .81284 | .24236 | .95650 |
| U.K. | .61966 | .67468 | .... | .42439 | .30615 | .06229 | .00509 | .00035 | .34496 | .10285 | .40593 |
| Euro | .91844 | .... | 1.4822 | .62903 | .45378 | .09233 | .00754 | .00052 | .51130 | .15245 | .60167 |
| U.S. | .... | 1.0888 | 1.6138 | .68488 | .49407 | .10053 | .00821 | .00056 | .55670 | .16599 | .65509 |

Source: Telerate

# Figure 19.2 (WSJ 2/22/99)

## World Value of the Dollar

The table below, compiled by Bank of America, gives the rates of exchange for the U.S. dollar against various currencies as of Friday February 19, 1999. Unless otherwise noted, all rates listed are middle rates of interbank bid and asked quotes, and are expressed in foreign currency units per one U.S. dollar. The rates are indicative and aren't based on, nor intended to be used as a basis for, particular transactions.

BankAmerica International doesn't trade in all the listed foreign currencies.

| Country (Currency) | Value 2/19 | Value 2/12 | Country (Currency) | Value 2/19 | Value 2/12 |
|---|---|---|---|---|---|
| Afghanistan (Afghani -c) | 4750.00 | 4750.00 | Lebanon (Pound) | 1508.00 | 1508.00 |
| Albania (Lek) | 139.55 | 139.70 | Lesotho (Maloti) | 6.2225 | 6.095 |
| Algeria (Dinar) | 63.5833 | 63.4022 | Liberia (Dollar) | 1.00 | 1.00 |
| Andorra (Peseta -7) | 148.7316 | 148.0303 | Libya (Dinar -21) | 0.45 | 0.45 |
| Andorra (Franc -8) | 5.8636 | 5.0269 | Liechtenstein (Franc) | 1.4294 | 1.4235 |
| Angola (Readiust Kwanza) | 257128.00 | 257128.00 | Lithuania (Litas) | 4.0015 | 4.0018 |
| Antigua (E Caribbean $) | 2.70 | 2.70 | Luxembourg (Lux.Franc -11) | 36.0596 | 35.8896 |
| Argentina (Peso) | 0.9999 | 0.9999 | Macao (Pataca) | 8.0042 | 8.0055 |
| Aruba (Florin) | 1.79 | 1.79 | Madagascar DR (Franc) | 5220.00 | 5220.00 |
| Australia (Australia Dollar) | 1.568 | 1.5576 | Malawi (Kwacha) | 43.81 | 43.625 |
| Austria (Schilling -14) | 12.3003 | 12.2423 | Malaysia (Ringgit) | 3.795 | 3.80 |
| Azerbaijan (Manat) | 3950.00 | 3950.00 | Maldive (Rufiyaa) | 11.77 | 11.77 |
| Bahamas (Dollar) | 1.00 | 1.00 | Mali Rep (C.F.A. Franc) | 586.3565 | 502.6868 |
| Bahrain (Dinar) | 0.38 | 0.38 | Malta (Lira *) | 2.6355 | 2.6355 |
| Bangladesh (Taka) | 48.50 | 48.50 | Martinique (Franc -8) | 5.8636 | 5.0269 |
| Barbados (Dollar) | 2.00 | 2.00 | Mauritania (Ouguiya) | 204.44 | 204.44 |
| Belgium (Franc -9) | 36.0596 | 35.8896 | Mauritius (Rupee) | 24.875 | 24.925 |
| Belize (Dollar) | 2.00 | 2.00 | Mexico (New Peso) | 9.92 | 10.005 |
| Benin (C.F.A. Franc) | 586.3565 | 502.6868 | Monaco (Franc -8) | 5.8636 | 5.0269 |
| Bermuda (Dollar) | 1.00 | 1.00 | Mongolia (Tugrik -0-29) | 817.61 | 817.61 |
| Bhutan (Ngultrum) | 42.4205 | 42.4475 | Montserrat (E Caribbean $) | 2.70 | 2.70 |
| Bolivia (Boliviano -o) | 5.69 | 5.68 | Morocco (Dirham) | 9.562 | 9.5065 |
| Bolivia (Boliviano -f) | 5.70 | 5.69 | Mozambique (Metical) | 11495.00 | 11495.00 |
| Botswana (Pula) | 4.6449 | 4.5872 | Namibia (Rand -c) | 6.2225 | 6.095 |
| Bouvet Islands (Norwegian Krone) | 7.7905 | 7.6765 | Nauru Islands (Australia Dollar) | 1.568 | 1.5576 |
| Brazil (Real) | 1.91 | 1.91 | Nepal (Rupee) | 67.675 | 67.675 |
| Brunei (Dollar) | 1.7067 | 1.6932 | Netherlands (Guilder -10) | 1.9699 | 1.9606 |
| Bulgaria (Lev) | 1741.85 | 1734.30 | Netherlands Ant'les (Guilder) | 1.79 | 1.79 |
| Burkina Faso (C.F.A. Franc) | 586.3565 | 502.6868 | New Zealand (N.Z.Dollar) | 1.8442 | 1.8283 |
| Burma (Kyat) | 6.2926 | 6.1047 | Nicaragua (Gold Cordoba) | 11.3443 | 11.3407 |
| Burundi (Franc) | 503.33 | 499.95 | Niger Rep (C.F.A. Franc) | 586.3565 | 502.6868 |
| Cambodia (Riel) | 3770.00 | 3775.00 | Nigeria (Naira -o) | 21.886 | 21.886 |
| Cameroon (C.F.A. Franc) | 586.3565 | 502.6868 | Nigeria (Naira -m) | 87.50 | 87.20 |
| Canada (Dollar) | 1.4881 | 1.4927 | Norway (Norwegian Krone) | 7.7905 | 7.6765 |
| Cape Verde Isl (Escudo -20) | 94.71 | 94.71 | Oman, Sultanate of (Rial) | 0.385 | 0.385 |
| Cayman Islands (Dollar) | 0.8333 | 0.8333 | Pakistan (Rupee -27) | 51.16 | 51.05 |
| Centrl African Rp (C.F.A. Franc) | 586.3565 | 502.6868 | Panama (Balboa) | 1.00 | 1.00 |
| Chad (C.F.A. Franc) | 586.3565 | 502.6868 | Papua N.G. (Kina) | 2.2222 | 2.2099 |
| Chile (Peso -m) | 496.54 | 493.26 | Paraguay (Guarani -d) | 2910.00 | 2910.00 |
| Chile (Peso -o) | 477.20 | 475.15 | Peru (New Sol -d) | 3.3895 | 3.3963 |
| China (Renminbi Yuan) | 8.2787 | 8.2776 | Philippines (Peso) | 38.87 | 38.65 |
| Colombia (Peso -o-2) | 1561.50 | 1564.20 | Pitcairn Island (N.Z.Dollar) | 1.8442 | 1.8283 |
| Commnwlth Ind Sts (Rouble -m-17) | 23.09 | 23.20 | Poland (Zloty -o) | 3.811 | 3.757 |
| Comoros (Franc) | 439.7674 | 377.0151 | Portugal (Escudo -6) | 179.2098 | 178.3648 |
| Congo, People Rp (C.F.A. Franc) | 586.3565 | 502.6868 | Puerto Rico (U.S. $) | 1.00 | 1.00 |
| Costa Rica (Colon) | 275.35 | 274.78 | Qatar (Riyal) | 3.6405 | 3.65 |
| Croatia (Kuna) | 6.7353 | 6.6728 | Repub of Macedonia (Denar) | 53.9586 | 53.5759 |
| Cuba (Peso -1) | 23.00 | 23.00 | Republic of Yemen (Rial -a-25) | 141.34 | 136.66 |
| Cyprus (Pound *) | 1.9275 | 1.9359 | Reunion, Ile de la (Franc -8) | 5.8636 | 5.0269 |
| Czech (Koruna) | 33.706 | 33.513 | Romania (Leu) | 12319.00 | 12207.00 |
| Denmark (Danish Krone) | 6.646 | 6.6155 | Rwanda (Franc) | 320.34 | 320.63 |
| Djibouti (Djibouti Franc) | 177.72 | 177.72 | Saint Christopher (E Caribbean $) | 2.70 | 2.70 |
| Dominica (E Caribbean $) | 2.70 | 2.70 | Saint Helena (Pound Sterling *) | 1.6345 | 1.6259 |
| Dominican Rep (Peso -d) | 15.90 | 15.90 | Saint Lucia (E Caribbean $) | 2.70 | 2.70 |
| Ecuador (Sucre -o-4) | 7610.00 | 7303.00 | Saint Pierre (Franc -8) | 5.8636 | 5.0269 |
| Ecuador (Sucre -d-4) | 7610.00 | 7303.50 | Saint Vincent (E Caribbean $) | 2.70 | 2.70 |
| Egypt (Pound) | 3.4127 | 3.408 | Samoa, American (U.S. $) | 1.00 | 1.00 |
| El Salvador (Colon -d) | 8.755 | 8.755 | Samoa, Western (Tala) | 2.9779 | 2.9231 |
| Equatorial Guinea (C.F.A. Franc) | 586.3565 | 502.6868 | San Marino (Lira -13) | 1730.8215 | 1722.6601 |
| Estonia (Kroon) | 13.9871 | 13.9224 | Sao Tome & Principe (Dobra) | 2390.00 | 2390.00 |
| Ethiopia (Birr -o) | 6.9875 | 6.9875 | Saudi Arabia (Riyal) | 3.7533 | 3.7507 |
| Faeroe Islands (Danish Krone) | 6.646 | 6.6155 | Senegal (C.F.A. Franc) | 586.3565 | 502.6868 |
| Falkland Islands (Pound *) | 1.6345 | 1.6259 | Seychelles (Rupee) | 5.359 | 5.42 |
| Fiji (Dollar -31) | 1.9688 | 1.9379 | Sierra Leone (Leone) | 1450.00 | 1571.00 |
| Finland (Markka -16) | 5.3149 | 5.2898 | Singapore (Dollar) | 1.7067 | 1.6932 |
| France (Franc -8) | 5.8636 | 5.0269 | Slovak (Koruna -15) | 39.199 | 38.226 |
| French Guiana (Franc -8) | 5.8636 | 5.0269 | Slovenia (Tolar) | 169.898 | 169.3312 |
| French Pacific Isl (C.F.P. Franc) | 106.6102 | 91.3975 | Solomon Islands (Solomon Dollar) | 4.8402 | 4.9455 |
| Gabon (C.F.A. Franc) | 586.3565 | 502.6868 | Somali Rep (Shilling -d) | 2620.00 | 2620.00 |
| Gambia (Dalasi) | 10.975 | 10.975 | South Africa (Rand -c) | 6.2225 | 6.095 |
| Germany (Mark -12) | 1.7483 | 1.7401 | Spain (Peseta -7) | 148.7316 | 148.0303 |
| Ghana (Cedi) | 2387.50 | 2387.50 | Sri Lanka (Rupee) | 69.29 | 69.095 |
| Gibraltar (Pound *) | 1.6345 | 1.6259 | Sudan Rep (Pound -c) | 1960.00 | 1960.00 |
| Greece (Drachma) | 286.855 | 286.475 | Sudan Rep (Dinar) | 196.00 | 196.00 |
| Greenland (Danish Krone) | 6.646 | 6.6155 | Surinam (Guilder) | 401.00 | 401.00 |
| Grenada (E Caribbean $) | 2.70 | 2.70 | Swaziland (Lilangeni) | 6.2225 | 6.095 |
| Guadeloupe (Franc -8) | 5.8636 | 5.0269 | Sweden (Krona) | 7.963 | 7.945 |
| Guam (U.S. $) | 1.00 | 1.00 | Switzerland (Franc) | 1.4294 | 1.4235 |
| Guatemala (Quetzal) | 6.8348 | 6.9241 | Syria (Pound) | 46.25 | 46.25 |
| Guinea Bissau (C.F.A. Franc -23) | 586.3565 | 502.6868 | Taiwan (Dollar -o) | 32.54 | 32.275 |
| Guinea Rep (Franc) | 1300.00 | 1300.00 | Tanzania (Shilling) | 691.35 | 688.25 |
| Guyana (Dollar) | 162.80 | 157.00 | Thailand (Baht) | 37.425 | 36.95 |
| Haiti (Gourde) | 16.8341 | 16.7883 | Togo, Rep (C.F.A. Franc) | 586.3565 | 502.6868 |
| Honduras Rep (Lempira -d) | 14.01 | 13.985 | Tonga Islands (Pa'anga) | 1.5883 | 1.5671 |
| Hong Kong (Dollar) | 7.7485 | 7.7498 | Trinidad & Tobago (Dollar) | 6.2525 | 6.2525 |
| Hungary (Forint) | 224.81 | 221.76 | Tunisia (Dinar) | 1.1369 | 1.13 |
| Iceland (Krona) | 71.32 | 70.74 | Turkey (Lira) | 347710.50 | 343810.00 |
| India (Rupee -m) | 42.4205 | 42.4475 | Turks & Caicos (U.S. $) | 1.00 | 1.00 |
| Indonesia (Rupiah) | 8850.00 | 8725.00 | Tuvalu (Australia Dollar) | 1.568 | 1.5576 |
| Iran (Rial -o) | 3000.00 | 3000.00 | Uganda (Shilling) | 1233.50 | 1233.50 |
| Iraq (Dinar -o-26) | 0.3109 | 0.3109 | Ukraine (Hryvnia -18) | 3.875 | 4.015 |
| Ireland (Punt * -5) | 1.4205 | 1.4272 | United Arab Emir (Dirham) | 3.673 | 3.6731 |
| Israel (New Shekel) | 4.0647 | 4.0617 | United Kingdom (Pound Sterling *) | 1.6345 | 1.6259 |
| Italy (Lira -13) | 1730.8215 | 1722.6601 | Uruguay (Peso Uruguayo -m) | 10.965 | 10.92 |
| Ivory Coast (C.F.A. Franc) | 586.3565 | 502.6868 | Vanuatu (Vatu) | 128.54 | 127.41 |
| Jamaica (Dollar -o) | 36.65 | 36.65 | Vatican City (Lira -13) | 1730.8215 | 1722.6601 |
| Japan (Yen) | 119.805 | 114.855 | Venezuela (Bolivar -d-3) | 577.00 | 577.255 |
| Jordan (Dinar) | 0.709 | 0.709 | Vietnam (Dong -o-28) | 13882.00 | 13881.50 |
| Kenya (Shilling) | 62.95 | 61.87 | Virgin Is, Br (U.S. $) | 1.00 | 1.00 |
| Kiribati (Australia Dollar) | 1.568 | 1.5576 | Virgin Is, US (U.S. $) | 1.00 | 1.00 |
| Korea, North (Won) | 2.20 | 2.20 | Yugoslavia (New Dinar -19) | 10.4179 | 10.3666 |
| Korea, South (Won -30) | 1204.50 | 1175.55 | Zaire Rep (New Zaire) | 245000.00 | 245000.00 |
| Kuwait (Dinar) | 0.3039 | 0.3029 | Zambia (Kwacha) | 2150.00 | 2487.50 |
| Laos, People DR (Kip) | 4203.50 | 4203.50 | Zimbabwe (Dollar) | 38.50 | 38.70 |
| Latvia (Lat) | 0.5788 | 0.5755 | | | |

Figure 19.3 Limits to Diversification
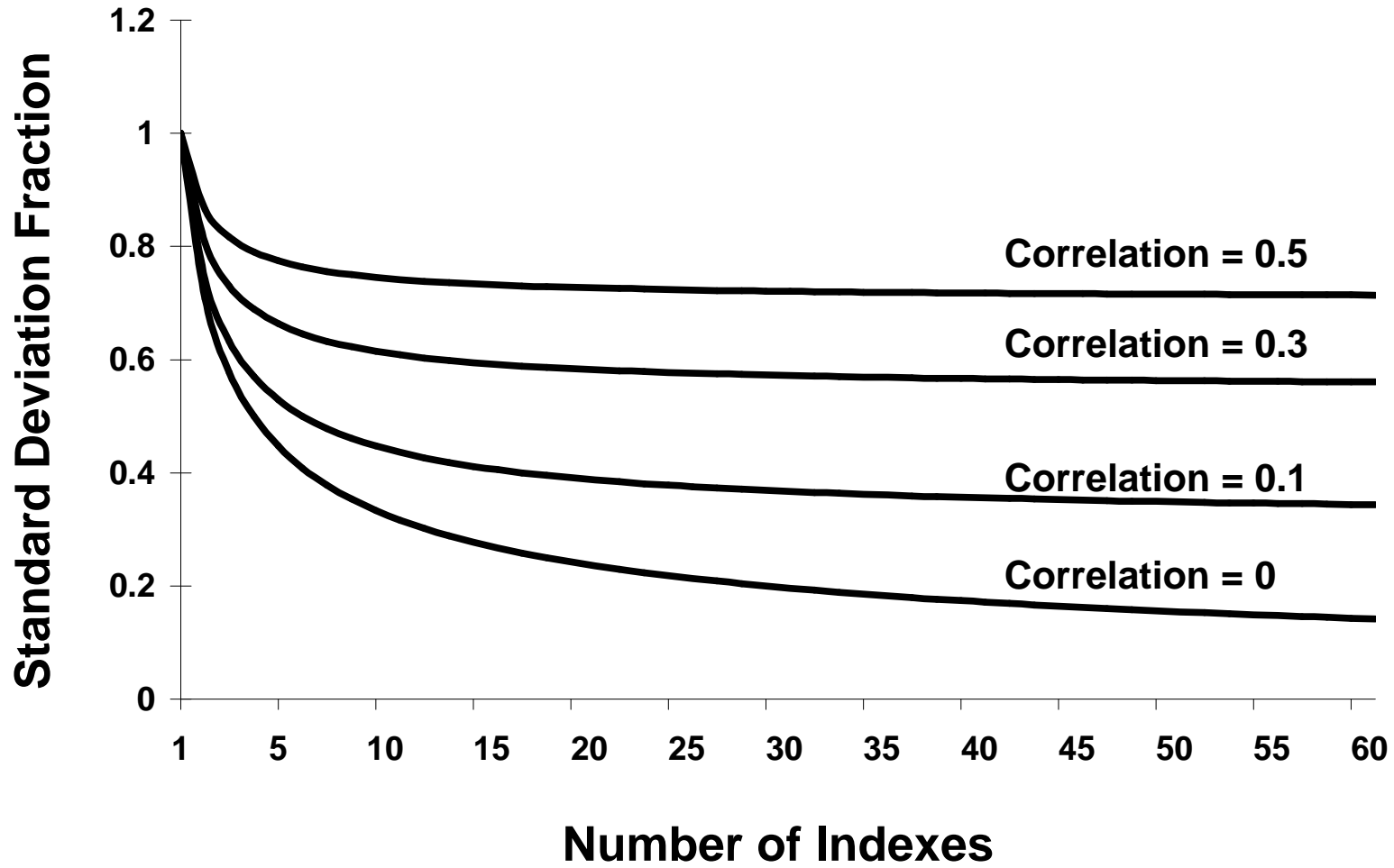
# A Cushion Overseas Is But a Dream

By MICHAEL R. SESIT

*Staff Reporter of* THE WALL STREET JOURNAL

LONDON — You've heard the message: Investing in foreign stocks lowers your risk and increases your returns.

Well, there's a good chance your overseas portfolio isn't as diversified as you think. Some money managers, in fact, warn that if Wall Street tanks, most U.S. foreign-stock portfolios could tumble with it. That's because they are heavily invested in European markets that tend to rise and fall in tandem with U.S. share prices and are underinvested in Japan, which has a low correlation to U.S. stocks.

Roughly 69% of the $257.6 billion that Americans have invested in major stock markets outside of North America is in Europe and only 18% in Japan, according to a new report on the stock holdings of the 2,200 biggest U.S. institutional investors by Technimetrics Inc., a New York-based firm that tracks shareholder ownership. That compares with market-capitalization weightings of 50% for Europe and 41% for Japan, according to Morgan Stanley Capital International's Europe AustralAsia Far East index of 20 major stock markets, the main benchmark against which portfolio managers are measured.

What's more, a fifth of the money is invested in the British stock market and 16% in the Dutch market, both of which are especially highly correlated with the U.S. market. U.S. investors are also heavily overweight in the Swedish, Hong Kong and Australian stock markets, which closely track the U.S.

The big question, say experts, is whether this mix will cushion the blow of a falling U.S. stock market. "You think you

## A Cushion Overseas Is but a Dream

*Continued From Page C1*

own foreign stocks, but if what you own is closely correlated to the U.S. economic and flow of funds cycle, it just won't do what you want it to do," says Nicholas Carn, chief investment officer of Draycott Partners in London. "And if the story in Japan is that of a domestic recovery, which is what we think it is, you lose out there."

The reason U.S. portfolios are so lopsided has less to do with well-thought-out decisions than American provincialism. U.S. investors "aren't particularly familiar with all the subtle differences in offshore markets," says William L. Wilby, a portfolio manager at OppenheimerFunds Inc. in New York. "Therefore, their investment decision is driven primarily on the basis of comfort and cultural familiarity."

A look at some of Americans' favorite foreign investments offers additional clues. Spain's **Telefonica de Espana SA**, French oil company **Total SA**, Swiss drug giant **Roche Holding AG** and Australian media company **News Corp.** represent "themes that are driving the U.S. economy," says Anne M. Tatlock, president of Fiduciary Trust Co. International in New York. At the same time, nearly half of all U.S. institutions own **Royal Dutch Petroleum** Co. shares, mostly because it is in Standard & Poor's 500-stock index, says John Vogt, a Technimetrics vice president in New York.

Led by names such as Royal Dutch, **SmithKline Beecham** PLC, **British Petroleum** Co., **Telefon AB L.M. Ericsson** and **Unilever Group**, nine of the 10 biggest U.S. foreign investments — and 16 of the top 25 — are European companies. Not one is Japanese.

"Each company on the list is a household name, a highly liquid stock, and most have a large presence in the U.S. in terms of their products," says Deborah Fuhr, a director of international accounts at Technimetrics in London. She adds that most of the companies have active investor-rela-

tions programs, are researched by big U.S. brokers and either are listed on the New York Stock Exchange or trade in the form of American depositary receipts.

The last fact "drives a lot of the investment decisions, because many institutions lack overseas custodial arrangements and, therefore, can't own foreign stocks unless they trade in the U.S.," says Mr. Wilby.

Meanwhile, the low level of Japan investment reflects several years of poor corporate earnings and "tells you there isn't a high degree of confidence in a Japanese company being a global leader in any core industry," says Ms. Tatlock of Fiduciary Trust. Japanese companies are also "very reluctant to issue ADRs" because "they are highly sensitive to institutional investors' stances on issues of corporate governance," adds Mr. Vogt.

In some ways, the "overweight Europe, underweight Japan" portfolio has worked. Over the past five years, MSCI's Europe index posted a 12.1% average annual return in dollars, compared with just 5.7% for Japan. But noting that the stocks Americans own essentially represent a "U.S. bull-market portfolio" of pharmaceuticals, brand names, cellular telephones and technology, one money manager argues that Americans might just as well have stayed home. Indeed, the S&P 500 returned 16.5% a year over the same period. That's 70% better than EAFE's 9.7% annual return and 36% higher than MSCI's Europe index.

The future might not be any brighter. Ms. Tatlock of Fiduciary Trust concedes that if an investor believes Continental Europe will follow the U.S. recovery, "there's good reason to be in" the big European companies owned by Americans. But she says that Japanese companies could outperform them, because they could generate faster earnings growth.

Others worry about the narrow concentration of Americans' overseas bets. Just three companies — Royal Dutch, Unilever

and **Philips Electronics NV** — account for 72% of all U.S. investment in Dutch stocks. Five — SmithKline, BP, **Reuters Holdings** PLC, **Vodafone Group** PLC and **Hanson** PLC — make up 43% of their British portfolio. Oy **Nokia** accounts for 71% of all Finnish holdings, and **Nestle SA**, Roche and **Ciba-Geigy** AG represent 52% of all Swiss holdings.

All these big-company stocks are fairly valued, note money managers. Yet they point out that part of the logic behind investing abroad is to find inefficiently priced stocks. Instead of playing just the big names, investors should look for "new businesses and new industries in foreign countries that are at their emerging stages, some of which are older industries in the U.S.," says Oppenheimer's Mr. Wilby. A good example, he says, is private hospitals.

Nonetheless, change won't come quickly, especially regarding the underweighting of Japanese shares. "There's too much skepticism on Japan," says Chris A. Nowakowski, president of InterSec Research Corp. a Stamford, Conn., investment advisory firm. "You've got to be a real hero to buy a market that has fallen by more than half in the past several years, and money managers are generally not heroes."

**GETTING GOING / BY JONATHAN CLEMENTS**

# International Investing Raises Questions
# On Allocation, Diversification, Hedging

As Yogi Berra might say, the problem with international investing is that it's so darn foreign.

Currency swings? Hedging? International diversification? What's that?

Here are answers to five questions that I'm often asked:

■ Foreign stocks account for some 60% of world stock-market value, so shouldn't you have 60% of your stock-market money overseas?

The main reason to invest abroad isn't to replicate the global market or to boost returns. Instead, "what we're trying to do by adding foreign stocks is to reduce volatility," explains Robert Ludwig, chief investment officer at money manager SEI Investments.

Foreign stocks don't move in sync with U.S. shares and, thus, they may provide offsetting gains when the U.S. market is falling. But to get the resulting risk reduction, you don't need anything like 60% of your money abroad.

■ So, how much foreign exposure do you need to get decent diversification?

"Based on the volatility of foreign markets and the correlation between markets, we think an optimal portfolio is 70% in the U.S., 20% in developed foreign markets and 10% in emerging markets," Mr. Ludwig says.

Why not put even more in foreign stocks? If your aim is to reduce a portfolio's risk level, "there are diminishing marginal benefits as the international equity exposure rises," explains Laurence Smith, a managing director with J.P. Morgan's investment management subsidiary.

He argues that once you have a third of your stock portfolio in foreign shares, there's no point in putting more money abroad unless you believe that overseas markets will outperform U.S. equities.

Even with a third of your stock-market money in foreign issues, you may find that the risk-reduction benefits aren't all that reliable. Unfortunately, when U.S. stocks get really pounded, it seems foreign shares also tend to tumble.

Experts have suggested that investors can better diversify their U.S. portfolios if, instead of emphasizing large foreign companies, they favor emerging markets, smaller foreign concerns and stocks that are cheap based on value yardsticks, such as price-to-earnings or price-to-book value.

"I do agree that there's a return advantage and a diversification benefit from emerging markets," Mr. Ludwig says. "But when people say that value stocks outperform or small stocks outperform, I think they're extrapolating from a very small data series, and that's dangerous."

■ Can U.S. companies with global operations give you international diversification?

"When you look at these multinationals, the factor that drives their performance is their home market,"

says Mark Riepe, a vice president with Ibbotson Associates, a Chicago research firm.

How come? U.S. multinationals tend to be owned by U.S. investors, who will be swayed by the ups and downs of the U.S. market. In addition, Mr. Riepe notes that while multinationals may derive substantial profits and revenue abroad, most of their costs—especially labor costs—will be incurred in the U.S.

■ Does international diversification come from the foreign stocks or the foreign currency?

"It comes from both in roughly equal pieces," Mr. Riepe says. "Those who choose to hedge their foreign currency raise the correlation with U.S. stocks, and so the diversification benefit won't be nearly as great."

Indeed, you may want to think twice before investing in a foreign-stock fund that frequently hedges its currency exposure in an effort to mute the impact of—and make money from—changes in foreign-exchange rates.

"The studies that we've done show that stock managers have hurt themselves more than they've helped themselves by actively managing currencies," Mr. Ludwig says.

■ Should you divvy up your money among foreign countries depending on the size of each national stock market?

At issue is the nagging question of how much to put in Japan. If you replicated the market weightings of Morgan Stanley Capital International's Europe, Australasia and Far East index, you would currently have around a third of your overseas money in Japan.
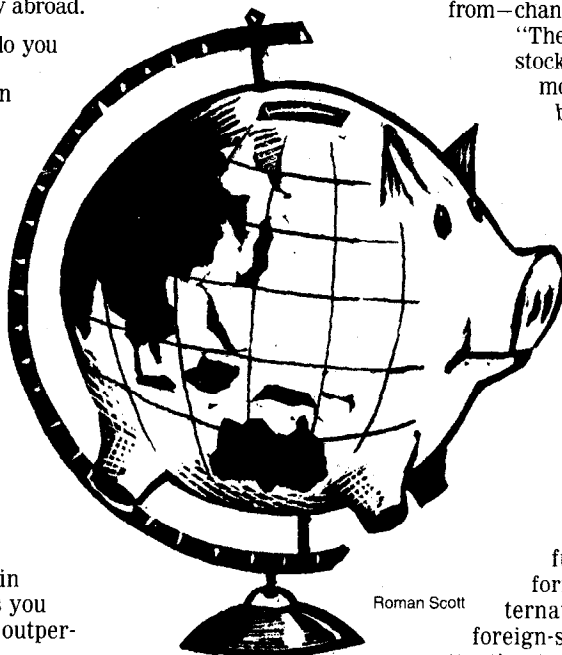
That's the sort of weighting you find in international index funds, which seek to track the performance of the EAFE or similar international indexes. Actively managed foreign-stock funds, by contrast, pay less attention to market weights and, on average, these days have just 14% in Japan.

So, who's right, the actively managed funds or the index funds? If you look at performance, it's a tough call.

In the 1980s, most funds lagged behind the Morgan Stanley index, which was bolstered by the dazzling performance of the Japanese market. But in the 1990s, the tables were turned. Actively managed funds have triumphed, as the index was dragged down by its large stake in the tumbling Tokyo market.

An honorable draw? Not quite. If your focus is risk reduction rather than performance, the index—and the funds that track it—are the clear winners. Japan performs quite unlike the U.S. market, so it provides good diversification for U.S. investors, says Tricia Rothschild, international editor at Morningstar Mutual Funds, a Chicago newsletter.

"But correlations aren't static," she adds. "There's always a problem with taking what happened over the past 20 years and projecting it out over the next 20 years."

Roman Scott