

## CHAPTER 16

# International Portfolio Investment

### ***Opening Case 16: LG Group Shows how Korea Inc. Might Restructure***

Amid a spate of corporate scandals that questioned the durability of South Korea's reforms for the post-Asian financial crisis era, the LG Group has completed a transformation which could prove to be a test case for one of the country's biggest challenges – restructuring big business. LG is the country's second-largest chaebol, or family-owned conglomerate, with assets of \$49.5 billion and businesses ranging from electronics to financial services. The company dismantled its complex web of cross-shareholdings and reorganized most of its affiliates under a holding company, the LG Corp. "The greatest corporate action in Korea so far is LG Group's restructuring to a holding company," stated Wonki Lee, the head of equity research at Merrill Lynch in Seoul.

Chaebols prospered by forming intricate financial and business ties among group companies – profiting together and often bailing each other out during economic distress. In the process, they took Korea's economy from postwar devastation to the world's 12th-largest. Nevertheless, the Asian financial crisis of 1997–8 exposed chaebol mismanagement and corruption. Since then, they have struggled to solve these problems and polish a tarnished image so that they could compete more effectively on a global stage. The LG Group began its reincarnation by improving its financial profile. LG merged 15 companies into other affiliates, shed five noncore businesses, listed 20 more, attracted foreign investors, and placed 34 of its 51 affiliates under the LG Corp. umbrella.

The restructuring also clarified how much of the group was controlled by the founding Koo and Huh families, whose current patriarchs are Koo Bon Moo and Huh Chang

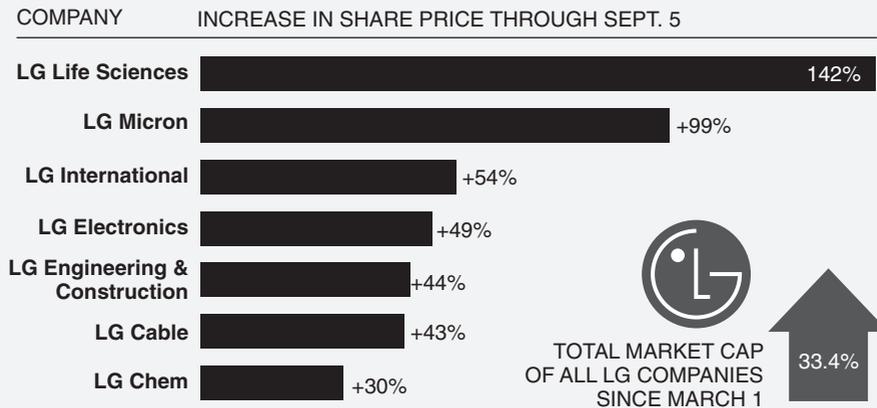
Soo. Together, they once controlled the entire conglomerate through small holdings in various affiliates. Through sales, equity swaps, and other deals, those stakes have been consolidated in their 59 percent LG Corp. stake. The holding company – whose earnings come solely from dividends and LG brand usage fees – sets group strategy, oversees unit management, and promotes the LG brand globally. The holding company aligns its interests with those of affiliate shareholders in terms of business strategy, financial status, and cash flows. Previously, the founders exercised unchallenged control over the entire conglomerate; now, the holding company has legal legitimacy and must act in a rational, accountable way, thus permitting unit independence.

The major purpose of this new structure is to increase corporate governance and transparency. The increased transparency is usually rewarded by the markets, with “good disclosure” stocks trading at higher valuation than those of their peers. Although it is difficult to isolate the effect of corporate openness on an overall share price, compelling circumstantial evidence shows that the more information a company releases, the better. Apparently, investors seem to believe that LG’s transformation has improved corporate governance and created transparency at what was once an impenetrable tangle of interlocking companies. As shown in figure 16.1, LG affiliate shares have soared since LG launched its structure in March 2003.

To increase competitiveness and management efficiency by focusing on core businesses, the Board of LG Corp. voted to divide the company into LG Group and GS

**All for One, and One for All**

The shares of LG Corp. affiliates have risen sharply since the March 1, 2003, announcement of the chaebol’s holding-company structure.



Source: LG Corp.

**Figure 16.1** All for one, and one for all

Source: *The Wall Street Journal*, Sept. 8, 2003, p. A10.

Holdings on April 13, 2004. Company shareholders approved the plan at a special meeting on May 28, thereby establishing GS Holdings as a new company. LG Group took manufacturing units, while GS Holdings took logistics and service units. GS Holdings started its business with Huh Chang Soo as its first Chairman on July 1, 2004.

Sources: K. Song, "LG Group Shows how Korea Inc. Might Restructure," *The Wall Street Journal*, Sept. 12, 2003, p. A10; and W. H. Lee and S. H. Park, "LG Plans Split to Establish 2 Holding Firms," *JoongAng Daily*, Apr. 14, 2004, p. 3.

In 1990, two American finance professors – Harry Markowitz (1959) and William Sharpe (1964) – received the Nobel Prize in economic science because of their contribution to portfolio theory. A highly respectable mean-variance model developed by Markowitz and Sharpe employs two basic measures: an index of expected return (mean) and an index of risk (variance or standard deviation). The expected value for a portfolio of securities is simply the sum of the individual returns for the securities that make up the portfolio. The standard deviation as a measure of risk for the portfolio is not easily measured. In many business situations, risks of individual securities tend to offset each other. Thus, with successful diversification, the investor may select a portfolio having less risk than the sum of the risks of individual securities.

There was a time when investment opportunities stopped at national borders. However, today we assume a unified and integrated world capital market when analyzing international finance and macroeconomics. Indeed, recent national policy discussions rely on this premise stimulated by global integration of capital markets. Thus, many countries have internationalized their capital markets since 1980. National capital markets have changed to an integrated global capital market, often followed by widespread international multiple listings of securities. An economic revolution is taking place in many parts of the world as countries deregulate financial markets.

Diversification among risky securities in a particular country reduces risk. Yet this potential is rather limited, because most companies usually earn more during booms and less during recessions, which suggests that international portfolio diversification reduces additional risk. In fact, gains from such diversification have become so commonplace in recent years that additional empirical studies are not needed to confirm the benefits of international diversification. Still, this chapter describes key diversification terminology, the gains from international diversification, and methods of international diversification.

## ● 16.1 Key Terminology

In the real world, no company or individual invests everything in a single asset. Accordingly, it is useful to consider the risk and return of a particular asset in conjunction with its counterparts in existing assets or new investment opportunities. Portfolio theory deals with selecting investment projects that minimize risk for a given rate of return or that maximize the rate of return for a given degree of risk.

### 16.1.1 Risk analysis: standard deviation

Two conflicts from investment in assets are that: (1) very few financial variables are known with certainty and (2) investors are basically risk averters. Risk is variability in the return generated by investment in an asset. For example, investors buy common stock in the hope of receiving growing dividends and an appreciating stock price. However, neither the dividend stream nor price appreciation is certain or guaranteed. Thus, investors evaluate risk before they invest in common stock.

Risk may be measured by the dispersion of alternative returns around the average return. **Standard deviation**, being a measure of dispersion, fits nicely as a technique for measuring risk. To determine the standard deviation of, say, monthly returns for an asset, we may use the following formula:

$$\sigma = \sqrt{\frac{\sum (R - \bar{R})^2}{n - 1}}$$

where  $\sigma$  is the standard deviation;  $R$  is the monthly returns; and  $\bar{R}$  is the average monthly return. To illustrate, assume that the monthly returns of a common stock are 0.40, 0.50, and 0.60 for 3 months. The average monthly return is 0.50, and the standard deviation is 0.10.

Standard deviation is an absolute measure of dispersion. If returns are expressed in dollars, the standard deviation shows the amount of risk per dollar of average return. A relative measure of dispersion is the **coefficient of variation**, which is the standard deviation divided by the average return. In general, the coefficient of variation measures risk better than the standard deviation for assets whose returns are stated in dollars. Standard deviation should be used to measure risk only for those assets whose returns are stated as percentages.

### 16.1.2 The capital asset pricing model

The **capital asset pricing model (CAPM)** assumes that the total risk of a security consists of systematic (undiversifiable) risk and unsystematic (diversifiable) risk. **Systematic risk** reflects overall market risk – risk that is common to all securities. Common causes of systematic risk include changes in the overall economy, tax reform by Congress, and change in national energy supply. Because it is common to all stocks, systematic risk cannot be eliminated by diversification.

**Unsystematic risk** is unique to a particular company. Some causes of unsystematic risk include wildcat strikes affecting only that company, new competitors producing essentially the same product, and technological breakthroughs making an existing product obsolete. Because it is unique to a particular stock, unsystematic risk can be eliminated by diversification.

Within an international context, systematic risk relates to such global events as worldwide recessions, world wars, and changes in world energy supply. Unsystematic risk relates to such national events as expropriation, currency controls, inflation, and exchange rate changes.

If a market is in equilibrium, the expected rate of return on an individual security ( $j$ ) is stated as follows:

**Table 16.1** Betas for selected firms in two industries

<i>Airline companies</i>	<i>Beta</i>	<i>Food processing companies</i>	<i>Beta</i>
American Airlines	2.52	Campbell Soups	0.44
United Airlines	1.92	H. J. Heinz	0.30
Northwest	1.88	Kraft Foods	0.30
Delta Airlines	1.70	Nabisco	0.28
British Airways	1.70	Kellogg's	0.03

Source: www.dbc.com, Jan. 29, 2004.

$$R_j = R_f + (R_m - R_f)\beta_j \quad (16.2)$$

where  $R_j$  is the expected rate of return on security  $j$ ;  $R_f$  is the riskless rate of interest;  $R_m$  is the expected rate of return on the **market portfolio**, which is a group of risky securities, such as Standard & Poor's 500 Stocks or the London Financial Times Stock Exchange 100; and  $\beta_j$  is the systematic risk of security  $j$ . This equation, known as the security market line, consists of the riskless rate of interest ( $R_f$ ) and a risk premium  $[(R_m - R_f)\beta_j]$ . It is important to understand that **beta** –  $\beta_j = [(R_j - R_f)/(R_m - R_f)]$  – is an index of volatility in the excess return of one security relative to that of a market portfolio.

**AGGRESSIVE VERSUS DEFENSIVE STOCKS** Because beta reflects the systematic risk of a stock or a mutual fund relative to that of the market as a whole, the market index is assigned a beta of 1. Beta may be used to classify stocks into two broad categories: aggressive and defensive. Aggressive stocks are those stocks that have betas greater than 1. Their returns rise (fall) more than the market index rises (falls). Defensive stocks are those stocks that have betas less than 1. Their returns fluctuate less than the market index. Those stocks with betas equal to 1 are frequently called neutral stocks.

Table 16.1 shows a sample of betas for 10 stocks: five aggressive stocks (airline companies) and five defensive stocks (food processing companies). Food processing companies have very stable earnings streams because their products are necessities. Swings in the earnings and stock returns of food processing companies are modest relative to the earnings and returns of most companies in the economy. Thus, food processing companies have a very low level of systematic risk and low betas.

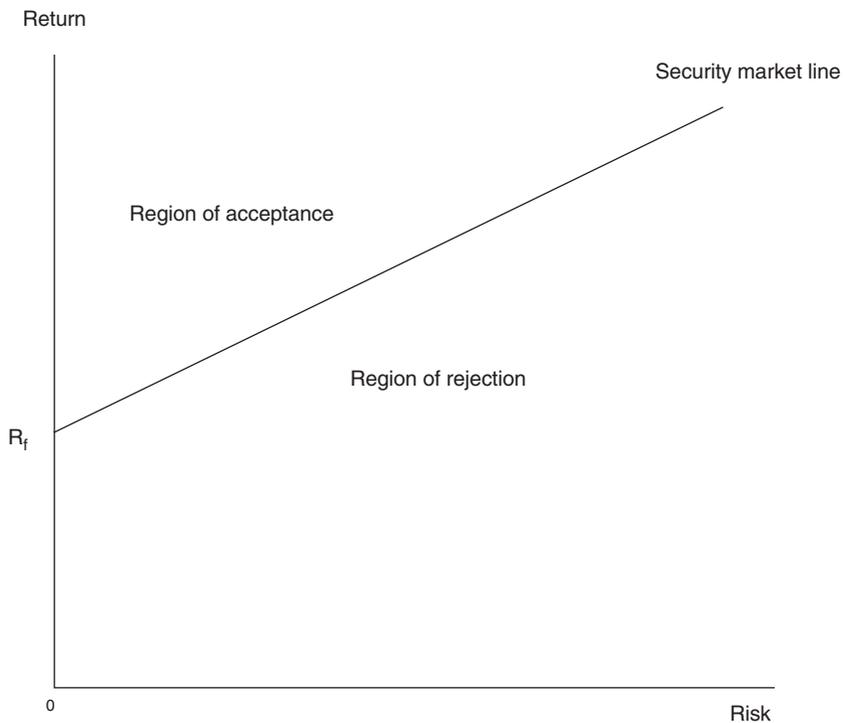
At the other extreme, airline revenues are closely tied to passenger miles, which are in turn very sensitive to changes in economic activity. This basic variability in revenues is amplified by high operating and financial leverage. These factors cause airline earnings and returns to produce wide variations relative to swings in the earnings and returns of most firms in the economy. Hence, airline companies have high betas.

Is beta one of the best ways to predict how your mutual fund or stock might perform in a market downturn or upturn? Table 16.2 shows average returns for US stock funds during the sharp decline from the peak on July 17, 1998, through August 31, 1998. In this particular downturn caused by the Asian financial crisis, beta has done a pretty good job of predicting which funds would be hit hardest or the least hard. For example, the 25 percent of US stock funds with the highest beta declined 27.68 percent in the period from July 17 through August 31. On the other hand, the 25 percent of US stock funds with the lowest beta lost only 17.77 percent during the same period. In that period, Standard & Poor's 500 Stocks lost 19.13 percent.

**Table 16.2** Average returns for US stock funds from July 17, 1998, to August 31, 1998

Beta	Average return (%)	Number of funds in group
Greater than 1.09	-27.68	461
Between 1.08 and 0.99	-20.93	486
Below 0.86	-17.77	434

Source: *The Wall Street Journal*, Oct. 15, 1998, p. R17.



**Figure 16.2** The security market line

In a portfolio context, the security market line constitutes various portfolios that combine a riskless security and a portfolio of risky securities. The general decision rule for accepting a risky project ( $j$ ), can be stated as follows:

$$R_j > R_f + (R_m - R_f)\beta_j \quad (16.3)$$

This decision rule implies that to accept security  $j$ , its expected return must exceed the investor's hurdle rate, which is the sum of the riskless rate of interest plus a risk premium for the riskiness of the security. Figure 16.2 shows the decision rule in general terms: accept all securities that plot above the security market line and reject all securities that plot below the security market line.

### 16.1.3 Correlation coefficients

The **portfolio effect** is defined as the extent to which unsystematic risks of individual securities tend to offset each other. The portfolio effect, or portfolio standard deviation, depends not only on the standard deviation of each security but also on the degree of correlation between two or more securities. The **correlation coefficient** measures the degree of correlation between two securities and varies from zero (no correlation, or independence) to 1.0 (perfect correlation).

A correlation coefficient of  $-1.0$  means that the two sets of returns for two securities tend to move in exactly opposite directions. Assume that a boom occurs. Security A is expected to earn \$100, while security B is expected to earn nothing. In contrast, if a recession occurs, security A would earn nothing, whereas security B would earn \$100. Consequently, these two securities are perfectly negatively correlated. Diversification can totally eliminate unsystematic risk when two securities are perfectly negatively correlated.

A correlation coefficient of  $+1.0$  means that two sets of returns for two securities tend to move in exactly the same direction. Suppose that a boom occurs. Securities X and Y would earn an equal amount of \$200. But if a recession occurs, they would yield an equal amount of \$50. Then we can say that these two securities are perfectly positively correlated. In this case, diversification would not reduce unsystematic risk at all.

A correlation coefficient of zero means that the two sets of returns for two securities are uncorrelated or independent of each other. In this scenario, diversification would reduce unsystematic risk considerably.

Because the degree of correlation among securities depends on economic factors, most pairs of domestic securities have a correlation coefficient of between 0 and  $+1.0$ . Most stock prices are likely to be high during a boom, while they are likely to be low during a recession. But different product lines and different geographical markets tend to have a relatively low degree of correlation to each other. Thus, international diversification may eliminate unsystematic risk and reduce domestic systematic risk considerably.

### 16.1.4 Portfolio return and risk

**Portfolio return** is the expected rate of return on a portfolio of securities. The expected portfolio return is simply a weighted average of the expected returns of the securities that make up the portfolio. One way to measure the benefits of international diversification is to consider the expected return and standard deviation of return for a portfolio that consists of US and foreign portfolios. Such a portfolio return may be computed as follows:

$$R_p = X_{us}R_{us} + X_{fn}R_{fn} \quad (16.4)$$

where  $R_p$  is the portfolio return,  $X_{us}$  is the percentage of funds invested in the US portfolio,  $R_{us}$  is the expected return on the US portfolio,  $X_{fn}$  is the percentage of funds invested in the foreign portfolio, and  $R_{fn}$  is the expected return on the foreign portfolio.

The standard deviation of a portfolio measures the riskiness of the portfolio. The standard deviation of a two-security portfolio can be calculated as follows:

$$\sigma_p = \sqrt{X_{us}^2\sigma_{us}^2 + X_{fn}^2\sigma_{fn}^2 + 2X_{us}X_{fn}\sigma_{us,fn}\sigma_{us}\sigma_{fn}} \quad (16.5)$$

where  $\sigma_p$  is the portfolio standard deviation,  $\sigma_u$  is the standard deviation of the US portfolio,  $\sigma_f$  is the standard deviation of the foreign portfolio, and  $\sigma_{u,f}$  is the correlation coefficient between the returns on the US and foreign portfolios.

## Example 16.1

Assume that an international portfolio consisting of a US portfolio and a foreign portfolio calls for a total investment of \$10 million. The US portfolio requires an investment of \$4 million and the foreign portfolio requires an investment of \$6 million. The expected returns are 8 percent on the US portfolio and 12 percent on the foreign portfolio. The standard deviations are 3.17 percent for the US portfolio and 3.17 percent for the foreign portfolio.

Because the percentage of the international portfolio invested in the US portfolio is 40 percent and that of the foreign portfolio is 60 percent, we can use equation 16.4 to compute the return on the international portfolio:

$$R_p = (0.4)0.08 + (0.6)0.12 = 10.4\%$$

It is important to recognize that the return on the international portfolio is the same regardless of correlation of returns for the US and foreign portfolios. However, the degree of the international portfolio risk varies according to interportfolio or intersecurity return behavior. Intersecurity returns can be perfectly negatively correlated, statistically independent, or perfectly positively correlated.

### Case A: perfectly negative correlation

If the US and foreign portfolios are perfectly negatively correlated, their correlation coefficient becomes  $-1$ . The return on the international portfolio and its standard deviation (use equation 16.5) are as follows:

$$\begin{aligned} R_p &= 10.4\% \\ \sigma_p &= \left[ (0.4)^2(0.0317)^2 + (0.6)^2(0.0317)^2 + 2(0.4)(0.6)(-1)(0.0317)(0.0317) \right]^{1/2} \\ &= 0.63\% \end{aligned}$$

Because the standard deviation of US and foreign portfolios are 3.17 percent each, their weighted average is 3.17 percent ( $0.0317 \times 0.40 + 0.0317 \times 0.60$ ). Thus, the standard deviation of the international portfolio is only 20 percent of the weighted average of the two individual standard deviations ( $0.0063/0.0317$ ). If a considerable number of perfectly negatively correlated projects are available, risk can be almost entirely diversified away. However, perfect negative correlation is seldom found in the real world.

### Case B: statistical independence

If these two portfolios are statistically independent, the correlation coefficient between the two is 0. The return of the international portfolio and its standard deviation are as follows:

$$R_p = 10.4\%$$

$$\sigma_p = \left[ (0.4)^2(0.0317)^2 + (0.6)^2(0.0317)^2 + 2(0.4)(0.6)(0)(0.0317)(0.0317) \right]^{1/2}$$

$$= 2.29\%$$

In this case, the standard deviation of the international portfolio is 72 percent of this weighted average (0.0229/0.0317). This means that international diversification can reduce risk significantly if a considerable number of statistically independent securities are available.

### Case C: perfectly positive correlation

If the two portfolios are perfectly positively correlated with each other, their correlation coefficient becomes 1. The portfolio return and its standard deviation are as follows:

$$R_p = 10.4\%$$

$$\sigma_p = \left[ (0.4)^2(0.0317)^2 + (0.6)^2(0.0317)^2 + 2(0.4)(0.6)(1)(0.0317)(0.0317) \right]^{1/2}$$

$$= 3.17\%$$

The standard deviation of the international portfolio equals the weighted average of the two individual standard deviations. Thus, if all alternative investments are perfectly positively correlated, diversification would not reduce risk at all.

## 16.1.5 The efficient frontier

An **efficient portfolio** is a portfolio that incurs the smallest risk for a given level of return and/or provides the highest rate of return for a given level of risk. Suppose that A, B, and C are three exclusive portfolios that require the same amount of investment, say, \$10 million. They have an equal rate of return, but their respective standard deviations are different. Figure 16.3 shows that A incurs the smallest risk for a given level of return; A is called the efficient portfolio. By the same token, assume that W, X, and Y are three exclusive portfolios that require the same amount of money, say, \$10 million. They have the same amount of risk, but their rates of return are different. As shown in figure 16.3, we notice that W provides the highest rate of return for a given level of risk; W is also called the efficient portfolio. If we compute more points such as A and W, we may obtain curve AW by connecting such points. This curve is known as the **efficient frontier**. Portfolios B, C, X, and Y are inefficient because some other portfolios could give either a lower risk for the same rate of return or a higher return for the same degree of risk.

There are numerous efficient portfolios along the efficient frontier. An efficient frontier does not tell us which portfolio to select, but shows a collection of portfolios that minimize risk for any expected return or that maximize the expected return for any degree of risk. The objective

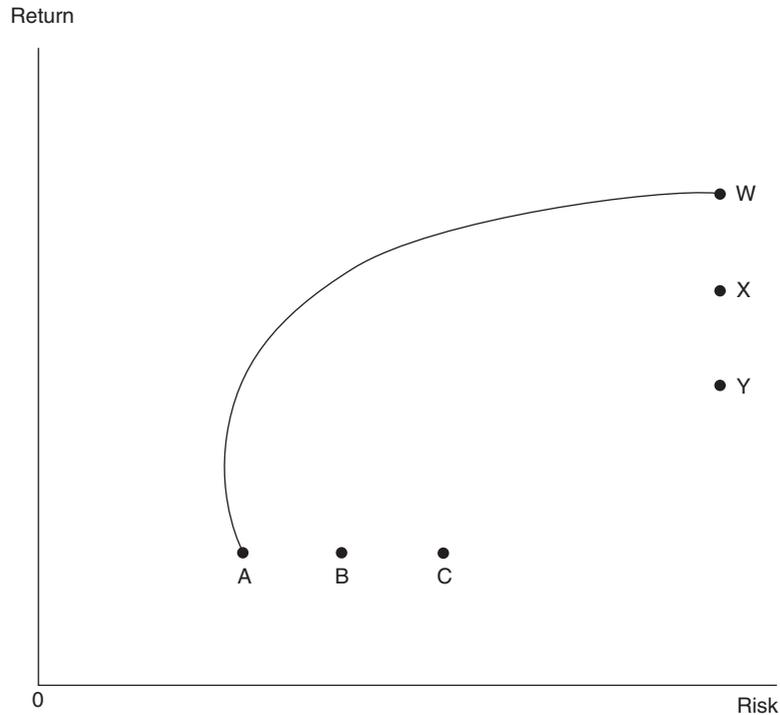


Figure 16.3 An efficient frontier

of the investor is to choose the optimal portfolio among those on the efficient frontier. Thus the efficient frontier is necessary but not sufficient for selecting the optimal portfolio. Given an efficient frontier, the choice of the optimal portfolio depends on the security market line.

If investors want to select the optimal portfolio from portfolios on a particular efficient frontier, they should land on the highest security market line. This **optimal portfolio** is found at the tangency point between the efficient frontier and the security market line. Tangency point M in figure 16.4 marks the highest security market line that investors can obtain with funds available for investment. An optimum portfolio is the portfolio that has, among all possible portfolios, the largest ratio of expected return to risk. Once investors identify the optimal portfolio, they will allocate funds between risky assets and risk-free assets to achieve a desired combination of risk and return.

## ● 16.2 The Benefits of International Diversification

A rather convincing body of literature holds that internationally diversified portfolios are better than domestically diversified portfolios because they provide higher risk-adjusted returns to their holders. This section, based on several empirical studies, discusses: (1) arguments for international diversification, (2) risk–return characteristics of national capital markets, and (3) selection of optimal international portfolios.

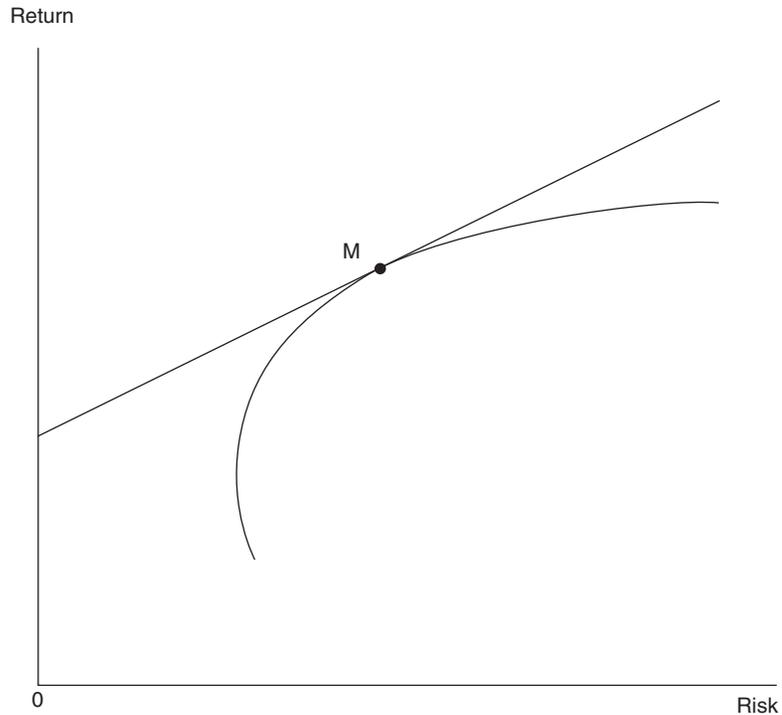


Figure 16.4 An optimal portfolio

### 16.2.1 Risk diversification through international investment

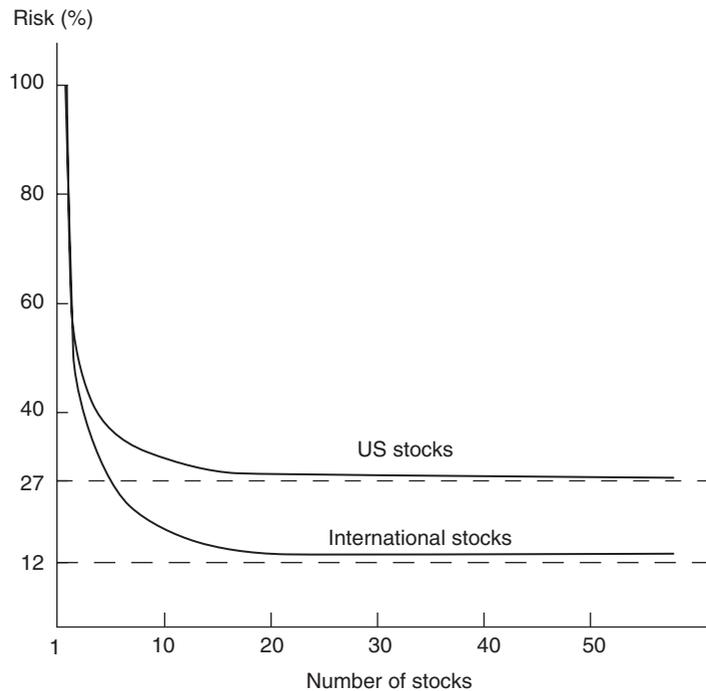
Table 16.3 provides correlations of stock market returns for 10 major countries known as the Group of Ten, from 1980 to 2001. First, the intracountry correlation is 1 for every country. On the other hand, the intercountry correlation is much less than 1 for every pair of any two countries. In other words, stock market returns have lower positive correlations across countries than within a country. Second, member countries of the European Union – France, Italy, Germany, the Netherlands, and the United Kingdom – have relatively high correlations because their currencies and economies are highly interrelated. Third, the intercountry correlation for the United States ranges from as high as 0.74 with Canada to as low as 0.29 with Japan. The extremely high correlation between the USA and Canada comes as no surprise, because these two neighboring countries have close business linkages in terms of trade, investment, and other financial activities. The USA and Japan have the extremely low correlation because they are situated in different continents and their economic policies are different.

Of course, a reason for low intercountry correlations is that much of the stock market risk in an individual country is unsystematic and so can be eliminated by international diversification. Low international correlations may reflect different geographical locations, independent economic policies, different endowments of natural resources, and cultural differences. In summary, these results imply that international diversification into geographically and economically diver-

**Table 16.3** Correlations of major stock market returns from 1980 to 2001

	AU	CA	FR	GE	IT	JA	NE	SW	UK	US
Australia	1.00									
Canada	0.60	1.00								
France	0.37	0.46	1.00							
Germany	0.34	0.42	0.69	1.00						
Italy	0.25	0.35	0.50	0.43	1.00					
Japan	0.33	0.33	0.41	0.33	0.37	1.00				
The Netherlands	0.44	0.58	0.66	0.71	0.44	0.42	1.00			
Sweden	0.44	0.49	0.49	0.57	0.44	0.39	0.54	1.00		
UK	0.54	0.57	0.57	0.50	0.38	0.42	0.70	0.51	1.00	
USA	0.47	0.74	0.50	0.45	0.31	0.29	0.62	0.49	0.58	1.00

Source: Monthly issues of Morgan Stanley's *Capital International Perspectives*.



**Figure 16.5** Gains from international diversification

Source: B. Solnik, *International Investments*, Reading, MA: Addison-Wesley, 1999, p. 126.

gent countries may significantly reduce the risk of portfolio returns. According to figure 16.5, drawn by Solnik (1999), that is indeed the case.

Figure 16.5 shows the total risk of domestically and internationally diversified portfolios as a function of the number of securities held. In this figure, 100 percent of risk as measured by standard deviation represents the typical risk of a single US security. As an investor increases the

number of securities in a portfolio, the portfolio's risk declines rapidly at first, then slowly approaches the systematic risk of the market expressed in the broken line. However, the addition of more securities beyond 15 or 20 reduces risk very little. The remaining risk – the part not affected by holding more US stocks – is called market risk, which is also known as systematic risk. Is there a way to lower portfolio risk even further? Only if we can lower the market risk. One way to lower the market risk is to hold stocks not traded on US stock exchanges.

Figure 16.5 illustrates a number of striking facts. First, the risk of a well-diversified US portfolio is only 27 percent of the typical risk of a single security. This relationship indicates that 73 percent of the risk associated with investing in a single security is diversifiable in a fully diversified portfolio. Second, the addition of foreign stocks to a purely domestic portfolio reduces risk faster, as shown in the bottom curve. Third, a fully diversified international portfolio is less than half as risky as a fully diversified US portfolio. The addition of foreign stocks to a US portfolio reduces the US market risk even further, because foreign economies generally do not move one-for-one with the US economy. When the US economy is in a recession, foreign economies might be in expansion, and vice versa. This and other studies have established that security returns are less highly correlated internationally than domestically. This makes a strong case for international diversification as a means of risk diversification.

It is important to note that a fully diversified portfolio or an efficient portfolio is one that has zero, or very little, unsystematic risk. As illustrated in figure 16.5, an efficient international portfolio cuts the systematic risk of an efficient domestic portfolio in half. Domestic systematic risk declines because international diversification offsets US-specific reactions to worldwide events.

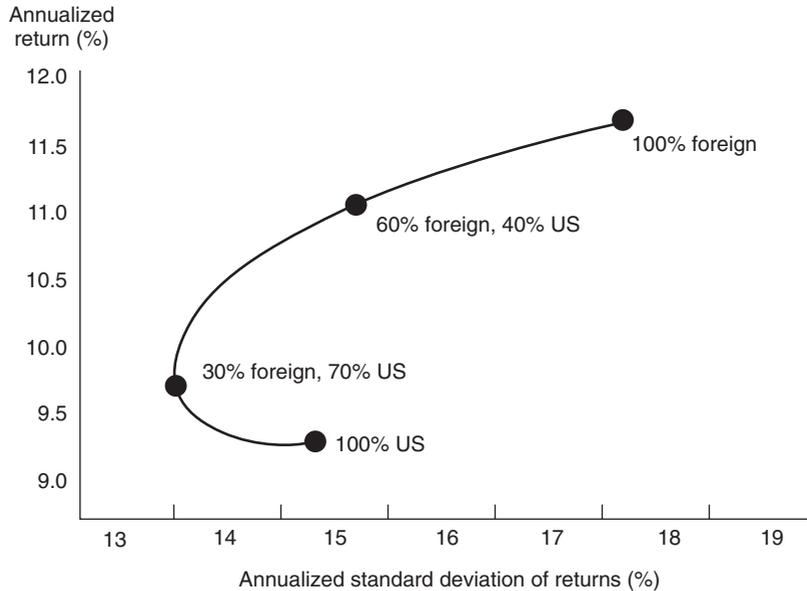
### 16.2.2 *Risk–return characteristics of capital markets*

In the previous section, we discussed the benefits from diversifying international portfolios in terms of risk reduction, but we ignored return, another important aspect of investment. Certainly, investors simultaneously consider both risk and return in making investment decisions. In other words, they want to maximize expected return for a given amount of risk and minimize the amount of risk for a given level of return. Consequently, we ought to examine the risk–return characteristics of stock markets.

To ascertain the gains from international diversification, Morgan Stanley constructed portfolios that began with a 100 percent US portfolio and then they made it increasingly more international in increments of 10 percent. Switching from domestic to foreign investments was implemented by acquiring equally weighted portfolios of the 20 foreign indexes in Europe, Australia, and the Far East, using quarterly data for 71 years from 1926 to 1997. Figure 16.6 shows the performance of these portfolios in terms of risk–return trade-offs. As the proportion of the portfolio invested abroad increased, the return increased; in addition, the risk decreased until the proportion of foreign equities reached 50 percent of the portfolio. In other words, American investors could have enjoyed higher returns and less risk if they had held a portfolio that contained up to 50 percent invested in foreign stocks.

### 16.2.3 *The selection of an optimal portfolio*

Before we discuss the selection of an optimal international portfolio, let us review the basic concept of bonds and stocks. Bonds are less risky than stocks. The standard deviation of bond



**Figure 16.6** Risk–return trade-offs of international portfolios, 1926–97

Source: Morgan Stanley Capital Investment.

returns in any particular market is typically lower than the standard deviation of stock returns in that market. Certainly, lower risk implies lower mean rates of return for bonds compared with stocks. Table 16.4 shows risk–return statistics for bonds and stocks in various markets from the viewpoint of a US investor. In terms of the mean-variance decision rule, both bonds and stocks were efficient investments in each market. With the exception of Germany, all the bond means and standard deviations were lower than the corresponding stock statistics in each market.

Levy and Lerman (1988) compared the performance of various investment strategies for the 13 industrial countries listed in table 16.4. The right-hand curve of figure 16.7 is the efficient frontier when investors are restricted to stocks only. The left-hand curve is the efficient frontier when investors can buy both stocks and bonds. The middle curve is the efficient frontier when investors are restricted to bonds only.  $M(bs)$ ,  $M(b)$ , and  $M(s)$  represent the optimal international portfolios for stocks and bonds, bonds, and stocks, respectively.

Levy and Lerman's study found several advantages of international bond and stock diversification. A US investor who diversified across world bond markets could have earned almost twice as much as the mean rate of return on a US bond portfolio, having the same risk level. Moreover, the US stock market dominated the US bond market in terms of risk-adjusted returns. However, internationally diversified bond portfolios outperformed internationally diversified stock portfolios. Finally, internationally diversified portfolios of stocks and bonds outperformed internationally diversified portfolios of stocks only or bonds only.

Investment in US bonds is inefficient because, as shown in figure 16.7, its risk–return combination is deep inside the efficient frontier. The international bond portfolio  $M(b)$  in figure 16.7 outperformed US bonds in terms of mean rate of return at the same risk level. More specifically,

**Table 16.4** Dollar-adjusted rates of return and standard deviations

Country	Bonds		Stocks	
	Mean	Standard deviation	Mean	Standard deviation
Belgium	8.11%	9.66%	10.14%	14.19%
Denmark	6.99%	13.14%	11.37%	24.83%
France	5.99%	12.62%	8.13%	21.96%
Germany	10.64%	9.45%	10.10%	20.34%
Italy	3.39%	13.73%	5.60%	27.89%
The Netherlands	7.90%	8.28%	10.68%	18.24%
Spain	5.17%	11.52%	10.35%	20.33%
Sweden	6.41%	6.06%	9.70%	17.09%
Switzerland	9.11%	12.68%	12.50%	23.48%
UK	6.81%	15.30%	14.67%	34.40%
Japan	11.19%	12.21%	19.03%	32.20%
Canada	3.52%	6.44%	12.10%	17.89%
USA	4.31%	5.53%	10.23%	18.12%

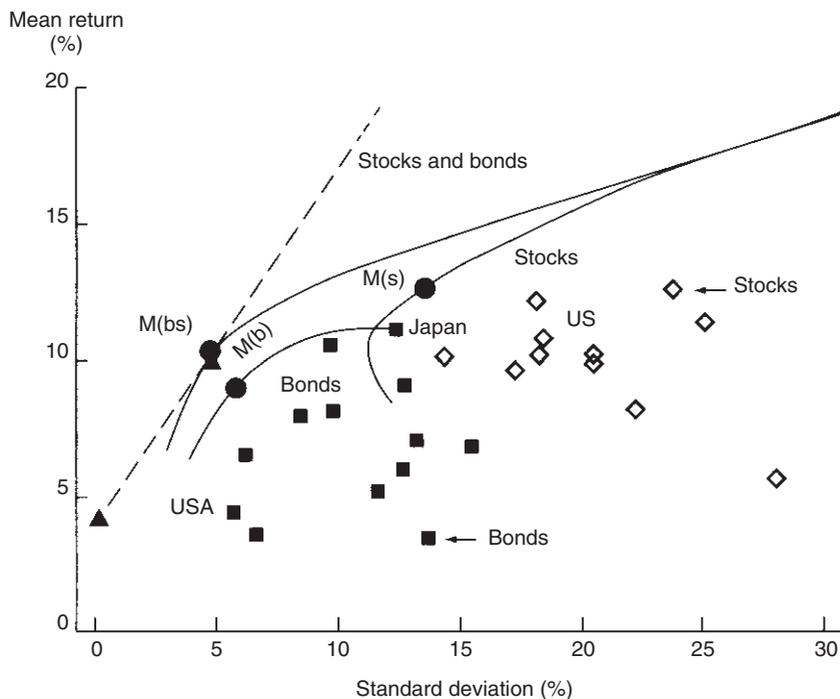
Source: H. Levy and Z. Lerman, "The Benefits of International Diversification in Bonds," *Financial Analysts Journal*, Sept./Oct. 1988, p. 57.

US bonds had a risk level of 5.53 percent and a mean return level of 4.31 percent. At about the same level of risk, the optimal international portfolio of bonds earned a mean return of about 8.5 percent – about twice the US-only portfolio's return. This was achieved by investing in a portfolio of German, Swedish, and Japanese bonds with small amounts in US and Spanish bonds.

Investment in US stocks is also inefficient because, according to figure 16.7, its risk–return combination is to the right of the efficient frontier. The performance of the international stock portfolio,  $M(s)$ , was better than that of US stocks. Point  $M(s)$  had a standard deviation of 14.84 percent and a mean return of 15 percent. Compare this to the US stocks, whose standard deviation was 18.12 percent and whose mean rate of return was 10.23 percent. Consequently, US investors could have earned more from international stock portfolios than from US stock portfolios, and at a lower risk level. This was achieved by investing in a portfolio of German, Spanish, Japanese, and Canadian stocks with small amounts of Belgian and British stocks.

Figure 16.7 shows that the bond portfolios definitely outperformed the stock portfolios. At every level of mean return up to 11 percent, the bond portfolios had a lower risk level than corresponding stock portfolios. However, the efficient bond frontier stops at a mean return level of about 11 percent, while the efficient stock frontier extends up to a mean return level of about 19 percent. The upper bound represents investment in Japanese stocks, which had the highest risk and return among all stocks. The higher range of risk–return combinations was not attainable with bond portfolios. Still, the stock portfolios played an efficient role on their own because of their upper bound.

As given in figure 16.7, the efficient frontier of stocks and bonds combined dominated its counterpart of either stocks by themselves or bonds by themselves. This means that international portfolios of stocks and bonds outperformed both stock portfolios and bond portfolios. The optimal international portfolio of stocks and bonds is obtained at point  $M(bs)$ , where the efficient frontier of stocks and bonds and the security market line intersect with each other.



**Figure 16.7** Efficient international portfolios

Source: H. Levy and Z. Lerman, "The Benefits of International Diversification in Bonds", *Financial Analysts Journal*, Sept./Oct. 1988, p. 62.

## ● 16.3 Methods of International Diversification

US investors try to obtain international diversification through one of the following methods: (1) international mutual funds, (2) purchases of American depository receipts (ADRs), (3) direct purchases of foreign securities, (4) hedge funds, and (5) investment in US multinational companies.

### 16.3.1 International mutual funds

Investors may purchase shares of an international mutual fund with a small minimum investment, such as \$1,000. Several brokerage firms, such as Merrill Lynch, Goldman Sachs, and Fidelity, create and manage many families of international mutual funds. Mutual funds are perhaps the most important by-product of the portfolio theory developed by Markowitz and Sharpe. **Mutual funds** are financial institutions that accept money from savers and then use these funds to buy a variety of securities. **International mutual funds** are portfolios of securities from various countries.

International mutual funds have several advantages over individual foreign securities. First, international mutual funds pool funds and thus reduce risk by diversification. Second, investors would have to pay extra transaction and information costs if they attempted to buy foreign securities directly in foreign markets. Third, international mutual fund investors circumvent many legal and institutional barriers associated with direct portfolio investments in foreign markets.

There are two classes of international mutual funds: open-end and closed-end. **Open-end mutual funds** are funds whose total number of shares under management grows and shrinks as investors buy and sell the fund. They stand ready to issue and redeem shares at prices that reflect the net-asset value of underlying foreign shares. **Closed-end funds** are funds where the amount of money under management is fixed. They issue a fixed number of shares against an initial capital offering and these shares then trade in secondary markets at prevailing market prices. These shares are not redeemable at the underlying net-asset value of the underlying foreign shares. There are approximately 300 US-based international mutual funds, which can be grouped into several families of mutual funds from a US perspective:

- 1 Global funds invested in US and non-US securities.
- 2 International funds invested in only non-US securities.
- 3 Regional mutual funds invested in particular geographical areas.
- 4 Country funds invested in single countries.

### 16.3.2 *American depository receipts (ADRs)*

Investors may purchase ADRs, which are traded on organized exchanges and/or in the over-the-counter markets. ADRs are securities distributed in the USA backed by foreign stock. Exchanges around the world have listing requirements before they accept a firm's shares for trading. Rules for listing vary markedly from country to country, with US requirements being among the most restrictive. Banks have created ADRs so that foreign companies can avoid these restrictions on trading in the USA. The total number of ADRs listed on major US stock exchanges increased from 176 in 1990 to 550 in 2003. In addition, there are approximately 1,000 private ADRs, which are not listed and are harder for an individual to invest in. Figure 16.8 shows that ADRs have become a convenient investment vehicle on foreign securities in recent years.

**American depository receipts** represent the ownership of underlying foreign stocks that are held in custody by the bank that issues them. In other words, the bank holds the foreign shares and trades ADRs that represent title to those shares held on deposit. In effect, the bank owns the shares and trades claims against those shares. ADR investors are entitled to all the privileges of stock ownership including dividend payments. The bank, the issuer of ADRs, usually collects the dividends in local currency and transfers the dollar-equivalent to the ADR investors. Today, ADRs have become so popular that companies have begun to issue global depository receipts. **Global depository receipts** are similar instruments to ADRs, but can be simultaneously issued on stock exchanges all over the world.

### 16.3.3 *Direct purchases of foreign securities*

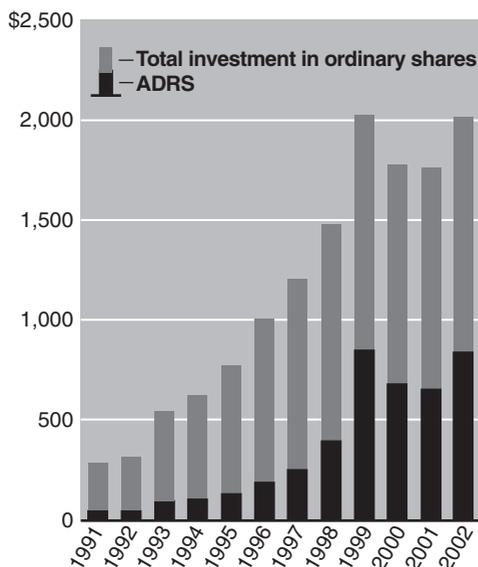
Investors may buy foreign securities listed on foreign exchanges through stockbrokers for inclusion in their portfolios. This method of international diversification, however, is not recom-

## Americans Look Abroad

US investors can buy stock in a non-US company by purchasing ordinary shares on US or foreign exchanges, or by purchasing American depository receipts (ADRs)

### ADRs become a convenient investment vehicle

ADR ownership as a part of US total investment in non-US companies; all figures in billions



Note: 2001 figure is preliminary; 2002 is forecast

### Companies that attract many US investors

Foreign-based companies with US ownership of 30% or more, ranked by their US sales

COMPANY (Country)	INDUSTRY	% OF STOCK WITH US OWNERSHIP
<b>BP</b> (UK)	Energy	<b>34%</b>
<b>Nortel Networks</b> (Canada)	Telecommunications	<b>60</b>
<b>Tyco Int'l</b> (Bermuda)	Diversified mfg/ services	<b>74</b>
<b>AXA Group</b> (France)	Financial services	<b>30</b>
<b>Unilever</b> (Netherlands/UK)	Consumer products	<b>32</b>
<b>News Corp.</b> (Australia)	Media, publishing	<b>39</b>
<b>Henkel</b> (Germany)	Chemicals, household cleaning prods, cosmetics	<b>31</b>

Source: Citibank

**Figure 16.8** Total American investment in foreign securities

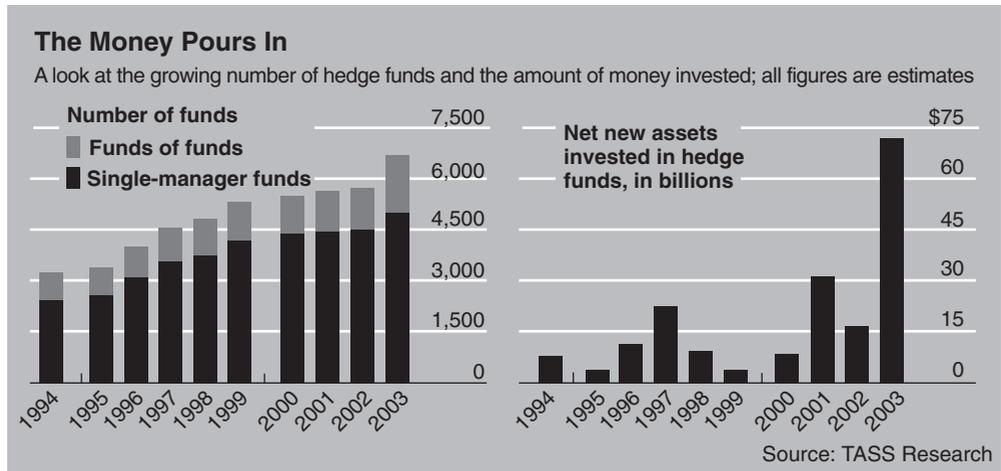
Source: *The Wall Street Journal*, July 2, 2001, p. C20.

mended for small investors because of market imperfections such as insufficient information, transaction costs, tax differentials among countries, and different exchange rate risks.

Alternatively, investors may invest in foreign securities listed on US exchanges in the same way as they can buy any US stock listed on a US exchange. Because the number of foreign securities listed on US exchanges is limited, this route by itself may be inadequate to obtain full international diversification benefits.

### 16.3.4 Hedge funds

**Hedge funds** are private partnerships with a general manager and a number of limited partners. Unlike other investment tools such as stocks and mutual funds, these hedge funds are largely unregulated investment pools open to only wealthy investors. Many hedge funds use short posi-



**Figure 16.9** Hedge funds: the number of funds and the net new assets

Source: *The Wall Street Journal*, July 11, 2004, p. C1.

tions, or bets that prices will fall, to offset their securities holdings. Some bet on cross-border mergers and acquisitions, convertible securities, or foreign currencies. They frequently use borrowed money in an effort to boost returns. Hedge funds have grown in popularity in recent years, both because of their oversized returns and their aura of exclusivity.

Figure 16.9 shows that the number of hedge funds operating worldwide by the end of 2003 had reached 6,500, with just under \$75 billion in net new assets invested in hedge funds during the year. Most hedge funds are small, with less than \$100 million in invested capital. A few dozen hedge funds have a capital base larger than \$1 billion. Most of these funds were reported as being based in the USA.

According to Tremont Capital's TASS Research hedge-fund tracking division, \$72.2 billion gushed into hedge funds in 2003, more than twice that in the next highest year. The trend has continued in 2004 and TASS estimated that there were 7,700 funds as of July 2004, with \$800 billion in assets under management.

Hedge funds have recently become the target of frequent criticism in the financial press, because of the lucrative compensation packages paid to management, the fact that they are unregulated, and the huge speculative positions taken by some hedge funds (see Global Finance in Action 16.1). For these reasons, experts suggest that an investor should ask the following questions before putting money into a hedge fund: First, how does the investment strategy work? Second, what are the risks? Third, what market conditions favor the manager's strategy – and which ones work against it? Fourth, what is the manager's experience and track record? Fifth, how long do I have to wait before I can withdraw my money? Sixth, how are the manager and the consultant helping select the hedge fund compensated?

## Global Finance in Action 16.1

### The Near Collapse of a Prominent Hedge Fund

In late September 1998, a group of large financial institutions urgently invested \$3.5 billion in Long-Term Capital Management (LTCM), a prominent hedge fund, to prevent its imminent collapse. These firms – Goldman Sachs, Merrill Lynch, Morgan Stanley Dean Witter, J. P. Morgan, Chase Manhattan, United Bank of Switzerland, and several others – had been encouraged to undertake the rescue by the Federal Reserve Bank of New York, which feared that a sudden failure of the fund could significantly disrupt world financial markets. The label “hedge fund” refers to investment companies that are unregulated because they restrict participation to a relatively small number of wealthy investors. The amount invested in hedge funds reached about \$300 billion by mid-1998.

The LTCM was formed in 1994, by a former Salomon vice chairman John Meirwellen, two Nobel laureates Robert Merton and Myron Scholes, former students of Professors Merton and Scholes, and several other prominent investors. The fund posted profits of 43 percent in 1995 and 41 percent in 1996. However, in August 1998 alone, LTCM's positions dropped 40 percent as a result of financial crises in Russia and several other countries. These bad outcomes were compounded by the huge amount of debt that LTCM had used to finance its transactions. Like other hedge funds, LTCM used derivative instruments to structure its investment transactions. Before its final crisis, LTCM had only \$4 billion of equity capital, but over \$100 billion in futures contracts, forward contracts, options, swaps, and other assets.

How could some of the world's best-known investors, some of the most famous economists, and some of the smartest mathematicians get crushed so quickly? LTCM had made a variety of investments all over the world, focused primarily on the expectation that various financial markets spread and volatility would converge to their historical norms. LTCM's leverage and its trading strategies made it vulnerable to the extraordinary financial market conditions that emerged after Russia's devaluation of the ruble and declaration of a debt moratorium on August 17, 1998.

Russia's actions sparked “a flight to quality” in which investors avoided risk and sought out quality. As a result, volatility, risk, and liquidity spreads rose sharply in markets around the world. For example, LTCM had made heavy bets that interest rates throughout Europe would move closer together as many of its nations moved toward monetary union. But with investors suddenly more eager to buy deutsche mark bonds, the spread between German and other European-government bonds widened rapidly – precisely what LTCM had bet against and thus causing the fund's bets to lose money. In another instance, the yield spread between US Treasuries and private securities also sharply widened – again what the fund had bet against.

*Source. The Economic Report of President to Congress, 1999, pp. 63–7.*

### 16.3.5 *Investment in US multinational companies*

It used to be the case that if you wanted to invest globally, you bought foreign stocks. But the recent wave of cross-border mergers and acquisitions along with accelerated globalization by US companies have turned many US shareholders into global investors, whether they like it or not. Thus, investors may choose securities of US-based multinational companies (MNCs) for their international portfolio diversification. An MNC represents a portfolio of international operations, thus its performance is somewhat insulated from US market downturns. An MNC can reduce risk by diversifying sales not only among industries, but also among countries. This means that the MNC as a single firm can achieve stability similar to that of an internationally diversified portfolio.

### 16.3.6 *Global investing*

Empirical studies conclude that international diversification pushes out the efficient frontier, thus allowing investors simultaneously to reduce risk and increase return. This benefit exists for a number of reasons. First, more profitable investments are possible in an enlarged universe, because faster-growing economies create higher returns or investors may see another advantage from currency gains. Second, the advantages of international diversification may occur because companies in different countries are subject to divergent cyclical economic fluctuations.

The US portion of total world capital markets has dropped from 70 percent in 1980 to 45 percent in 2000. During that same period, nondollar stock markets frequently outperformed their US counterparts. Yet the average American investor has less than 10 percent of his or her portfolio invested in international securities. Some stockbrokers, such as Launny Steffens, Executive Vice President of Merrill Lynch, think that investors would be better off patterning their asset allocations much more closely to total world capitalizations. Of course, opportunity varies region by region, country by country. And some regions and countries come with greater risk – liquidity, political, or currency risk.

The manager of a US stock fund has just one way to beat the competition, by making better stock picks. But an international stock fund manager has three different ways to add value: by picking countries, by picking currencies, and by picking stocks.

How can US investors best select a global fund? Some helpful hints may cut down on the potential for loss (Clements 1992). They are: (1) stick with large players in the global market; (2) combine funds to minimize the effect of the failure of one fund on the total portfolio; (3) select regional rather than totally global funds; (4) consider combining regional funds with stock or bond index funds; and (5) try publicly traded funds. These suggestions will not assure success, but can reduce the likelihood of failure.

## SUMMARY

Political and economic events in the 1980s and the 1990s underscored the growing importance of free flows of finance, trade, and investment among countries. These changes, along with an improved ability to collect and analyze data, give us low-cost information about foreign securities. As a result, investors are realizing substantial benefits from international investment. In this chapter, we saw that international stock and bond diversification can yield higher returns with less risk than investment in a single market.

In the past 20 years or so, researchers have convincingly argued, in terms of the mean-variance model, the case for international portfolio investments, as opposed to purely domestic diversification. A major reason for such a case is that international investment offers a broader range of opportunities than domestic investment even in a market as large as the USA or Europe. Studies have stressed the following two points: (1) adding foreign securities to a purely domestic portfolio reduces the total risk of the portfolio because of a low correlation between foreign securities and the domestic market; and (2) in the past, international portfolios could have yielded both a higher return and a lower volatility than purely domestic portfolios.

Even though investors are increasingly interested in foreign securities, investment in foreign securities represents a small portion of their total investment in stocks and bonds. Most commonly expressed barriers to international investment include: (1) excessive information and transaction costs; (2) double taxation of foreign investment profits; (3) foreign-exchange regulations and currency risk; (4) greater rate-of-return volatility; (5) unfamiliarity with operating procedures of foreign stock exchanges; (6) unavailability of high-quality financial data for foreign companies; and (7) significant delays of transactions and settlements associated with foreign securities.

## Questions

- 1 Discuss both unsystematic risk and systematic risk within an international context.
- 2 What is the market portfolio? Why is the market portfolio important?
- 3 Many studies have found that intercountry correlations tend to be substantially lower than intracountry correlations. Explain some reasons for this fact. What significance does this finding have for international investment?
- 4 Describe the efficient portfolio, the efficient frontier, and the optimum portfolio.
- 5 Is the standard deviation of bond returns in any particular market typically higher or lower than the standard deviation of stock returns in that market? Does this information make any difference for investors?
- 6 Is it possible for an international portfolio to reduce the domestic systematic risk?
- 7 Describe American depository receipts and global depository receipts.
- 8 What are the different methods of international diversification?

## Problems

- 1 The expected rate of return on the market portfolio is 20 percent. The riskless rate of interest is 10 percent. The beta of a multinational company is 0.5. What is the cost of this company's common equity?
- 2 At present, the riskless rate of return is 10 percent and the expected rate of return on the market portfolio is 15 percent. The expected returns for five stocks are listed below, together with their expected betas.

Stock	Expected return	Expected beta
A	0.22	1.5
B	0.30	1.3
C	0.12	0.8
D	0.15	0.7
E	0.14	1.1

On the basis of these expectations, which stocks are overvalued? Which stocks are undervalued?

- 3 The prices of a common stock were \$40, \$50, and \$60 for the last 3 days. Compute the average stock price and the standard deviation.
- 4 A portfolio manager wishes to invest a total of \$10 million in US and British portfolios. The expected returns are 15 percent on the US portfolio and 12 percent on the British portfolio. The standard deviations are 10 percent for the US portfolio and 9 percent for the British portfolio. Their correlation coefficient is 0.33. What is the expected return and standard deviation of an international portfolio with 25 percent invested in the US portfolio and 75 percent in the British portfolio?
- 5 An international portfolio with a total investment of \$10 million consists of a US portfolio and a foreign portfolio. The US portfolio requires an investment of \$5 million and the foreign portfolio requires an investment of \$5 million. The standard deviations are 4 percent for the US portfolio and 4 percent for the foreign portfolio.
  - (a) If these two portfolios are perfectly positively correlated, what is the standard deviation of the international portfolio?
  - (b) If the two portfolios have a correlation coefficient of 0.2, what is the standard deviation of the international portfolio?
  - (c) If the two portfolios are perfectly negatively correlated, what is the standard deviation of the international portfolio?

## REFERENCES

- Eaker, M. R. and D. M. Grant, "Currency Hedging Strategies for Internationally Diversified Equity Portfolios," *The Journal of Portfolio Management*, Fall 1990, pp. 30–2.
- Clements, J., "Choosing the Best Global Fund for You: Experts Offer Some Winning Strategies," *The Wall Street Journal*, Mar. 4, 1992, pp. C1, 14.
- Levy, H. and Z. Lerman, "The Benefits of International Diversification in Bonds," *Financial Analysts Journal*, Sept./Oct. 1988, pp. 56–64.
- Markowitz, H. M., *Portfolio Selection*, New York: John Wiley, 1959.
- Sharpe, W. F., "Capital Asset Prices: A Theory of Market Equilibrium Under Conditions of Risk," *Journal of Finance*, Sept. 1964, pp. 425–42.
- Sill, K., "The Gains from International Risk Sharing," *Business Review*, Federal Reserve Bank of Philadelphia, Third Quarter 2001, pp. 23–31.
- Simmons, K., "Should US Investors Invest Overseas?" *New England Economic Review*, Federal Reserve Bank of Boston, Nov./Dec. 1999, pp. 29–40.
- Solnik, B., *International Investments*, Reading, MA: Addison-Wesley, 1999.
- Thomas, L. R., "The Performance of Currency-Hedged Foreign Bonds," *Financial Analysts Journal*, May/June 1989, pp. 25–31.
- Taylor, F., "Global Investing: Why International, Why Now?" *Trusts & Estates*, Sept. 1998, pp. 12–16.

## Case Problem 16: Investing in DaimlerChrysler in the USA

Thirty-five years ago, when an Indiana accounting professor, Dan Edwards, placed an order to buy shares of Sony Corp., his broker tried to talk him out of it, saying "nobody has ever heard of that company." Nevertheless, Professor Edwards persisted, and his broker made the purchase. To begin with, it took 2 days for the order to go through; once it did, Professor Edwards couldn't find price quotes without calling his broker. When annual reports came, they were in Japanese.

How times have changed. Thanks largely to the rise of American depository receipts (ADRs), these days US investors can trade many foreign shares, such as DaimlerChrysler, with no more difficulty than it takes to buy domestic shares. Created in 1927 by financier J. P. Morgan as a way of facilitating US investment abroad, an ADR is a negotiable certificate issued by a US bank in the USA to represent the underlying shares of foreign stock, which are held in a custodian bank. ADRs are sold, registered, and transferred in the USA in the same way as any share of domestic stock. Fueled by Americans' interest in foreign markets, ADRs now account for more than 5 percent of all trading volume on the major US exchanges. Three of the 10 most active NYSE stocks in 1996 were ADRs – Telefonos de Mexico SA, Hanson PLC, and Glaxo Wellcome PLC. Currently, there are more than 1,400 ADRs in the USA. This figure represents a 50 percent increase from only 7 years ago. "The ADR market has grown like a jerry-

built house for the last few years," says Eric Fry, President of Holl International, a San Francisco management firm. "It started at 2,500 square feet, and now it's 14,000 square feet."

In 1993, Daimler-Benz management decided to adjust its financial reporting in order to list shares of stock as ADRs on the New York Stock Exchange (NYSE). This decision resulted from months of negotiations between Daimler-Benz, the NYSE, and the SEC (Securities and Exchange Commission). In 1993, Daimler-Benz saw profits fall by 25 percent from the previous year, and prospects for the future were not bright. The company relied historically on strong profits for cash flow; therefore, its management realized that it would have to look to other sources of cash to fund future growth. One way to raise funds was to issue shares of stock in foreign stock exchanges such as the NYSE.

Daimler-Benz was Europe's largest industrial company – best known for its vehicle division, Mercedes-Benz – but it consisted of 23 business units housed in five divisions: passenger cars, commercial vehicles, aerospace, services, and directly managed business. In November 1998, Daimler-Benz purchased Chrysler for \$40.5 billion in its ADRs, which created the world's second-largest company on the *Fortune* Global 500. This newly combined company, named DaimlerChrysler, became the fifth-largest automaker in the world ranked by production. The world's top five automakers based on 1998 production of cars and light trucks are GM (7.8 million units), Ford (6.5 million units), Toyota (4 million units), Volkswagen (3.9 million units), and DaimlerChrysler (3.6 million units).

Unlike other mergers, the overall goal of this merger is just growth. DaimlerChrysler said that it would generate annual savings and revenue gains of at least \$3 billion, with no plant closures or layoffs planned. The company's top integration priorities included: (1) combining efforts to boost Chrysler and Daimler sales in Asia and Latin America; (2) building and selling an extra 30,000 units of the Mercedes M-class sport-utility vehicle around the world; (3) identifying ways to use Daimler diesel engines in Chrysler cars and trucks; (4) developing a Daimler-Benz minivan, working with Chrysler's minivan platform team; (5) eliminating overlapping research into fuel cells, electric cars, and advanced diesel engines; and (6) consolidating the functions of marketing and finance.

Figure 16.10 shows that this combined company posted substantial gains in both sales and profits in 1998 over 1997. Furthermore, DaimlerChrysler predicted a 4 percent growth in sales and operating profit in 1999. Analysts did not dispute the company's forecast for even faster growth in sales and earnings beyond 1999. In just 4 months after the historic merger, however, the portion of US investors in DaimlerChrysler dropped from 44 percent in November 1998 to 25 percent in March 1999. In the meantime, the company's share price fell 21 percent from a 52-week high of \$108.625 on January 6, 1999, to \$86 on March 23, 1999, in NYSE composite trading. These two pieces of bad news – the drop in US ownership and the decline in the share price – caused DaimlerChrysler in March 1999 to abruptly end its efforts to purchase Japan's Nissan Motor Co.

Apparently, the overall goal of DaimlerChrysler at the time of their merger – just growth – turned out to be an unrealizable dream. Figure 16.11 shows that the company's revenues and profits fell sharply after their 1998 merger. Consequently, DaimlerChrysler announced its restructured plan for Chrysler Group in February 2001. Under this plan, the company would: (1) cut 26,000 jobs, close six plants, and reduce car and truck output by 15 percent; (2) lower parts and materials costs by \$7.8 billion through 2003; (3) cut manufacturing expenses by \$1.8 billion and sell noncore assets; (4) lower the break-even point from 113 percent to 83 percent;

## DaimlerChrysler's Dilemma

**Sales and profits are strong ...**  
In billions of euros

	1998	1997	PERCENT CHANGE
<b>Profit</b>	5.22	4.06	+29%
<b>Sales</b>	131.78	117.57	+12%

NOTE: Excludes merger costs and nonrecurring items

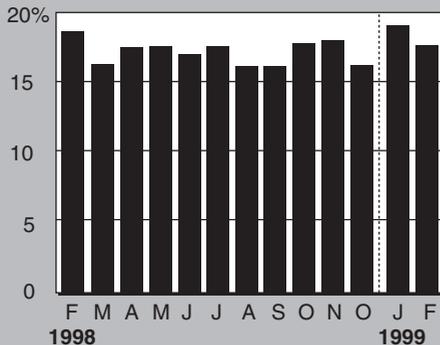
**But US investors are fleeing**

Percentage of DaimlerChrysler shareholders in the USA

<b>When the merger took effect in November 1998</b>	44%
<b>Now</b>	25%

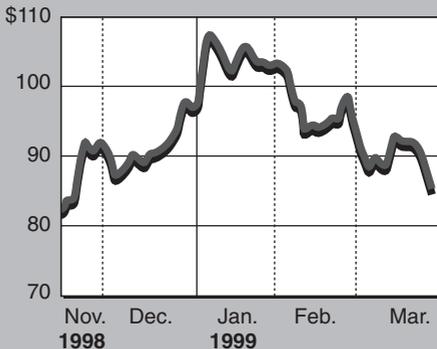
**US market share is steady ...**

Figure are for passenger and light trucks only



**Though the stock has declined**

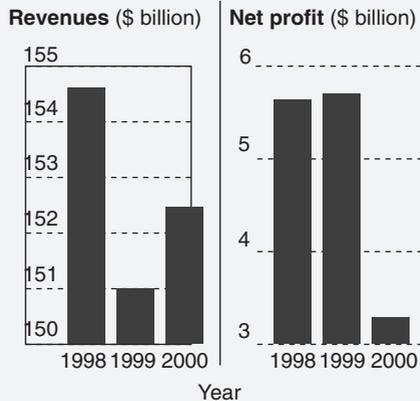
Symbol: DCX, daily stock price



Note: Until Nov. 1998, the companies operated independently as Daimler-Benz AG and Chrysler Corp.  
Source: The company, PricewaterhouseCoopers

**Figure 16.10** Key financial statistics of DaimlerChrysler

Source: J. Ball, "DaimlerChrysler Frets Over Loss of US Shareholders", *The Wall Street Journal*, Mar. 24, 1999; reprinted by kind permission.



**Figure 16.11** DaimlerChrysler's revenues and profits

Source: *The Detroit News*, Feb. 27, 2001, p. A4.

(5) reduce fixed costs by \$2.5 billion by cutting workforce, trimming white-collar benefits, and noncore asset sales; (6) increase annual revenues by \$4.8 billion by 2003; and (7) reduce engineering costs through a variety of actions. However, critics charge that DaimlerChrysler should have taken these actions when they merged in 1998. Some observers argue that all major merged companies restructure their business operations at the time of the merger by laying off thousands of workers, closing factories, firing long-time managers, and spinning off noncore businesses.

## Case Questions

- 1 Describe American depository receipts in some detail.
- 2 Why did Daimler-Benz and other foreign companies decide to list their ADRs on the NYSE?
- 3 Briefly describe how to choose ADRs.
- 4 What is the downside of ADR investment?
- 5 Both sales and profits in DaimlerChrysler posted big gains in 1998 and expected to increase even faster beyond 1999. In the meantime, the company's US ownership and share price declined sharply in the first 4 months after the merger. Explain this apparent conflict between the company's profits and its share price.
- 6 To list their stocks in the New York Stock Exchange, foreign companies have to comply with the registration and disclosure requirements established by the US Securities and Exchange Commission (SEC). Use the website of the SEC, [www.sec.gov/](http://www.sec.gov/), to review disclosure requirements in SEC final rules related to foreign investment and trade.

*Source:* M. Allen, "Foregoing Funds," *The Wall Street Journal*, June 27, 1996, Section R; J. Ball, "Daimler-Chrysler Frets Over Loss of US Shareholders," *The Wall Street Journal*, Mar. 24, 1999, p. B4; S. Carney and D. Howes, "Retooling Chrysler: Will it Work?" *The Detroit News*, Feb. 27, 2001, pp. A1, A4; C. Park, "Daimler to Make New York Debut in October," *The Financial Times*, July 28, 1993, p. 23; A. Raghavan and C. Harlan, "Daimler-Benz's Listing is Likely to Draw More Foreign Firms to the US Market," *The Wall Street Journal*, Mar. 3, 1993, p. A4; G. Stern and S. Lipin, "Proposed Merger of Automobile Titans May Spur Global Shake-out of Industry," *The Wall Street Journal*, May 7, 1998, p. A10; and G. Yip, "Home Advantage," *The Wall Street Journal*, Apr. 26, 1999, p. R12.