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

Background on International Stock Exchanges

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

Using the Web

Stock Exchange Information A summary of links to stock exchanges around the world is provided at http://123world.com/stockexchanges.

Reduction in Transaction Costs

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

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

When there are many more buy orders than sell orders for a given stock, the computer is unable to accommodate all orders. Some buyers will then increase the price they are willing to pay for the stock. Thus, the price adjusts in response to the demand (buy orders) for the stock and the supply (sell orders) of the stock for sale recorded by the computer system. Similar dynamics occur when a trading floor is used, but the computerized system has documented criteria by which it prioritizes the execution of orders; traders on a trading floor may execute some trades in ways that favor themselves at the expense of investors.

In recent years, electronic communications networks (ECNs) have been created in many countries to match orders between buyers and sellers. Like the Swiss stock exchange, ECNs do not have a visible trading floor: the trades are executed by a computer network. Examples of popular ECNs include Archipelago, Instinet, and Tradebook. With an ECN, investors can place orders on their computers that are then executed by the computer system and confirmed through the Internet to the investor. Thus, all parts of the trading process from the placement of the order to the confirmation that the transaction has been executed are conducted by computer. The ease with which such orders can occur, regardless of the locations of the investor and the stock exchange, is sure to increase the volume of international stock transactions in the future.

Impact of Alliances. Several stock exchanges have created international alliances with the stock exchanges of other countries, thereby enabling firms to more easily cross-list their shares among various stock markets. This gives investors easier and cheaper access to foreign stocks. The alliances also allow greater integration between markets. At some point in the future, there may be one global stock market in which any stock of any country can be easily purchased or sold by investors around the world. A single global stock market would allow U.S. investors to easily purchase any stock, regardless of where the corporation is based or the currency in which the stock is denominated. The international alliances are a first step toward a single global stock market. The costs of international stock transactions have already been substantially reduced as a result of some of the alliances.

Reduction in Information Costs

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

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

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

Measuring the Impact of Exchange Rates. The return to a U.S. investor from investing in a foreign stock is influenced by the return on the stock itself \( (R) \), which includes the dividend, and the percentage change in the exchange rate \( (e) \), as shown here:

\[
R_e = (1 + R)(1 + e) - 1
\]

A year ago, Rob Grady invested in the stock of Vopka, a Russian company. Over the last year, the stock increased in value by 35 percent. Over this same period, however, the Russian ruble’s value declined by 30 percent. Rob sold the Vopka stock today. His return is:

\[
R_e = (1 + .35)(1 + (-.30)) - 1 = - .055 \text{ or } -5.5\%.
\]

Even though the return on the stock was more pronounced than the exchange rate movement, Rob lost money on his investment. The reason is that the exchange rate movement of \(-30\%\) wiped out not only 30 percent of his initial investment but also 30 percent of the stock’s return.

As the preceding example illustrates, investors should consider the potential influence of exchange rate movements on foreign stocks before investing in those stocks. Foreign investments are especially risky in developing countries, where exchange rates tend to be very volatile.

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

Although hedging the exchange rate risk of an international stock portfolio can be effective, it has three limitations. First, the number of foreign currency units to be converted to dollars at the end of the investment horizon is unknown. If the units received from liquidating the foreign stocks are more (less) than the amount hedged, the investor has a net long (short) position in that foreign currency, and the return will be unfavorably affected by its depreciation (appreciation). Nevertheless, though the hedge may not be perfect for this reason, investors normally should be able to hedge most of their exchange rate risk.
A second limitation of hedging exchange rate risk is that the investors may decide to retain the foreign stocks beyond the initially planned investment horizon. Of course, they can create another short position after the initial short position is terminated. If they ever decide to liquidate the foreign stocks prior to the forward delivery date, the hedge will be less effective. They could use the proceeds to invest in foreign money market securities denominated in that foreign currency in order to postpone conversion to dollars until the forward delivery date. But this prevents them from using the funds for other opportunities until that delivery date.

A third limitation of hedging is that forward rates for currencies that are less widely traded may not exist or may exhibit a large discount.

International Stock Diversification

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

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

The risk of a stock portfolio can be measured by its volatility. Investors prefer a stock portfolio that has a lower degree of volatility because the future returns of a less volatile portfolio are subject to less uncertainty. The volatility of a single stock is commonly measured by its standard deviation of returns over a recent period. The volatility of a stock portfolio can also be measured by its standard deviation of returns over a recent period. The standard deviation of a stock portfolio is determined by the standard deviation of returns for each individual stock along with the correlations of returns between each pair of stocks in the portfolio, as shown below for a two-stock portfolio:

\[
\sigma_p = \sqrt{w_X^2 \sigma_X^2 + w_Y^2 \sigma_Y^2 + 2w_Xw_Y \sigma_X \sigma_Y \text{CORR}_{XY}}
\]

where \(w_X\) is the proportion of funds invested in stock X, \(w_Y\) is the proportion of funds invested in stock Y, \(\sigma_X\) is the standard deviation of returns for stock X, \(\sigma_Y\) is the standard deviation of returns for stock Y, and \(\text{CORR}_{XY}\) is the correlation coefficient of returns between stock X and stock Y. From this equation, it should be clear that the standard deviation of returns (and therefore the risk) of a stock portfolio is positively related to the standard deviation of the individual stocks included within the portfolio and is also positively related to the correlations between individual stock returns.

Much research has documented that stock returns are driven by their country market conditions. Therefore, individual stocks within a given country tend to be highly correlated. If country economies are segmented, their stock market returns should not be highly correlated, and therefore, the individual stocks of one country should not be highly correlated with individual stocks of other countries. Thus, investors should be able to reduce the risk of their stock portfolio by investing in stocks among different countries.
Limitations of International Diversification

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

Stock Market Performance Charts showing recent stock market performance for each market can be found at http://finance.yahoo.com/intlindices?u. The prevailing stock index level is shown for each country, as well as the performance of each market during the previous day. For some markets, you can assess the performance over the last year by clicking on Chart next to the country's name.

One reason for the increased correlations among stock market returns is increased integration of business between countries. Increased integration results in more inter-country trade flows and capital flows, which causes each country to have more influence on other countries. In particular, many European countries have become more integrated as regulations have been standardized throughout Europe to facilitate trade between countries. In addition, the adoption of the euro has removed exchange rate risk due to trade between participating countries.

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

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

Market Movements during the 1987 Crash. Further evidence on the relationships between stock markets is obtained by assessing market movements during the stock market crash in October 1987. Exhibit 3A.1 shows the stock market movements for four major countries during the crash. While the magnitude of the decline was not exactly the same, all four markets were adversely affected. When institutional investors anticipated a general decline in stocks, they sold some stocks from all markets, instead of just the U.S. market.

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

Market Movements during the Asian Crisis. In the summer of 1997, Thailand experienced severe economic problems, which were followed by economic downturns in several other Asian countries. Investors revalued stocks downward because of weakened
economic conditions, more political uncertainty, and a lack of confidence that the problems would be resolved. The effects during the first year of the Asian crisis are summarized in Exhibit 3A.2. This crisis demonstrated how quickly stock prices could adjust to changing conditions and how adverse market conditions could spread across countries. Thus, diversification across Asia did not effectively insulate investors during the Asian crisis. Diversification across all continents would have been a more effective method of diversification during the crisis.

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

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

**Valuation of Foreign Stocks**

When investors consider investing in foreign stocks, they need methods for valuing those stocks.

**Dividend Discount Model**

One possibility is to use the dividend discount model with an adjustment to account for expected exchange rate movements. Foreign stocks pay dividends in the currency in which they are denominated. Thus, the cash flow per period to U.S. investors is the dividend (denominated in the foreign currency) multiplied by the value of that foreign currency in dollars. The dividend can normally be forecasted with more accuracy than the value of the foreign currency. Because of exchange rate uncertainty, the value of the foreign stock from a U.S. investor’s perspective is subject to much uncertainty.

**Price-Earnings Method**

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

Other Methods

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

Why Perceptions of Stock Valuation Differ among Countries

A stock that appears undervalued to investors in one country may seem overvalued to investors in another country. Some of the more common reasons why perceptions of a stock’s valuation may vary among investors in different countries are identified here.

Required Rate of Return. Some investors attempt to value a stock according to the present value of the future cash flows that it will generate. The dividend discount model is one of many models that use this approach. The required rate of return that is used to discount the cash flows can vary substantially among countries. It is based on the prevailing risk-free interest rate available to investors, plus a risk premium. For investors in the United States, the risk-free rate is typically below 10 percent. Thus, U.S. investors would apply a required rate of return of 12 to 15 percent in some cases. In contrast, investors in a country such as Brazil would not be willing to accept such a low rate because their risk-free interest rate is commonly above 25 percent. If they can earn an annual return of 25 percent by investing in a risk-free asset, they would require a higher return than that before they would invest in risky assets such as stocks.

Exchange Rate Risk. The exposure of investors to exchange rate risk from investing in foreign stocks is dependent on their home country. Investors in the United States who invest in a Brazilian stock are highly exposed to exchange rate risk, as the Brazilian currency (the real) has depreciated substantially against the dollar over time. Brazilian investors are not as exposed to exchange rate risk when investing in U.S. stocks, however, because there is less chance of a major depreciation in the dollar against the Brazilian real. In fact, Brazilian investors normally benefit from investing in U.S. stocks because of the dollar’s appreciation against the Brazilian real. Indeed, the appreciation of the dollar is often necessary to generate an adequate return for Brazilian investors, given their high required return when investing in foreign stocks.
**Taxes.** The tax effects of dividends and capital gains also vary among countries. The lower a country’s tax rates, the greater the proportion of the pre-tax cash flows received that the investor can retain. Other things being equal, investors based in low-tax countries should value stocks higher.

The valuation of stocks by investors within a given country changes in response to changes in tax laws. Before 2003, dividend income received by U.S. investors was taxed at ordinary income tax rates, which could be nearly 40 percent for some taxpayers. Consequently, many U.S. investors may have placed higher valuations on foreign stocks that paid low or no dividends (especially if the investors did not rely on the stocks to provide periodic income). Before 2003, the maximum tax on long-term capital gains was 20 percent, a rate that made foreign stocks that paid no dividends but had high potential for large capital gains very attractive. In 2003, however, the maximum tax rate on both dividends and long-term capital gains was set at 15 percent. Consequently, U.S. investors became more willing to consider foreign stocks that paid high dividends.

**Methods Used to Invest Internationally**

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

- Direct purchases of foreign stocks
- Investment in MNC stocks
- American depository receipts (ADRs)
- Exchange-traded funds (ETFs)
- International mutual funds (IMFs)

Each approach is discussed in turn.

**Direct Purchases of Foreign Stocks**

Foreign stocks can be purchased on foreign stock exchanges. This requires the services of brokerage firms that can contact floor brokers who work on the foreign stock exchange of concern. However, this approach is inefficient because of market imperfections such as insufficient information, transaction costs, and tax differentials among countries.

An alternative method of investing directly in foreign stocks is to purchase stocks of foreign companies that are sold on the local stock exchange. In the United States, for example, Royal Dutch Shell (of the Netherlands), Sony (of Japan), and many other foreign stocks are sold on U.S. stock exchanges. Because the number of foreign stocks listed on any local stock exchange is typically quite limited, this method by itself may not be adequate to achieve the full benefits of international diversification.

**Investment in MNC Stocks**

The operations of an MNC represent international diversification. Like an investor with a well-managed stock portfolio, an MNC can reduce risk (variability in net cash flows) by diversifying sales not only among industries but also among countries. In this sense, the MNC as a single firm can achieve stability similar to that of an internationally diversified stock portfolio.
If MNC stocks behave like an international stock portfolio, then they should be sensitive to the stock markets of the various countries in which they operate. The sensitivity of returns of MNCs based in a particular country to specific international stock markets can be measured as:

\[
R_{MNC} = a_0 + a_1 R_L + b_1 R_{I,1} + b_2 R_{I,2} + \cdots + b_n R_{I,n} + u,
\]

where \( R_{MNC} \) is the average return on a portfolio of MNCs from the same country, \( a_0 \) is the intercept, \( R_L \) is the return on the local stock market, \( R_{I,1} \) through \( R_{I,n} \) are returns on foreign stock indices \( I_1 \) through \( I_n \), and \( u \) is an error term. The regression coefficient \( a_1 \) measures the sensitivity of MNC returns to their local stock market, while coefficients \( b_1 \) through \( b_n \) measure the sensitivity of MNC returns to the various foreign stock markets. Studies have applied the time series regression model specified here and found that MNCs based in a particular country were typically affected only by their respective local stock markets and were not affected by other stock market movements. This suggests that the diversification benefits from investing in an MNC are limited.

**American Depository Receipts**

Another approach is to purchase American depository receipts (ADRs), which are certificates representing ownership of foreign stocks. More than 1,000 ADRs are available in the United States, primarily traded on the over-the-counter (OTC) stock market. An investment in ADRs may be an adequate substitute for direct investment in foreign stocks. Only a limited number of ADRs are available, however.

**ADR Performance** The performance of ADRs is provided at [http://www.adr.com](http://www.adr.com). Click on Industry to review the stock performance of ADRs within each industry. The website provides a table that shows information about the industry, including the number of ADRs in that industry, and the 6-month and 12-month returns. Click on any particular industry of interest to review the performance of individual ADRs in that industry.

**Exchange-Traded Funds (ETFs)**

Although investors have closely monitored international stock indexes for years, they were typically unable to invest directly in these indexes. The index was simply a measure of performance for a set of stocks but was not traded. Exchange-traded funds (ETFs) represent indexes that reflect composites of stocks for particular countries; they were created to allow investors to invest directly in a stock index representing any one of several countries. ETFs are sometimes referred to as world equity benchmark shares (WEBS) or as iShares.

**International Mutual Funds**

A final approach to consider is purchasing shares of international mutual funds (IMFs), which are portfolios of stocks from various countries. Several investment firms, such as Fidelity, Vanguard, and Merrill Lynch, have constructed IMFs for their customers. Like domestic mutual funds, IMFs are popular due to (1) the low minimum investment necessary to participate in the funds, (2) the presumed expertise of the portfolio managers,
and (3) the high degree of diversification achieved by the portfolios’ inclusion of several stocks. Many investors believe an IMF can better reduce risk than a purely domestic mutual fund because the IMF includes foreign securities. An IMF represents a prepackaged portfolio, so investors who use it do not need to construct their own portfolios. Although some investors prefer to construct their own portfolios, the existence of numerous IMFs on the market today allows investors to select the one that most closely resembles the type of portfolio they would have constructed on their own. Moreover, some investors feel more comfortable with a professional manager managing the international portfolio.