International Equity Investing: Long-Term Expectations and Short-Term Departures*

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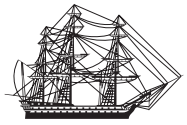

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Executive summary

The main benefit of investing internationally is greater portfolio diversification. While this benefit is clear and significant over the long term, it is sometimes not apparent over shorter investment horizons. By focusing on the cyclical phenomena of bull and bear equity markets—which can obscure the long-term case for international investing—this paper shows that a portfolio diversified into non-U.S. stocks has typically provided higher returns or lower volatility than a U.S.-only portfolio over such periods. However, we contend that behavioral and practical considerations call for a smaller allocation than standard theory may suggest. Practical factors such as transaction costs and the need to fund local liabilities can engender home-country bias. In the end, investors deciding how much to allocate internationally must weigh the expectations of long-run risk-adjusted return against the potential regret of underperforming benchmarks or peer-group averages over shorter investment horizons.

Some investors suggest that domestically traded multinational companies can provide exposure to international markets. However, historical data show that multinationals' returns tend to move with the swings of the U.S. market, irrespective of the location of their foreign operations. Multinationals provide little in the way of global diversification (Rowland and Tesar, 2000; McEnally and Cristophe, 2000).

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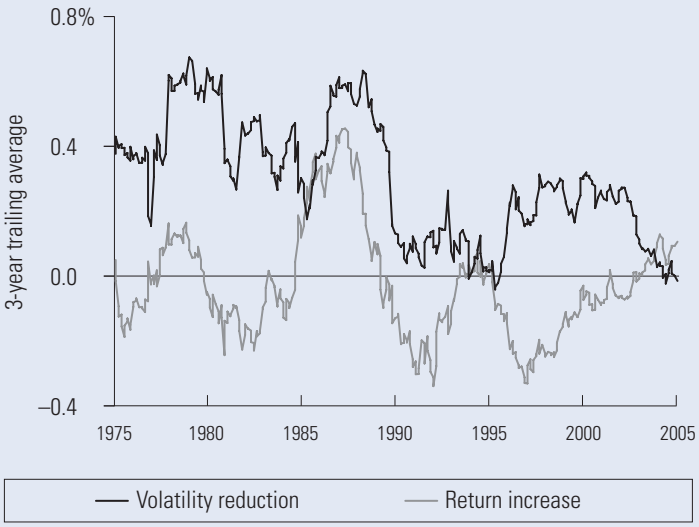
Figure 1. Volatility reduction and return enhancement from international investing



Note: Return increase is the difference between the return of the 80% U.S./20% MSCI EAFE portfolio and the 100% U.S. portfolio. Volatility reduction is the volatility difference between the 80% U.S./20% MSCI EAFE portfolio and the 100% U.S. portfolio. U.S. equities are represented by the Dow Jones Wilshire 5000 Composite Index. EAFE equities are represented by the MSCI EAFE Index (see footnote 1).
The performance data shown represent past performance, which is not a guarantee of future results. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.
Sources: Dow Jones and MSCI; author's calculations.

Introduction

The long-term case for international investing is powerful. In the short term, however, the benefits aren't always clear. This dichotomy has contributed to widespread disagreement about the role of international securities in a portfolio, as well as to pronounced "instability" in investors' attitudes toward international investing. During the late 1990s, as the U.S. stock market outperformed international markets, the case for international investing came under attack. More recently, high returns from international stocks have restored enthusiasm for international investing among U.S. investors.

This paper examines international investing over both the long and the short term. We conclude that the primary benefit of international investing in the long run is diversification. As Figure 1 illustrates, since 1975, an allocation to Europe, Australasia, and the Far East equities (as represented by the Morgan Stanley Capital International Europe, Australasia, Far East [MSCI EAFE] Index[1]) has almost always produced a diversification benefit, reducing a portfolio's volatility over rolling three-year periods.[2] The lower line indicates that international investments have sometimes augmented and sometimes diminished the return of a portfolio invested 80% in the United States and 20% in EAFE relative to the return of a portfolio invested only in U.S. stocks in any one period. Over time, however, the returns of U.S. and international stocks have been very similar. Despite their long-term similarities in return and volatility, the combination of U.S. and international stocks has produced superior long-term volatility-adjusted returns because of these stocks' less-than-perfect correlation. International differences in economic cycles, fiscal and monetary policies, currencies, and sector weightings suggest that international correlations should be less than perfect. As long as international and U.S. stock returns are imperfectly correlated in the long run, a diversification benefit will exist.

The obvious long-term diversification benefits of international investing may, however, be undetectable in the short term. In the short term, realized return, volatility, and correlation may vary considerably from reasonable long-term expectations. Over short periods of time, the major benefit of international investing may be a higher return or lower volatility. Correlations—the basis of the long-term case for international investing—are relatively unhelpful in the short run.

1 The MSCI EAFE Index is a free float-adjusted market-capitalization index for Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom (source: MSCI).

2 This paper focuses on developed equity markets. See Yesim Tokat (2006) for an analysis of the case for emerging equity markets.

We analyzed two short-term phenomena that can obscure the long-term case for international investing: the cycle of bull and bear markets and stock market booms and bubbles. Historical data indicate that when the United States is in a bear market, other markets tend to experience bear markets as well, increasing the short-term correlation between markets. In a prototypical stock market boom and bubble, investors worldwide tend to grow exceptionally optimistic about major technological innovations that seem to promise enormous productivity growth. Stock markets worldwide boom, and again, short-term correlations rise. However, these factors do not necessarily reduce the short- or long-term benefits of international investing.

The appropriate allocation to international stocks for any one investor depends in part on the investor's comfort with short-term divergences from reasonable long-term expectations. Stated differently, determining the right allocation is dependent on balancing the investor's desire for the best risk-adjusted returns against the potential regret of underperforming a benchmark or peer-group average in any one time period. Efficient market theory and mean-variance analysis suggest that the investor should have a substantial allocation to international stocks. Behavioral and practical considerations call for a smaller allocation. Our review of the long- and short-term evidence, as well as of considerations not captured in the performance data, can help investors determine the right allocation for their unique situations.

Forming expectations: The long-term perspective

The case for international investing assumes that most investors seek the highest possible returns while minimizing the variability of returns. To determine whether international stocks can help a portfolio achieve this goal, it's necessary to estimate three factors: the average returns of international and U.S. markets, the variability of these returns, and the correlation of returns from these markets.[3] We base our future expectations for these characteristics, in part, on the results of the U.S. and international markets from 1971 to 2005.

Returns and variability

Historical data indicate that the average returns[4] and volatility of the international developed markets (as represented by the MSCI EAFE Index) and the U.S. stock market have been very similar over the long term, as shown in Table 1 on page 4.[5] These results are intuitive. Business and stock market cycles may provide a return advantage to a region or country over short and intermediate time horizons, but these differences tend to even out in the long term simply because developed economies grow at similar rates. In addition, while currency fluctuations can significantly affect international returns in the short and intermediate term, the inflation-adjusted exchange rates between the currencies of developed countries have remained roughly constant over the long run, minimizing the impact of currency fluctuations on long-term returns.

3 The square of the correlation (R^2) indicates the percentage of common variance between two markets. The correlation of the U.S. and international markets during 1971–2005 was approximately 56%, indicating that 31% of the movements in stock prices were common to the U.S. and international markets and that 69% of the price movements were independent.

4 Arithmetic mean is used throughout the paper unless otherwise noted.

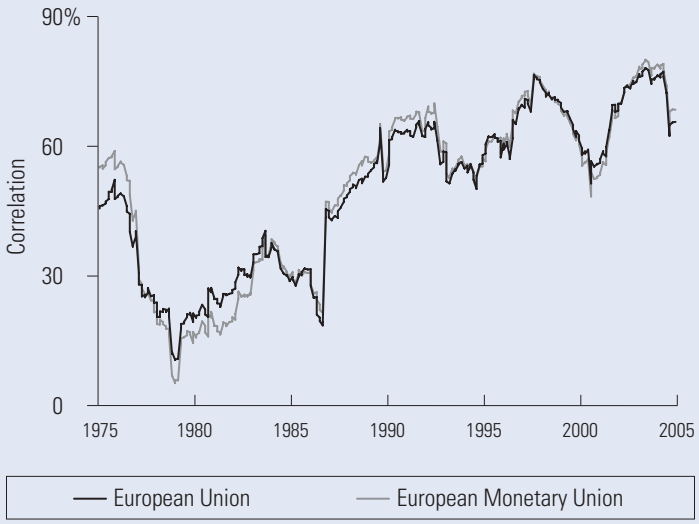
5 Elroy Dimson et al. (2001) analyzed the financial markets of 16 developed countries from 1900 through 2000. They found that U.S. equities provided higher returns than equities in ten of those countries and lower volatility than stocks in ten of them. Note that the United States emerged as the world's foremost economic power over the course of the 20th century. As the United States is now a mature developed economy, it is prudent to expect the U.S. market to perform similarly to other developed markets.

Table 1. Annualized average returns and volatility for U.S. and international markets, 1971–2005

	1971–2005		1971–1980		1981–1990		1991–2005	
Market	Return	Volatility	Return	Volatility	Return	Volatility	Return	Volatility
U.S.	12.12%	15.71%	10.74%	16.87%	13.32%	16.71%	12.23%	14.24%
EAFE	12.65	16.68	14.25	16.07	17.65	19.39	8.24	15.05
EAFE ex-Japan	12.77	16.63	12.46	17.71	15.58	17.96	11.10	14.95
Europe	13.13	16.73	12.14	17.66	17.01	18.16	11.20	15.08
Pacific	13.45	20.87	20.13	19.06	19.12	24.22	5.22	19.45
Pacific ex-Japan	13.43	23.79	19.18	28.21	9.57	24.28	12.18	20.02

Note: The Dow Jones Wilshire 5000 Index, a market-capitalization-weighted index, represents the U.S. market. The MSCI Europe Index, a free float-adjusted market-capitalization index, represents the European market. The MSCI Pacific Index, a free float-adjusted market-capitalization index, represents the Pacific markets.
Sources: Dow Jones and MSCI; author's calculations.

Figure 2. Average EU and EMU 3-year rolling correlations



Note: EU and EMU countries that had data since 1973 were included in this calculation. EU countries that met this criterion were Austria, Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, and the United Kingdom. EMU countries that met the criterion were Austria, Belgium, France, Germany, Ireland, Italy, and the Netherlands. The reported correlation is the equal-weighted average correlation. All returns are denominated in U.S. dollars and are unhedged total returns.
Sources: Thomson Datastream; author's calculations.

As indicated in Table 1, currency risk has had some impact on the volatility of returns, increasing the volatility of international stocks somewhat. When currency risk is hedged away, the volatility of international stock returns declines (though it remains higher than the volatility of U.S. stocks). The long-run data and an evaluation of the economic similarities between developed markets suggest that it is reasonable to assume that these long-term similarities between average returns and volatility in the U.S. and international stock markets are likely to persist over comparable time periods.

Correlation

If future long-term returns and volatility are expected to be similar, the case for international investing hinges on the correlation between international markets. An increase in long-term correlations could make international investing less attractive than it has been over the long-term history. However, as long as there is less than perfect correlation, meaning that international markets do not move in lockstep with each other, allocating some assets to international investments should reduce the volatility of an investor's portfolio.

Estimates of future long-term correlations are based in part on the historical record and in part on reasonable assumptions about the likely course of global economic and financial integration. Historical evidence suggests that the financial and economic integration of different regions—through trade and financial flows—increases the correlation between these regions' financial markets and economies (Bekaert and Harvey, 2000).

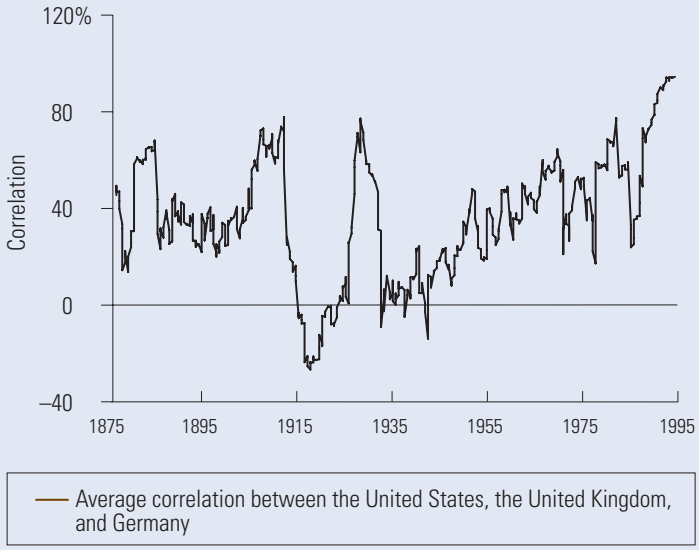
Since the 1990s, the pace of global economic and financial integration has accelerated rapidly. National firms are becoming multinationals. These companies conduct a greater percentage of their business outside their home borders, which may expose them to risks similar to those faced by companies domiciled abroad. Stock exchanges are merging and creating alliances across regions, increasing investors' ability to trade globally. Efforts to globalize standards of accounting and corporate governance are under way. Some of the most visible examples of economic integration are the treaties signed by developed and less-developed countries during the 1990s, most notably:

- The European Union's (EU) Maastricht Treaty (1992).
- The Asian Free Trade Agreement (AFTA) (1992).
- The North American Free Trade Agreement (NAFTA) (1994).
- The World Trade Organization (WTO), an international organization governing the rules of trade between nations (1995).

Figure 2 shows that the average correlation between countries in the EU and the European Monetary Union (EMU) increased from 40% in the 1970s and 1980s to 60% in the 1990s, which can be attributed in part to increased financial and economic integration.[6] The European Parliament was established in 1967, and European countries increased their cooperation over the years leading to the Maastricht Treaty. The "single market" was formally completed at the end of 1992, removing all barriers to trade and turning the EU into a genuine single market in which goods, services, people, and capital could move freely. A single currency—the euro—was introduced on January 1, 2002, when euro notes and coins replaced national currencies in the 12 countries (out of 15 then-existing EU members) that formed EMU.

Similar relationships between financial and economic integration and stock market correlations are apparent throughout the history of developed markets. As shown in Figure 3, the correlation between the U.S., U.K., and German stock exchanges

Figure 3. Historical diversification benefits across the U.S., U.K., and German equity markets



Note: The reported rolling five-year correlation is the equal-weighted correlation of the U.S., U.K., and German equity markets. All quarterly returns are denominated in local currencies.
Source: Global Financial Data, Inc.

6 Ten countries that joined the EU on May 1, 2004, were excluded from the analysis.

has waxed and waned since 1875, rising during periods of increased integration and diminishing during periods of less integration. For example, the European colonial era, from 1875 to 1914, was marked by a high degree of economic and financial integration among different regions, and as a result, stock market correlations rose.

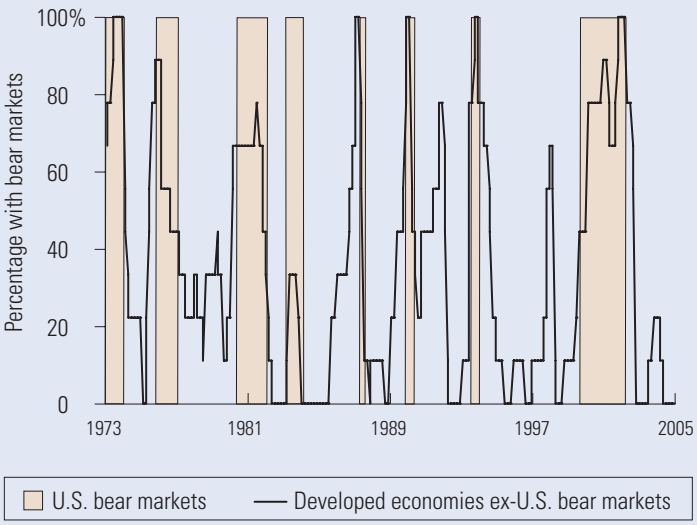
By contrast, the period from 1915 to 1971, which encompassed two World Wars, the frostiest years of the Cold War, and the Bretton Woods era of capital controls and fixed exchange rates, was marked by a low degree of international integration and relatively low correlations between international markets, and thus there was greater opportunity to diversify internationally. Since 1972, the post-Bretton Woods era of flexible exchange rates has meant that capital controls are no longer needed to keep the exchange rates fixed, encouraging the integration of capital markets. Global economic and financial integration has accelerated during this period, and consistent with earlier periods of financial and economic integration, stock market correlations have increased (Goetzmann et al., 2001).

If recent trends of financial and economic integration continue, long-term stock market correlations may be higher in the future than in the past 30 years. By assuming a somewhat arbitrary—but reasonable—future correlation, we can use a standard mean-variance framework to determine the allocation to international stocks that would deliver the highest volatility-adjusted return.

The Mean-Variance Solution

As noted earlier, it's reasonable to assume that, in the foreseeable future, the relationship between, and the magnitude of, U.S. and international average returns and volatility will be similar to past measures. If expected returns and volatilities are similar to their historical values, the case for international investing rests on the future value of the correlation. At the current correlation of 56%, the mean-variance framework suggests that an allocation of 50.5% of equities to international would maximize the volatility-adjusted return. If the correlation were to rise, diminishing the diversification benefits of international stocks, the optimal allocation would change. For example, an increase in the long-term correlation from 56% to 70% would change the recommended international allocation based on mean-variance analysis from 50.5% to 51.8%.[7]

Figure 4. Bear markets in the United States coincide with those elsewhere



Note: Shaded areas represent U.S. bear markets. The percentage of countries with bear markets equals the number of countries with bear markets divided by the total number of countries. The developed countries include the United States, Canada, Germany, France, the United Kingdom, Italy, Switzerland, Austria, Japan, and Australia (Sweden, New Zealand, and Spain were excluded from the analysis because they did not have equity market data for the entire period).
Sources: Thomson Datastream; author's calculations.

7 From 1971 to 2005, the MSCI EAFE Index's return was slightly higher than the Dow Jones Wilshire 5000 Index's return. Therefore, an increase in correlations reduces the Dow Jones Wilshire 5000 exposure based on mean-variance analysis.

Forming expectations: The short-term perspective

If the short-term scenario were simply an abbreviated version of the long-term one, then the case for international investing would be settled. In the short term, however, markets can deviate significantly from long-term expectations. The long-term diversification benefits of international investing can be obscured by the short-term economic and financial factors that dominate a portfolio's performance in any given period.

An examination of the factors that drive short-term performance may help investors to resist the strong temptation to believe that the stock market's behavior in any one period invalidates the long-term case for international investing. Short-term performance may seem to contradict the long-term case for international investing because, in the short run, return and volatility differentials between markets may dominate the benefits of international investing. Correlation—the cornerstone of the long-term case for international investing—plays a minor role. For example, in 2000, when the 3-year correlation was a high 78%, the lower volatility of international developed markets (as represented by the MSCI EAFE Index) relative to U.S. stocks provided a greater reduction in the volatility of portfolio returns than during 1993–1995, a period when the correlation was lower (see Figure 1 on page 2). To provide perspective on the inevitable deviations from long-term expectations during the short term, we analyzed two short-term phenomena that raise the most troubling questions about the value of international diversification: the cycle of bull and bear markets and stock market booms and bubbles.

The correlation between the U.S. stock market and other developed stock markets has been generally higher during U.S. bear markets. However, even when the correlation is high, international investing may provide the short-term benefit of higher returns (as during most U.S. bear markets) or lower volatility (as during the technology bubble).

International diversification in bull and bear markets

Historical evidence suggests that the returns of the equity markets of the larger economic powers have had a significant impact on the returns of the equity markets of smaller countries. Kristin J. Forbes and Menzie D. Chinn (2003) reported that the performance of the U.S. equity market has had a significant effect on the returns of most global markets, while the performance of the Japanese equity market has had a meaningful effect on the returns of Asian equity markets. The returns of stock markets in Germany, France, and the United Kingdom have had a significant effect on the results of markets in the rest of Europe.

Identifying bull and bear markets

"Bull" markets are periods of a generalized uptrend in stock prices (with positive returns), while "bear" markets are periods of a generalized downtrend (with negative returns). Identifying bull and bear markets requires establishing the market's turning points—the peaks and troughs in a series of stock prices that signal a change in the market's trend. There is no widely accepted institution that dates bear and bull markets. We define a peak as a price index's highest level relative to the previous and subsequent eight months (Pagan and Sossounov, 2003). In other words, a peak is the highest level of a price index in a 16-month period, with eight months of rising prices followed by eight months of generally declining prices. A trough is defined as a price index's lowest level in a 16-month period, with eight months of falling prices followed by eight months of generally rising prices. The market is bullish if the price index is rising from its most recent trough to the nearest peak and bearish if the index is falling from the peak to the trough.

To ensure that we do not identify spurious peaks and troughs:

- We eliminate turns within eight months of the beginning or end of the series.
- We enforce alternations of peaks and troughs. A peak always follows a trough and vice versa. Alternation is achieved by taking the highest (lowest) of two consecutive peaks (troughs).

When there is a bear market in U.S. stocks, other markets tend to experience bear markets as well, increasing the correlation between markets (see the definition of a bear market on page 7). For example, from 1973 to 2005, more than 70% of developed countries experienced bear markets in stocks when there was a U.S. bear market, with the exception of the 1983–1984 bear market (see Figure 4 on page 6).

Table 2 shows that the U.S. stock market–EAFE stock market correlation was generally higher during U.S. bear markets than during U.S. bull markets, even when the dramatic U.S.-led global crash in 1987 is excluded. The correlation between the returns of the U.S. and EAFE stock markets during the most recent U.S. bear market increased to 86%.

The worldwide economic and financial dominance of the United States has diminished diversification opportunities for U.S. investors because of the country's powerful influence on the performance of other stock markets.

Investors residing in less economically dominant countries should benefit more from international diversification than their U.S. counterparts. (For example, we observed a weaker relationship between bear markets in Switzerland and those in other developed countries.) It's worth noting, however, that correlation is a measure of direction, not magnitude. The lower intensity of the international bear markets and the time lags between bear markets in different countries may still provide opportunities for U.S. investors to enhance their returns and reduce their risk through international investments. For the 1971–2005 period, EAFE markets provided higher returns (although still negative) than the U.S. market during U.S. bear markets, but lower returns than the U.S. market during U.S. bull markets (see Table 3).

During past U.S. bear markets, the primary benefit of international investing was higher returns, not volatility reduction. Both the MSCI EAFE Index and the Dow Jones Wilshire 5000 Index experienced higher volatility during U.S. bear markets. For a given correlation level, a proportional increase in the volatility of assets provides greater diversification. However, the high return correlation between U.S. and EAFE stocks worked against this effect, reducing the diversification benefits. During U.S. bear markets, a 20% allocation to stocks in EAFE provided, on average, 2.18% greater return and only 0.73% lower volatility than a portfolio made up of U.S. stocks solely. This result was evident in six out of eight bear markets.[8]

Table 2. Correlation between EAFE and U.S. stock markets in different market environments

1971–2005		1971–1986		1988–2005	
Bear	Bull	Bear	Bull	Bear	Bull
65%	47%	52%	39%	75%	54%

Note: The Dow Jones Wilshire 5000 Index represents the U.S. market. The MSCI EAFE Index represents the European and Far East markets. See John Rea and Richard Marcis (1996) for bull and bear market cycles from 1971 to 1991.
Sources: MSCI and Dow Jones; author's calculations.

Table 3. Annualized average returns and volatility of international equities in U.S. bear and bull markets, 1971–2005

	Bear market		Bull market	
Market	Return	Volatility	Return	Volatility
U.S.	–15.83%	16.54%	24.23%	13.98%
EAFE	–4.91	18.00	20.25	15.60
80% U.S./20% EAFE	–13.65	15.81	23.44	12.95

Note: The Dow Jones Wilshire 5000 Index represents the U.S. market. The MSCI EAFE Index represents the European and Far East markets. See John Rea and Richard Marcis (1996) for bull and bear market cycles from 1971 to 1991.
Sources: MSCI and Dow Jones; author's calculations.

8 In two bear markets, November 1980 through July 1982 and March 2000 through September 2002, international diversification reduced portfolio return.

During U.S. bull markets, by contrast, the benefit of international investing was diversification, not higher returns. During U.S. bull markets, a 20% allocation to stocks in EAFE provided, on average, 0.79% less return and 1.03% lower volatility than a U.S.-only portfolio. Diversification benefits have been more prominent during bull markets because the correlation between equities in the United States and those in EAFE has declined during U.S. bull markets.

Prudent investors should expect significant short-term deviation in returns from reasonable long-term expectations. Bear and bull markets are notoriously difficult to predict in all developed markets. Often, reacting to short-term deviations hurts performance.

Bubbles and booms affect short-term returns, volatility, and correlations

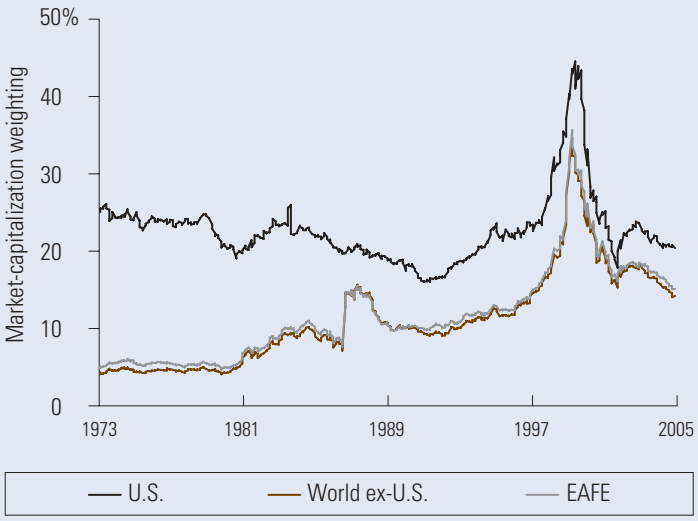
Another short-term challenge to the case for international investing has been global stock markets' occasional bubbles and booms. Financial markets' history shows that investors worldwide tend to be exceptionally optimistic about major technological innovations that seem to promise enormous productivity growth. At such times, stock markets worldwide boom, and international correlations rise. When a technological innovation fails to meet those expectations, returns subsequently decline and correlations subside.

Table 4. The technology bubble (January 1998–March 2000) and the subsequent correction (April 2000–December 2002)

	Bubble		Correction	
	EAFE	U.S.	EAFE	U.S.
Average return	20.37%	22.24%	–18.83%	–6.34%
Volatility	16.25	18.14	16.21	19.21
Correlation	80	—	86	—

Note: The Dow Jones Wilshire 5000 Index represents the U.S. market. The MSCI EAFE Index represents the European and Far East markets.
Sources: MSCI and Dow Jones; author's calculations.

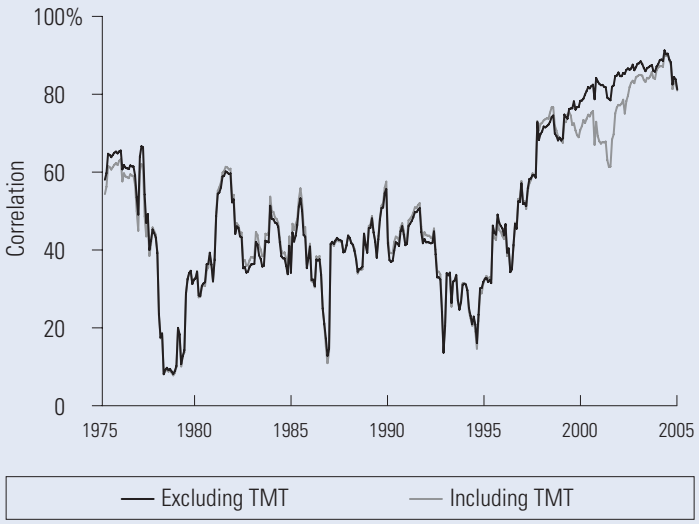
Figure 5. The market-capitalization weighting of the TMT sector



Note: All returns are denominated in U.S. dollars and are unhedged. The Europe, Australasia, Far East Index used in this figure is a market-capitalization-weighted performance index for Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, and the United Kingdom constructed from the individual country indexes in Thomson Datastream. Although the Datastream Europe, Australasia, Far East Index and the MSCI EAFE Index cover the same countries, the performance statistics of the Datastream Europe, Australasia, Far East Index deviate somewhat from those of the MSCI EAFE Index due to index-construction differences.
The performance data shown represent past performance, which is not a guarantee of future results.
Sources: Thomson Datastream; author's calculations.

The worldwide bubble in telecommunications, media, and information technology (TMT) stocks during the second half of the 1990s is an example. During the bubble, stock markets worldwide provided extraordinary returns. The U.S. market led the bubble with a higher average return and higher volatility than the rest of the developed world (see Table 4). A surge in the TMT sector's market capitalization and correlation across all markets contributed to a sharp rise in the overall correlation between worldwide stock markets. These developments are illustrated in Figures 5 (above) and 6 (on page 10).

Figure 6. Correlation between the United States and EAFE with and without the TMT sector for 3-year rolling periods



Sources: Thomson Datastream and Dow Jones; author's calculations.

Figure 6 also shows that when the TMT sector is excluded, correlation declines considerably, falling within the high end of the historical range, observed in the 1970s. After the collapse of the technology bubble and the attendant decline in TMT stocks' market capitalization, the sector's impact on correlation faded. However, during the post-bubble correction, correlations were still elevated due to the deep worldwide bear market (see Table 4 on page 9).

A historical parallel can be found in the 1920s, which was a period of rapid economic growth accompanied by the proliferation of automobiles, electricity, and radio (Shiller, 2001). Investor optimism led to a bull market in the developed economies not unlike that of the 1990s, with both the U.S. and the U.K. stock markets experiencing double-digit growth rates (DeLong and Grossman, 1993). Figure 3 on page 5 illustrates that, during the 1920s, correlation between the U.S., U.K., and German stock exchanges rose sharply, much as international stock market correlations surged during the 1990s.[9] Figure 3 also illustrates that this high correlation subsequently declined, a pattern consistent with the historical evidence, suggesting that surges in correlations tend to revert to historical norms.

The higher short-term correlation between U.S. and international stock markets may seem to weaken the case for international investing, validating the oft-heard complaint that "diversification disappears when you need it most." However, even when correlation is high, international investing may provide the short-term benefit of higher returns (as during most U.S. bear markets) or lower volatility (as during the technology bubble). To derive the long-term benefits of international investing, it's necessary to expect significant short-term deviations from reasonable long-term expectations.

International allocation recommendations

The appropriate allocation to international investments ultimately hinges on an investor's short- and long-term objectives. For example, an investor whose most important long-term goal is to ensure that he or she has sufficient assets to meet spending objectives or liabilities should reduce "shortfall risk." Short-term declines, or underperformance relative to a benchmark, are far less important considerations. In this case, it's relatively simple to use a mean-variance framework or theoretical model to estimate the allocation to international stocks that will produce the best risk-adjusted returns.

Standard financial theory provides several approaches for establishing a long-term, or strategic, allocation to international securities. The first approach assumes that the global equity market is efficient and fully integrated and that market-capitalization weightings reflect market participants'

9 In the first years after hyperinflation, when the German economy found its footing and began to capitalize on new technologies, real German equity prices nearly quadrupled from their hyperinflation lows (DeLong and Becht, 1992).

analyses and consensus expectations. In this case, investors would be advised to buy the world-market portfolio as they buy their domestic-market portfolio. Market-capitalization weightings in 2005 suggest that U.S. investors should invest 52% of their equity allocations internationally.[10] However, the world's capital markets are not fully integrated, and numerous constraints provide a competitive advantage to domestic investors. The additional costs and risks of foreign investments, such as transaction costs, tax liabilities, informational costs, and currency risks, cause market segmentation and affect asset pricing.

Adhering to market-cap weightings may also lead to a portfolio that is concentrated in a particular country or region. For instance, exuberance about Japan's prospects and pessimism about the U.S. potential in the late 1980s reduced the market-cap weighting of the United States to 25% in 1989.[11] In such a case, deviation from market weightings may be prudent. In theory, any deviation from market weightings reflects an investor's deviation from the market's consensus expectations.

Mean-variance analysis provides a framework for systematically incorporating an *investor's* expectations to achieve the best risk-adjusted return. The data from 1971 to 2005 suggest that an investor's risk-adjusted return is maximized by holding 50.5% of equities internationally.[12] However, recommendations of mean-variance analysis are highly sensitive to assumptions about returns, volatilities, and correlations, and the high short-term uncertainty of expected returns and risks makes mean-variance-analysis recommendations less reliable in the short term.

Efficient market theory and mean-variance analysis recommend that investors allocate substantial portions of their portfolios to international stocks. However, investors' desire to reduce potential regret from underperforming peers or benchmarks may result in smaller international allocations.

Issues in benchmark construction for international markets

This study uses the MSCI EAFE Index as the benchmark for international investing, except where data availability warrants the use of the Europe, Australasia, Far East Index (constructed by market-capitalization weighting of Thomson Datastream country returns). As discussed in *Market Indexes: Determining the Appropriate Benchmark* (Investment Counseling & Research, 2004), benchmarks are imperfect representations of market performance.

Several issues are important in considering the MSCI EAFE Index. During certain periods, the index can be over- or underrepresented in certain regions or countries. A prominent example is the index's concentration in Japan in the 1980s.

Another problem with market-cap weightings could arise from the practice of cross-holdings, which tend to overstate the aggregate value of outstanding equities. For instance, Japanese firms tend to have more cross-holdings than U.S. firms, somewhat increasing Japan's market-cap value (French and Poterba, 1991).

Some investors question the appropriateness of market-cap weightings in part because countries have different proportions of their corporate sectors organized as publicly traded firms. For instance, in 2004, 92% of the U.S. gross domestic product (GDP) was represented by the U.S. stock market, whereas the figure was 42% for France. In a GDP-weighted portfolio, shares are purchased in proportion to the broad asset base of each country in the international economy rather than in proportion to the value of a country's outstanding stocks. Managing a GDP-weighted portfolio requires frequent rebalancing as market prices move.

Note: The free-market capitalization of the U.S. and French stock markets was determined using the MSCI All Country World Index at year-end 2004. The 2004 GDP data for the United States and France are from the World Bank.

10 The 2005 international allocation is based on the MSCI U.S. market-cap weighting and MSCI All Country World Index market-cap weighting as of December 2005 (Source: FactSet).

11 The weighting in 1989 is based on the Thomson Datastream market-cap weighting of the U.S. stock market in the global equity market.

12 Since the correlation of international equities with U.S. bonds has been lower than the correlation of U.S. equities with U.S. bonds, inclusion of bonds in the analysis changes the results somewhat. Mean-variance analysis using the Lehman Brothers Aggregate Bond, Dow Jones Wilshire 5000, and MSCI EAFE Indexes for the 1973–2005 period shows that the optimal allocation to international equities varies from 30% to 50% at reasonable risk levels.

Practical modifications to theory: Minimizing regret

In the real world, of course, long-term-oriented portfolios are managed over a series of short terms that may be very different from long-term expectations. In addition, shorter-term measures of success—and failure—are many and varied. Investors typically seek to reduce not only portfolio volatility, but also the risk of underperforming a benchmark or peer-group average.[13] Any difference between an investor's portfolio and that of the peer group or benchmark introduces the potential for regret.

For example, some investors experience regret at not holding, or underweighting, the particular international markets that outperform an implicit world benchmark. Unfortunately, the high level of uncertainty in financial markets makes it difficult to know which market will outperform next. Such investors can reduce their potential regret by holding U.S. and international markets at their market-capitalization weightings, reflecting consensus expectations.

Table 5. International holdings of U.S. investors

	Holdings	1990	1995	2000	2005
Corporate defined benefit plans	% of portfolio	6.1%	12.6%	16.0%	16.5%
	% of equities	11.4	20.8	25.0	26.9
Endowments	% of portfolio	5.1	9.5	12.1	17.0
	% of equities	9.2	16.6	20.7	31.8
Corporate defined contribution plans	% of portfolio	1.1	1.8	4.2	4.8
	% of equities	2.5	3.1	5.7	7.5

Source: Greenwich Associates.

Table 6. International holdings of pension funds

	% of total portfolio			% of total equities		
Country/region	2000	2002	2004	2000	2002	2004
Canada	24.60%	23.50%	25.20%	45.14%	46.53%	51.32%
United Kingdom	24.20	25.20	27.50	34.23	39.87	45.08
Japan	—	20.00	15.00	—	40.00	35.71
Australia	—	26.50	—	—	44.46	—
Europe	14.00	8.00	8.00	40.00	40.00	36.36

Source: Greenwich Associates.

13 See George Chow (1995) and Grant W. Gardner and Thierry Wuilloud (1995) for potential decision-making frameworks that balance both concerns.

Alternatively, investors who judge their portfolios' performance against their peers will regret having higher international exposure than their peers when international markets underperform. This is especially relevant for institutional investors, who may have to explain underperformance to an investment committee. Table 5 shows that U.S. institutional investors, on average, invested approximately 20%–30% of their equities internationally over the last ten years. Individual investors, on average, allocated approximately 3%–7% of their equities to international markets over the same time period. To minimize their potential regret, such investors should not deviate from their peers' allocations to international equities.

Similarly, investors who judge their portfolios' performance against domestic markets will regret their international investments when domestic markets outperform. Such investors can eliminate their potential regret by holding U.S.-only portfolios. Although each of these allocation decisions may make sense in a particular environment, investors should be conscious of the trade-off between minimizing short-term regret and maximizing long-term risk-adjusted return.

Home-country bias

Fear of regret may be one, though certainly not the sole, reason for investors' "home-country bias"—overweighting their home countries relative to global equity market benchmarks. Table 6 shows that pension funds from different countries exhibit strong home-country biases. In 2005, the international exposure of the average U.S. pension fund and endowment increased significantly to approximately 17% of the total portfolio and 31%–32% of the total equity exposure (see Table 5). However, individual investors in defined contribution plans are still extremely home-country biased, allocating only 7.5% of their total equity exposure to international stocks, although this represents growth of approximately 1.8% in international exposure since 2000.

Investors generally show a bias toward investing in their home country. Rational factors can justify some bias in favor of local investments, but not to the extent observed. Investors should be cognizant of their potential behavioral biases, which diminish the opportunity to benefit from international investing.

Although difficult to quantify, several factors other than regret risk encourage home-country bias. Transaction costs, additional taxes, asymmetric information, and restricted market access may cause home-country bias if these costs lower international returns relative to domestic returns. Empirical analysis suggests that these factors can account for some, but not all, of the observed home-country bias. Multinational firms in the domestic market could conceivably limit the need to invest internationally. But, as noted previously, multinationals' returns tend to move closely with returns in their home markets, providing little diversification benefit compared with direct international investments (Rowland and Tesar, 2000).

Liability hedging may also be a justification for home-country bias. It is desirable to hold assets that move in tandem with liabilities to facilitate funding of the liabilities. Such an asset is a particularly effective hedge if it also moves inversely with income and portfolio contributions. Although theoretically sensible, research shows that the liability-hedging benefits of home-country bias can justify some, but not all, of the actual bias. The following theories have been proposed to explain investors' persistent and widespread home-country bias:

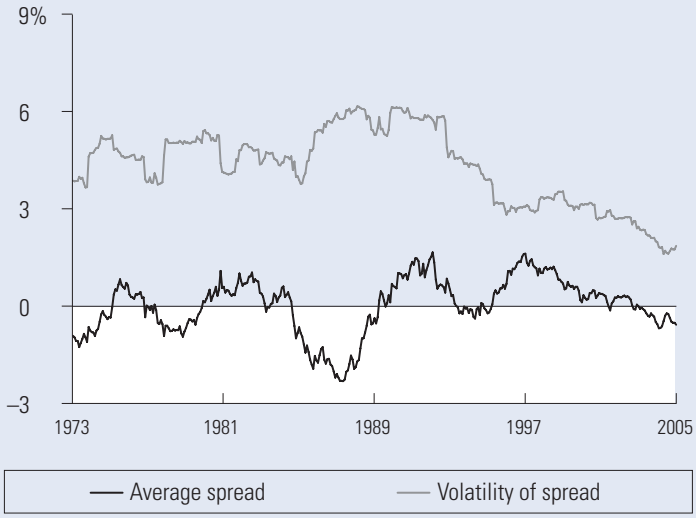
- **Inflation hedge.** Liabilities such as living expenses are driven mainly by inflation. To the extent that local equities are more correlated with local inflation, they should be overweighted relative to international equities. However, the evidence in the United States suggests that the inflation-hedging ability of U.S. and developed international markets' equities is very similar, implying that it cannot explain home-country bias (Vassalou, 2000).

Underperformance risk and "regret"

International investments' short-term average returns, volatility, and correlation are likely to deviate substantially from their long-term expectations. But, as Figure 1 on page 2 demonstrates, international investments have consistently reduced a portfolio's volatility over both the short and the long term. However, in the short term, international investments can add to or detract from a portfolio's total return and may cause considerable regret. "Regret" can be thought of as simply a concern about negative tracking error relative to a benchmark.[14] In this context, "regret" is benchmark-specific.

Regret from a portfolio lagging its benchmark depends on the spread between returns of U.S. and international markets. The size of the spread varies, as expected returns, volatility, and correlation fluctuate over time. Expected regret depends on the expected return differential between U.S. and international markets. In the long term, since markets tend to perform similarly, expected regret is very small. However, over short periods, the expected spread can be very high, creating significant regret. From 1971 to 2005, the monthly return spread for the Dow Jones Wilshire 5000 Index and the MSCI EAFE Index was as high as 15.6%, and the 3-year average monthly spread was as high as 1.7%.

Figure 7. Average and volatility of monthly spread between the U.S. and EAFE indexes for 3-year rolling periods



Note: The average spread is the monthly return difference between the Dow Jones Wilshire 5000 and the MSCI EAFE Indexes. The volatility is the standard deviation of the return spread.
Sources: MSCI and Dow Jones; author's calculations.

Regret risk, measured as the volatility of the negative spread, depends on the volatility of U.S. and international markets and their correlation. High international correlation and low volatility reduce the volatility of the return spread and the potential regret risk. Figure 7 shows that the volatility of the spread and the associated regret risk are significant in both the short and the long term.

14 Expected regret can be formally defined as *E [portfolio return – benchmark return]*. Volatility of regret can be formally defined as *semi-variance [portfolio return – benchmark return]*.

- **Consumption patterns.** Another factor that can lead to home-country bias is the consumption of goods and services produced locally for which imported substitutes are unavailable. Since the value of these goods and services is closely linked to the domestic economy and its equity markets, home-country bias may be warranted. There is evidence to support this view in Organisation for Economic Co-operation and Development countries (Pesenti and van Wincoop, 2002).
- **Interest rate hedge.** Home-country bias might be warranted if domestic equities were a better hedge for interest-rate-sensitive liabilities. The evidence on this relationship is mixed.[15]

Research shows that each of these factors generates some rational degree of home-country bias, but not enough to justify the observed magnitude of the bias. It's also worth noting that a counterbalance to these factors is the preference for assets that move inversely to an investor's income or a portfolio's contributions. An asset class whose value is high when income or contributions are low creates a hedging demand for this asset. To the extent that international equities are less correlated with a U.S. investor's income or contributions than domestic equities, there should be increased hedging demand for international equities.

Vanguard's recommendation

On balance, however, the rational arguments for home-country bias call for some reduction in the international exposure suggested by market-capitalization weightings or a mean-variance framework. Those investors intent on minimizing regret risk must, by definition, base their international allocation on the parameters established by the benchmark or peer group that they follow. For investors that do not strongly follow one of the listed approaches, we contend that a 20%–40% allocation to international stocks for the equity portion of the portfolio provides meaningful diversification opportunities (Philips, 2006).

Behavioral reasons for home-country bias

In addition to the rational reasons for home-country biased portfolios, there are a number of behavioral reasons that yield no apparent financial benefit. For example, surveys of institutional and individual investors show that they are more optimistic about their local economies than foreign investors. U.S. investors are significantly more optimistic about U.S. equities, for example, than are European or Japanese investors (Strong and Xu, 2003). Even within the United States, investors show a preference toward local equities. Shareholders of a Regional Bell Operating Company (RBOC) tend to live in the area that it serves, and a RBOC's customers seem to prefer the shares of their own telephone provider to those of RBOCs in other areas of the country (Huberman, 2001). Even U.S. investment managers exhibit some bias for locally based firms, possibly because of familiarity bias or perceived or real informational advantages (Coval and Moskowitz, 1999). We advise investors to be aware of these potential biases, which appear to offer no financial benefit and diminish investors' opportunity to benefit from international diversification in their own portfolios.

15 Lawrence G. Tint and William F. Sharpe (1990) find support for this argument, but Tongxuan Yang (2002) finds this not to be the case.

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