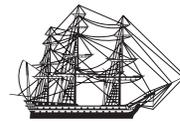


International Equity Investing: Investing in Emerging Markets*

Vanguard Investment Counseling & Research



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Executive summary

By blending theoretical and empirical approaches, we find that the allocation of a portion of a portfolio's international exposure to emerging-markets stocks can enhance the portfolio's long-term risk-adjusted returns. The benefit of such an allocation is the opportunity to increase a portfolio's return while reducing its risk through diversification. However, the cycle of bull and bear markets, financial crises, and stock market booms and bubbles can break down the long-term case. Indeed, over certain short periods of time, investments in emerging markets have reduced a portfolio's return while increasing its volatility. To decide on the appropriate allocation to emerging markets, investors must weigh their expectations of long-run risk-adjusted returns against the potential regret of their portfolios' underperforming benchmarks or peer-group averages over shorter investment horizons. We recommend that risk-tolerant investors allocate a small portion of their international stock investments to emerging markets.

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* Published as Yesim Tokat and Nelson W. Wicas, 2004. Investing in Emerging Stock Markets. *Journal of Wealth Management* 6(2):68-80.

Introduction

Emerging stock markets represent a small, but dynamic, set of investment opportunities. The risks of investing in emerging markets are typically as dramatic as these markets' potentially high rewards. Annual gains or losses of more than 80% are not unusual. For instance, the Thai stock market's 113.8% return in 1993 was followed by a combined loss of 86.7% over 1996 and 1997. Currently, investors are anxious about what will follow Russia's 73.8% 2005 return.

Both the long-term risks and the long-term rewards of investing in emerging markets are strongly linked to the ability of these markets to develop economically. History shows that some once-emerging economies—such as Japan and the United States—have been successful, while others—such as Argentina and Brazil—have been less successful. A complex set of factors determines which emerging markets will succeed. It is impossible to predict which countries will emerge, rewarding investors for the risks they assume. Thus, investors should diversify their exposure among emerging markets.

Empirical analysis of emerging-markets investments is hindered by both the short history and the selection bias of the data. Furthermore, major economic, social, and political changes in emerging markets limit the applicability of historical data. Therefore, theoretical and empirical approaches should be blended in determining an investor's appropriate allocation to a diversified selection of emerging markets.

Financial market theory suggests that, over the long run, higher returns should compensate for the higher risks of emerging markets. Emerging markets are expected to enjoy faster economic growth than

developed markets in the long run. Faster economic growth should translate into higher growth in corporate earnings and higher equity market returns. Over the full historical record, emerging markets have mostly behaved as theory would suggest, providing somewhat higher returns than developed markets in Europe, Australasia, and the Far East.

In some shorter periods, however, the empirical case for emerging markets has broken down. Three short-term phenomena that raise the most troubling questions are the cycle of bull and bear markets, financial crises, and stock market booms and bubbles. Historically, when the United States was in a bear market, U.S. investors benefited less from their emerging-markets exposure, on average, than from exposure to developed international markets. During emerging markets' occasional financial crises, U.S. investors with emerging-markets exposure experienced reduced portfolio return and increased portfolio volatility. The worldwide stock market bubble of the late 1990s had a similar effect on emerging and developed markets. However, these shorter-term departures from long-term expectations don't invalidate the long-term case for investing in emerging markets for risk-tolerant investors.

The appropriate allocation to emerging markets for any one investor depends in part on the investor's comfort with short-term divergences from reasonable long-term expectations. Efficient market theory and mean-variance analysis suggest that the investor should have a significant allocation to emerging-markets equities. Behavioral and practical considerations call for a smaller allocation. We recommend that risk-tolerant investors allocate a small portion of their international stock investments to emerging markets.

Understanding emerging markets

Both the risks and the rewards of investing in emerging equity markets are closely related to the success of economic development. An “emerging stock market,” which is generally in a low- or middle-income economy,¹ is a stock market in transition—increasing in size, activity, or level of sophistication. The United States was an emerging market for most of the 19th century. As the United States evolved into the world’s foremost economic power over the course of the 20th century, its equities provided higher returns than those of most developed equity markets.

However, not all economies succeed in emerging from their less-developed status. For example, in 1870, Brazil had the same gross domestic product² (GDP) per capita as Japan. By 1998, Japan had increased its GDP per capita to 3.5 times that of Brazil. As recently as 1913, Argentina had a greater GDP per capita than Germany and France, and it was considered a developed market. Currently, Argentina is an emerging market, with its GDP per capita estimated to be less than 50% of Germany’s in 2005 (Central Intelligence Agency, 2006).

A complex set of factors influences the success or failure of long-run economic development. One theory explains most of the differences in economic prosperity in terms of geographic, climatic, or ecological differences across countries. An alternative view relates differences in economic performance to the organization of a society. Societies that protect property rights across a broad cross-section of the populace provide incentives and opportunities for investment and, thus, enjoy economic development (Acemoglu et al., 2002).

Economies that successfully develop enjoy highly positive long-run stock returns; those that do not may see their stock markets collapse alongside their exchange rates, banking systems, and political

stability. Although developing economies in the aggregate are expected to grow faster than developed economies, it is impossible to predict which countries will emerge and reward investors for the risks they assume. Thus, investors should diversify their exposure among emerging markets.

Emerging-markets data and their limitations

Emerging-markets global indexes represent the dynamism of the universe of emerging markets. From 1988 to 2005, as less-developed economies liberalized access to their capital markets, the pool of emerging markets expanded from 9 to 33.³ Over this period, some emerging markets, such as Greece and Portugal, evolved into developed markets.⁴ The very nature of economic development, involving major economic, social, and political changes, limits the applicability of historical data.

There are other hindrances to the empirical analysis of investments in emerging markets. First, the widely available data cover only a brief period of emerging stock markets’ history. Some emerging equity markets, such as those in Argentina and Brazil, have existed for a long time. Because widely available indexes capture only the reemergence period, they bias the results (Jorion and Goetzmann, 1999). Second, the markets that are included in the indexes are those with a relatively successful history, creating selection bias. There is also a “past success” bias in the selection of an emerging market’s representative companies. These stocks generally must meet certain size, liquidity, and industry qualifications. Stocks that satisfy these criteria are often a market’s most successful companies. Finally, differences in the construction of widely used indexes from S&P, MSCI, and Thomson Datastream may produce significant disparity in their performances.⁵ Such differences can influence the conclusions of an empirical analysis.

1 A market is considered “developed” if gross national income (GNI) per capita for the economy exceeds the World Bank’s high-income threshold, which was \$10,065 in 2004.

2 GDP is calculated as the value of the total final output of all goods and services produced in a single year within a country’s boundaries. GNI is GDP plus incomes received by residents from abroad minus incomes claimed by nonresidents.

3 Source: Standard & Poor’s/International Finance Corporation (S&P/IFC) Index.

4 Portugal and Greece graduated from the Morgan Stanley Capital International (MSCI) Emerging Markets Index to the MSCI Europe, Australasia, Far East (EAFE) Index in 1997 and 2001, respectively. 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).

5 Index providers may emphasize market capitalizations, liquidity, sector weightings, or investability by international investors differently.

Investors in emerging markets face unique risks

There is ample room for emerging stock markets to grow. In December 2004, the ratio of market capitalization to GDP of low- to middle-income countries was 13.7%, compared with a ratio of 92.1% for the United States. However, the following unique risks of investing in emerging equity markets can deter investments in these markets.

- **Political risks.** Factors such as external conflicts, coups, and racial and national tensions create political instability in a country. Political instability can significantly influence a firm's ability to generate earnings and stock market returns.
- **Economic risks.** Economic policies and reforms may fail, creating a challenging macroeconomic environment for companies.
- **Regulatory and operational environment.** The quality of market regulation, corporate governance, transparency, and accounting standards is often below that of developed markets. These factors make it harder to appropriately price securities, increasing the risk of mispricing.
- **Limits on investment.** In December 2005, only 43.5% of the aggregate market capitalization of emerging markets was investable by international investors.⁶ Limits for foreign investors on their individual company or total holdings may change. For instance, Malaysia introduced a 10% tax on investment profits to stop investors from selling shares after the Asian crisis of 1996–1997. (The tax was lifted in 2001.)
- **High industry/firm concentration.** In emerging markets, a large share of a country's stock market capitalization may be concentrated in a particular industry or company. In China, for example, as of December 31, 2005, the top ten stocks according to market capitalization accounted for 65.7% of the stock market's value, and natural resources companies accounted for 31.2% of the value.⁷

Broad diversification across emerging markets can significantly reduce the above risks; however, it does not ensure a profit or protect against a loss in a declining market.

What is the right weighting for emerging markets?

Emerging-markets indexes from S&P, MSCI, Thomson Datastream, and Barings are weighted by market capitalization, which raises several complications:

- Differences across countries in the proportion of firms that are publicly traded may result in a concentration in certain countries.
- The strict limits on foreign investors that some countries impose may result in these countries being underweighted in "investable" as compared with "local" indexes. "Investable" emerging-markets indexes include only those shares legally and practically available to foreign investors in market capitalization.
- The entry or exit of countries may alter index weightings significantly at the date of change.
- The high volatility of individual emerging markets may produce high concentrations in certain regions or countries, reducing diversification. These concentrations can also hurt portfolio performance when a recently outperforming and overweighted country retreats strongly, which is typical for emerging markets.

Alternative weighting schemes have been proposed to address these problems. One option is to weight countries by GDP. GDP-weighted portfolios purchase shares in proportion to the economic size of each country rather than the market value of its outstanding stocks. Another option is to use equal-weighted portfolios. However, managing GDP- or equal-weighted portfolios typically requires more frequent rebalancing—which leads to higher trading costs and taxes—as market prices move.

Another option is to use judgment in deciding which countries to include in the index, but still maintain countries' market-capitalization weightings. There is great variation in the financial, economic, and political characteristics of emerging markets. Customized emerging-markets indexes can include countries that are deemed more favorable for investors than others. For instance, the Select Emerging Markets Index managed by MSCI for Vanguard includes a subset of the countries in the MSCI Emerging Markets Index.

⁶ This is the ratio of total market capitalization (derived from Thomson Datastream) to investable market capitalization of countries in the MSCI Emerging Markets Index.

⁷ The MSCI China Index contained 75 stocks on December 31, 2005.

Emerging-markets expectations: The long-term perspective

Financial theory suggests that higher returns should compensate for the higher volatility of emerging equity markets. Emerging markets are expected to enjoy faster economic growth than developed markets. Faster economic growth should translate into faster growth in corporate earnings and, thus, into higher equity market returns. The overall historical record is mostly consistent with the theoretical expectation. The long-term case for investing a portion of an international allocation in emerging markets rests on the opportunity to enhance a portfolio's return and reduce its risk through diversification.

Returns and variability

Table 1 presents the annualized average returns and volatility of emerging and developed markets. We present both the simple, or arithmetic, average return and the compound, or geometric, average return. Although the simple average return is always higher than the compound average return, the differences become more significant when volatility is high, as in emerging markets, and the holding period is longer.⁸

From 1985 to 2005,⁹ emerging markets provided compound average returns greater than those of the developed international markets in the MSCI EAFE Index and the U.S. market, as represented by the Dow Jones Wilshire 5000 Composite Index. The volatility of emerging-markets returns was far higher in this period, which produced a divergence between the simple average return and the compound average return earned by an investor. However, measured by arithmetic average and compound average returns, emerging markets were the best-performing class of securities over this time frame. For a U.S. investor, allocating a portion of his or her portfolio's international exposure to emerging markets would have increased both the arithmetic and the compound average returns of the portfolio from 1985 to 2005.

Table 1. Annualized risk and average returns of emerging and developed markets

	Simple annualized average return	Compound annualized average return	Volatility
Full sample: 1985–2005			
Emerging Markets	16.71%	13.90%	23.43%
U.S.	13.09	11.89	15.34
EAFE	12.73	11.27	17.14
"Lookback" period*: 1975–1984			
Emerging markets	15.73%	14.59%	15.35%
U.S.	12.68	11.77	13.72
EAFE	14.85	13.71	15.18
Before liberalizations: 1985–1990			
Emerging markets	23.91%	20.52%	25.90%
U.S.	15.24	13.59	17.88
EAFE	23.96	21.73	21.26
Early liberalizations: 1991–1996			
Emerging markets	19.48%	17.89%	18.18%
U.S.	17.10	16.60	10.11
EAFE	9.80	8.78	14.42
Recent period: 1997–2005			
Emerging markets	10.06%	6.87%	24.82%
U.S.	8.98	7.62	16.41
EAFE	7.20	5.99	15.52

*S&P/IFC emerging-markets regional indexes were established in 1985. Backtracking those countries to 1975 created a "lookback" bias. For the period from 1975 to 1984, the emerging-markets performance numbers are based on an equal-weighted portfolio of the following emerging markets: Argentina, Brazil, Chile, India, Jordan, Mexico, South Korea, Thailand, and Zimbabwe. Jordanian data start in December 1978. All other emerging-markets data start in December 1975.

Note: Emerging-markets data are from the MSCI Emerging Markets Index, which was backfilled by the S&P/IFC Global Composite Index between 1985 and 1987. All returns are denominated in U.S. dollars. U.S. returns are from the Dow Jones Wilshire 5000 Index.

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, MSCI, and S&P Emerging Markets Data Base; author's calculations.

⁸ To understand this divergence, consider the following example. If a stock returned –50% last year and +100% this year, the expected annual future rate of return on the stock is the simple arithmetic average of –50% and 100%, which is 25%. However, an investor who invested in this stock for the two years would have recovered his or her capital at the end of the two years and would have a 0% compound average annual return. When the investment horizon is long, the geometric average return is a better measure of average performance (Jacquier et al., 2003).

⁹ Unless otherwise stated, data are from January 1985 to December 2005.

Emerging markets generated their best absolute and relative returns before widespread financial liberalizations in the early 1990s.¹⁰ Emerging markets recorded strong results from 1985 to 1990. An equal-weighted emerging-markets index also generated strong returns during the 1975–1984 period captured by backfilled data.¹¹ Although emerging markets generated their best absolute and relative returns before widespread financial liberalizations in the early 1990s, they continued to generate higher returns than the U.S. market after liberalizations.¹² In all periods, emerging markets have been more volatile than developed markets.

One caution about these index returns is that they exclude costs. Transaction costs and portfolio management fees in emerging markets can be significantly higher than those in developed markets. From 1996 to 1998, the average one-way total trading cost was 50 basis points in developed markets and 97 basis points in emerging markets (Domowitz et al., 2001). Therefore, round-trip trading costs in emerging markets were, on average, 94 basis points higher than in developed equity markets. Currently, the average expense ratio of emerging-markets mutual funds (including management fees and other operating expenses) is approximately 26 basis points greater than the average expense ratio of international developed-markets funds.¹³

Under reasonable conditions, an emerging-markets index fund's costs would be about 60 basis points (or 0.60% of total net assets) higher than those of a developed-markets index fund.¹⁴ Even if we reduced the annualized index return by 60 basis points, the emerging markets in the MSCI Emerging Markets Index would still outperform the developed markets in the MSCI EAFE Index from 1985 to 2005.

Correlation

The correlation between the U.S. market and emerging markets affects the potential diversification benefits of investing in emerging markets. Figure 1 shows that the correlation between various emerging-markets regions and the U.S. market increased sharply from 1988 to 2005, hovering near 80% in the mid-1990s and, most recently, declining somewhat. Figures 1 and 2 show a similar elevation in correlations both between developed markets and between developed markets and emerging markets. If this increase is permanent, then there will be less potential diversification benefit from investing in emerging markets.

Challenge to building expectations: Integration

Expectations for future long-term returns, volatility, and correlations should be 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 as the financial and economic integration of different regions increases through trade and financial flows, the correlation among these regions' financial markets and economies also increases (Bekaert and Harvey, 2000). The record also provides information about integration's effect on returns. Recent data show that emerging-markets returns declined after the liberalizations of the 1990s. The counterpoint to this observation is that integration may lead to faster economic growth, boosting expected returns. Greater returns may offset the investment disadvantages of higher correlations.

10 *Financial liberalization* is defined as the expanded access of foreign investors to a domestic equity market and the expanded access of local investors to foreign equity markets. Different methods are used to date the liberalization and integration of world capital markets. The four main approaches are event association (such as regulatory reform date), inference from the behavior of financial assets, inference from the behavior of key economic aggregates, and market infrastructure. The dates reported in the text are the dates of regulatory reform. See Geert Bekaert and Campbell R. Harvey (2000) for a more detailed explanation.

11 S&P/IFC emerging-markets indexes were established in 1981 and then backfilled to 1975. This backfilled history creates a survivorship bias.

12 This comment is sensitive to the indexes used.

13 As of December 2005, the average expense ratio of the 2,180 funds in the Morningstar international stock funds category was 1.68%, whereas the average expense ratio of the 230 funds in the emerging-markets category was 1.94%. The difference between the expense ratios of Vanguard® Developed Markets Index Fund and Vanguard Emerging Markets Stock Index Fund was 0.16% as of October 31, 2005.

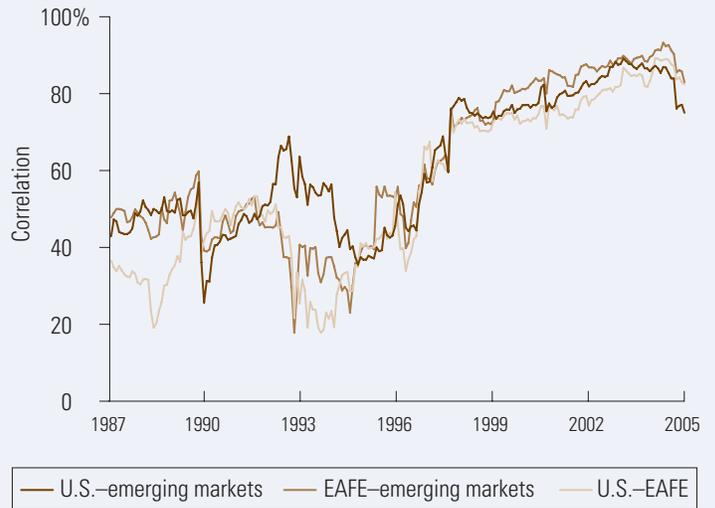
14 Assuming a 30% turnover rate for both the developed- and the emerging-markets index funds, the emerging-markets index fund's costs would be 28 basis points higher. In addition, we are assuming that the emerging-markets index fund's expense ratio is 32 basis points higher than that of the developed-markets index fund.

Figure 1. Rolling 3-year correlations between the U.S. market and emerging-markets regions



Note: The MSCI indexes were backfilled with S&P/IFC indexes from 1985 to 1987, with the exception of the MSCI Emerging Markets Europe, Middle East, and Africa Index, which was established in 1989 and was backfilled with the S&P/IFC Index from 1989 to 1996.
Sources: Dow Jones, MSCI, and S&P/IFC; author's calculations.

Figure 2. Rolling 3-year correlations between the U.S., EAFE, and emerging markets



Note: The MSCI Emerging Markets Index was backfilled with the S&P/IFC Index from 1985 to 1987.
Sources: Dow Jones, MSCI, and S&P/IFC; author's calculations.

Since the 1990s, the pace of global economic integration, both among emerging markets and among emerging markets and developed markets, has accelerated rapidly. Prominent treaties promoting economic integration include the European Union's (EU) Maastricht Treaty, the Asian Free Trade Agreement (AFTA), the North American Free Trade Agreement (NAFTA), and the World Trade Organization (WTO). These developments could lead to an increase in global capital and goods flows and, by extension, in correlations among markets.

Emerging markets have been active participants in this process, reducing barriers to trade and investment and restructuring economic, political,

and social systems. In general, three categories of barriers have historically discouraged investment in emerging markets: legal barriers; indirect barriers, such as inadequate accounting standards and investor protections; and largely unpredictable risks, such as liquidity risk, economic policy risk, political risk, and currency risk (Bekaert, 1995). These barriers have been coming down slowly, but it is generally agreed that a number of liberalizations were clustered around 1990. Correlations among emerging markets and between emerging markets and developed markets have risen, in part due to transitory factors and in part due to secular trends of financial integration.

Diversification among emerging markets

Correlations among emerging markets are very low. Broad diversification among emerging markets significantly reduces the volatility of an emerging-markets portfolio. Although an individual emerging market could have annualized volatility of up to 85%, a diversified exposure to emerging markets experienced greater than 30% volatility during 1976–2005.¹⁵ Figure 3 shows that the average correlation among emerging markets rose from about 5% to more than 30% during the 1990s. Financial liberalizations in the 1990s could in part be responsible for this increase.

Figure 3. Average correlation among emerging markets



Note: Emerging markets include Argentina, Brazil, Chile, Greece, Mexico, India, South Korea, Thailand, Malaysia, Taiwan, Zimbabwe, the Philippines, Pakistan, Nigeria, Colombia, Venezuela, Jordan, and Turkey. Greece graduated from emerging-markets status in May 2001. Data for Malaysia, the Philippines, Pakistan, Nigeria, Colombia, Venezuela, and Taiwan became available in December 1984. Turkish data start in December 1985, and Jordanian data start in December 1978. All other emerging-markets data start in December 1975. Zimbabwe and Nigeria are S&P/IFC Global Indexes. All other countries use S&P/IFC indexes until December 1987 and MSCI indexes thereafter, with the exception of India, Pakistan, Colombia, and Venezuela, which use S&P/IFC indexes until December 1992 and MSCI indexes thereafter.

Sources: S&P Emerging Markets Data Base and MSCI; author's calculations.

Forming expectations: The short-term perspective

Significant short-term deviations from long-run averages may make it challenging for investors to realize the long-term benefits of investing in emerging markets. Although emerging markets provided higher returns than EAFE markets and some diversification over the 1985–2005 period, there have been significant short-term deviations from this long-term performance. Figure 4 shows that from 1998 to 2000, for example, even a modest 3% allocation to emerging-markets equities *reduced* a portfolio's return and *increased* its volatility despite imperfect correlation.¹⁶ Although the magnitudes in Figure 4 are small due to the small emerging-markets exposure, no investor would be willing to hold an asset that seems to reduce a portfolio's return and increase its volatility.

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. We analyzed three short-term phenomena that raise the most troubling questions about the value of investing in emerging markets: the cycle of bull and bear markets, financial crises, and stock market booms and bubbles. Note, however, that relatively short periods—five years, for example—constitute a large proportion of the limited historical record of the performance of emerging markets.

¹⁵ U.S. dollar returns from Argentina had an annualized volatility of up to 85% in this period.

¹⁶ Note that the magnitudes in Figure 4 would be greater if the exposure to emerging markets were greater.

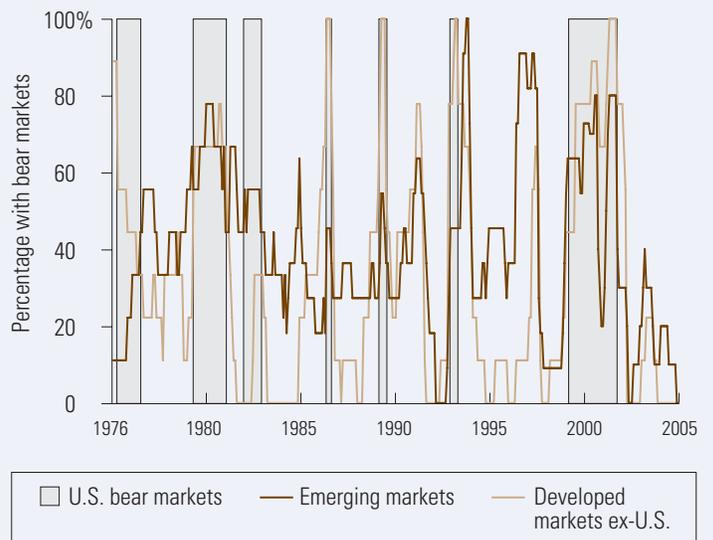
Figure 4. The impact of adding a 3% emerging-markets allocation to a U.S. and international portfolio: 3-year rolling average differences



Note: The return difference equals the return of an 80% U.S./17% EAFE/3% emerging-markets portfolio minus the return of an 80% U.S./20% EAFE portfolio. The volatility difference equals the volatility of the 80% U.S./17% EAFE/3% emerging-markets portfolio minus the volatility of the 80% U.S./20% EAFE portfolio. Emerging-markets data are based on the S&P/IFC Global Composite Index between 1985 and 1988 and the MSCI Emerging Markets Index thereafter. All returns are denominated in U.S. dollars.

Sources: Dow Jones and MSCI; author's calculations.

Figure 5. Bear markets in the United States coincide less with emerging-markets bears than with developed-markets bears



Note: The percentage of countries with bear markets equals the number of countries with bear markets divided by the total number of countries. Emerging markets include Argentina, Brazil, Chile, Greece, India, Malaysia, Mexico, South Korea, Taiwan, Thailand, and Zimbabwe. Greece graduated from emerging-markets status in May 2001. Data for Malaysia and Taiwan became available in December 1984. All other emerging-markets data start in December 1975. Developed economies include Australia, Austria, Canada, Germany, France, Italy, Japan, Switzerland, the United Kingdom, and the United States. All returns are denominated in local currencies.

Sources: S&P Emerging Markets Data Base and Thomson Datastream; author's calculations.

Bull and bear markets

Bull and bear markets in U.S. stocks can obscure the long-term benefits of emerging-markets investments. Historical evidence suggests that the performances of equity markets in large economies have a significant impact on the performances of equity markets in smaller economies. The relationship is strongest among developed economies. Figure 5 shows that, with the exception of the 1983–1984 U.S. bear market,

more than 70% of developed international stock markets experienced bear markets when the United States was in a bear market. The good news about emerging markets is that, historically, their stock markets have not been as sensitive to the U.S. bear markets, with *less than 70%* of emerging markets in bear markets during U.S. bear markets.

However, emerging markets were influenced by the most recent U.S. bear market—perhaps a sign that as these markets become more integrated

Table 2. Rolling 3-year correlations among U.S. and international markets during U.S. bear and bull markets

	Emerging Markets Composite Index	Asia Index	Latin America Index	Europe, Middle East, and Africa Index
Bear	71%	57%	66%	51%
Bull	60	54	51	29
All	62	55	54	34

Note: The MSCI indexes were backfilled with S&P/IFC indexes from 1985 to 1987, with the exception of the Europe, Middle East, and Africa Index, which was established in 1989 and was backfilled with the S&P/IFC Index from 1989 to 1996. The dates of the U.S. bear markets are May 1990–October 1990, January 1994–June 1994, and March 2000–September 2002. Sources: MSCI, S&P Emerging Markets Database, and Dow Jones; author's calculations.

Table 3. Annualized performance of international equities during U.S. bear and bull markets, 1985–2005

Market	Bear market		Bull market	
	Average return	Volatility	Average return	Volatility
U.S.	–22.52%	20.61%	21.25%	12.80%
EAFE	–12.35	21.17	18.48	15.67
EM	–19.52	28.04	25.02	21.61
80%U.S./20%EAFE	–20.49	19.90	20.70	12.01
80%U.S./17%EAFE/3%EM	–20.70	20.06	20.89	12.03

Note: The dates of the U.S. bear markets are August 1987–November 1987, May 1990–October 1990, January 1994–June 1994, and March 2000–September 2002. The MSCI Emerging Markets Index was backfilled with the S&P/IFC Index from 1985 to 1987. *Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.* Sources: MSCI, S&P Emerging Markets Data Base, and Dow Jones; author's calculations.

with the global economy, they will behave more like developed markets. (Over time, however, the lower intensity of international bear markets, and the time lags among bear markets in different countries, may still provide opportunities for U.S. investors to enhance their returns and reduce risk by investing in international equities.)

During U.S. bear markets, the correlations between U.S. and emerging-markets stocks and between U.S. and developed international markets

stocks generally rise. Table 2 shows the correlation of the U.S. stock market with the respective MSCI Emerging Markets Index for Asia; Latin America; and Europe, the Middle East, and Africa. All emerging-markets regions exhibited higher correlations with the U.S. market during U.S. bear markets in the 1985–2005 period. In the most recent U.S. bear market, the correlation between the returns of U.S. stocks and those of emerging markets increased to 70%.

Table 3 shows the bull and bear market performances of the U.S., developed international markets (represented by the MSCI EAFE Index), and emerging markets from 1985 to 2005. During these short periods, within the overall fairly limited time frame of 1985 to 2005, emerging markets outperformed U.S. stocks during both bear markets and bull markets. Compared with developed international markets, however, emerging markets trailed during U.S. bear markets and outperformed during U.S. bull markets. In both bull and bear markets, emerging markets were significantly more volatile than the developed markets.

Table 3 also shows the returns of two hypothetical portfolios—one with 80% of assets in U.S. stocks and 20% in developed international markets, and the other with 80% in U.S. stocks, 17% in developed international markets, and 3% in emerging markets. The emerging-markets allocation proved a modest detriment during bear markets—reducing the average return and increasing volatility—and a modest enhancement during bull markets—boosting the average return with little impact on volatility. Note that the impact on portfolio performance would be more meaningful if the emerging-markets allocation were greater.

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).

Financial crises: contagion

Another short-term factor that challenges the long-term case for investing in emerging markets is the phenomenon of “contagion”—the observation that correlations among emerging markets spike during periods of crisis in the developing world. Figure 5 (on page 9) shows that more than 90% of emerging markets experienced bear markets during the Latin American crisis of 1994–1995 and the Asian crisis of 1996–1998. The Latin American crisis originated

with the 34% devaluation of the Mexican peso in December 1994. The peso’s fall reverberated throughout Latin America and, to a lesser degree, in other emerging markets. Similarly, the Asian crisis was triggered by the devaluation of the Thai baht in October 1996. Again, other emerging markets suffered as well.

Such shocks can be transmitted in several ways:¹⁶

- **Financial links** through the international financial system. A margin call is one example. When the value of a leveraged investor’s collateral falls because of a shock in one country, the investor may need to sell holdings in a “healthy” market to meet a margin call. This dynamic transmits the shock to other economies.
- **Real links** through fundamental economic relationships among economies, typically through international trade. When two countries trade with each other, or compete in the same foreign markets, a devaluation of one country’s currency reduces the other country’s competitive advantage. This can lead to a devaluation by the competing economy as it seeks to rebalance its external sectors.
- **Political links** through political relationships among countries. Though less emphasized by researchers, this link may exist through an association or “club” of countries with an exchange rate arrangement. If some countries in the group devalue their currencies, the political cost of others’ doing the same may be low. Therefore, crises tend to be clustered. A crisis in one country is followed by crises elsewhere.
- **Herding behavior** of international investors. When information is costly and hard to come by—which is often the case in emerging markets—investors remain uninformed about the countries in which they invest. They try to infer future price changes based on the reactions of their fellow investors, amplifying market movements. Moreover, a crisis can prompt investors to reassess the general

¹⁶ This discussion is largely from the World Bank’s subsite entitled “Contagion of Financial Crises.” See <http://www1.worldbank.org/economicpolicy/managing%20volatility/contagion>.

risks of investing abroad. In this situation, a change in Thailand's asset prices, for example, might be used to make decisions about future price changes in Indonesia or Brazil. These reactions lead to herding behavior, panics, and "irrational" pessimism or exuberance.

Tables 4 and 5 present the average returns and volatility of—and correlations between—international markets during three periods of crisis: the Asian crises of 1990–1991 and 1996–1998 and the Latin American crisis of 1994–1995.¹⁷ For emerging markets as a group, volatility increased and investment losses were steep during these periods of crisis. The effects were most pronounced in Asia simply because it experienced two crises during the period under review. The crises had minimal impact on the volatility and returns of developed markets.

The correlations among emerging markets and developed markets increased during the periods of crisis, though this result may be skewed by the length of the 1996–1998 crisis, a period when correlations were already significantly higher than their historical levels. During these periods of crisis, emerging-markets stocks detracted from the performance of a portfolio, again obscuring the long-term case for investing in these securities. For example, in any financial-crisis year from 1985 to 2005, a portfolio that was invested 80% in the United States, 17% in developed international markets, and 3% in emerging markets would have experienced a return that was 49 basis points lower and volatility that was 20 basis points higher relative to a portfolio that was invested 80% in U.S. stocks and 20% in developed international markets.

Table 4. International average returns and volatility during emerging-markets crises, 1985–2005

	Emerging Markets Index	Asia Index	Latin America Index	Europe, Middle East, and Africa Index	U.S.	EAFE
Volatility						
All Periods	23.43%	24.55%	34.65%	28.98%	15.34%	17.14%
Crisis	27.79	31.51	33.54	31.24	16.09	19.72
Average Returns						
All Periods	16.71%	12.67%	24.20%	14.48%	13.09%	12.73%
Crisis	-6.28	-15.74	5.21	-2.80	25.40	10.03

Note: The dates of the crises are December 1994–November 1995 for the Latin American crisis, May 1990–April 1991 for the first Asian crisis, and October 1996–December 1998 for the second Asian crisis. The Emerging Markets, Asia, and Latin America indexes were backfilled with the S&P/IFC Index from 1985 to 1987. The Europe, Middle East, and Africa Index was established in 1989 and was backfilled with the S&P/IFC Index from 1989 to 1996.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

Sources: MSCI, Dow Jones, S&P Emerging Markets Data Base, and Thomson Datastream; author's calculations.

¹⁷ The 1990–1991 Asian crisis was the result of complex factors, ranging from monetary conditions to political uncertainty. Stock markets in the Philippines, Taiwan, South Korea, Thailand, and Indonesia crashed in the period from May 1990 to October 1990. The 1994–1995 Latin American crisis started with the devaluation of the Mexican peso in December 1994. The Mexican, Argentinean, and Brazilian stock markets crashed in December 1994, February 1994, and March 1995, respectively. The 1996–1998 Asian crisis was essentially a convolution of two crises. The Thai stock market crashed in October 1996 over concerns about high interest rates and bad bank loans. The Malaysian and Philippine markets crashed together in August 1997.

Table 5. International correlations during emerging markets crises, 1985–2005

	Emerging Markets Index	Asia Index	Latin America Index	Europe, Middle East, and Africa Index
Correlation with U.S.				
All Periods	58%	53%	47%	36%
Crisis	73	65	65	50
Correlation with EAFE				
All Periods	53%	49%	39%	44%
Crisis	65	66	47	50

Note: The dates of the crises are December 1994–November 1995 for the Latin American crisis, May 1990–April 1991 for the first Asian crisis, and October 1996–December 1998 for the second Asian crisis. The Emerging Markets, Asia, and Latin America Indexes were backfilled with the S&P/IFC Index from 1985 to 1987. The Europe, Middle East, and Africa Index was established in 1989 and was backfilled with the S&P/IFC Index from 1989 to 1996.

Sources: S&P Emerging Markets Data Base, MSCI, and Thomson Datastream; author's calculations.

Bubbles and booms

The final transitory factor we examined was periodic bubbles and booms in the stock market. Financial markets' history shows that investors worldwide tend to become exceptionally optimistic about major technological innovations that seem to promise enormous productivity growth. Stock markets worldwide boom, and international correlations rise. When a technological innovation fails to meet those high expectations, returns decline and correlations subside.

The 1990s was a time of rapid economic growth and widespread dissemination of technological innovations in the telecommunications, media, and information technology (TMT) sectors. Investor optimism regarding the impact of these innovations on profitability and the economy resulted in a bull market in the 1990s. The optimism was remarkable in its universality. Investors in Europe, Asia, and the

United States seemed to share the same euphoric sentiments about the economic prospects of the TMT sector. In addition, the performance of TMT firms in different parts of the world depended on the economic conditions in the major markets, such as the U.S. economy, to create demand for their products. These factors led to a sharp increase in the correlation between TMT stocks in one market and TMT stocks in another. The increase in the TMT sector's market capitalization, combined with a surge in the correlation among TMT stocks in different markets, contributed to a sharp rise in the correlation between the return of the broad U.S. market and the returns of international stock markets. Figure 6 on page 14 depicts rolling 3-year U.S. and emerging-

markets correlations with and without the TMT sector. When the TMT sector is excluded, the correlation between the Dow Jones Wilshire 5000 Index and the Emerging Markets Index declines significantly, although correlations converged over the 2003–2005 period.¹⁸ During this period, correlations also rose between the U.S. and developed international markets (Tokat, 2006).

These occasional booms produce short-term performance that differs from long-term expectations, most notably through the rise in correlations. History suggests that much of the increase is temporary. For example, during the 1920s—a period of rapid economic growth accompanied by the widespread dissemination of automobiles, electricity, and radio—the correlations among stock markets rose sharply, then later declined.

¹⁸ Note that the differences between Figures 1 and 6 arise because Figure 1 uses data from the MSCI Index backfilled with the S&P/IFC Index, whereas Figure 6 uses data from Thomson Datastream, which does not correct for investability. The combination of the MSCI and S&P/IFC indexes may give somewhat different answers at times than Datastream due to different market-cap weightings of countries or industries. The correlation between the returns of the MSCI–S&P/IFC combination and Datastream is 86%.

Figure 6. Rolling 3-year correlations with and without TMT stocks



Note: Emerging markets are represented by the MSCI Emerging Markets Index, and the U.S. market is represented by the Thomson Datastream U.S. Index.

The performance data shown represent past performance, which is not a guarantee of future results.

Sources: MSCI and Thomson Datastream; author's calculations.

Over short periods, stock market booms and bubbles, financial crises, and the cycle of bull and bear markets may tempt investors to conclude that the long-term case for international investing is not valid. To derive the long-term benefits of investing in emerging markets, investors should be prepared for significant short-term deviations from reasonable long-term expectations.

International allocation recommendations

The appropriate allocation to international investments ultimately hinges on an investor's investment horizon and ability to tolerate risk. Standard financial theory provides several approaches for establishing a strategic allocation to emerging markets. We explore approaches based on an assumption of market efficiency, a mean-variance framework, and practical modifications to theory.

The first approach assumes that the global equity market is efficient and that market-capitalization weightings reflect market participants' analyses and consensus expectations. In this case, the global market-cap weighting of any country or region is its "optimal" allocation. Although developing countries represented approximately 20% of the world's GDP in 2004, their stock markets accounted for only 5.2% of the world's equity market capitalization.¹⁹

The world's capital markets are not fully integrated. Restrictions on foreign investors reduced the internationally available emerging-markets capitalization weighting from 11% to 7% in 2005.²⁰ Numerous other constraints—higher transaction and tax costs, high information costs, and currency risk, among others—put foreign investors at a disadvantage relative to a country's domestic investors. Research suggests that there are both rational and behavioral reasons for ignoring market-cap weightings and overweighting an investor's domestic market (Tokat, 2006). If U.S. investors are biased toward their market, but don't have a strong bias against emerging markets relative to other international markets, then a market-weighted international allocation is a sensible approach. At the end of 2005, emerging markets made up about 13% of the value of global stock markets, excluding the U.S. stock market.

¹⁹ The source for GDP is the World Bank and the source for market-cap weightings is the MSCI Emerging Markets Index and the MSCI All Country World Index. Data are as of December 31, 2004.

²⁰ The current weighting is the MSCI Emerging Markets Index market-cap weighting as of December 2005.

One risk of adhering to market-capitalization weightings is that it may lead to a portfolio that is concentrated in a particular country or region. For example, South Korea's stock market boom during the 1980s boosted its weighting among emerging markets to 25.7% in 1989. From 1988 to 2005, however, its average weighting was just 13.2%. In extreme cases, a deviation from market weightings might 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 expectations about returns, volatility, and correlations to achieve the best risk-adjusted returns or the minimum portfolio volatility. Recommendations based on mean-variance analysis are highly sensitive to assumptions about returns, volatility, and correlations. Because emerging markets provided the highest arithmetic average returns from 1985 to 2005, investors' risk-adjusted returns were maximized by investing 18% of their total equity allocation in emerging markets. However, the limited financial history, data biases, and major changes of economic structure that characterize emerging markets render this approach less appropriate. Furthermore, the high uncertainty of expected returns and risks in short periods makes asset allocation recommendations based on mean-variance analysis less reliable in the short term.

Practical modifications to theory

In the real world, long-term portfolios are managed over a series of short terms that may be very different from investors' 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.²¹ Any difference between an investor's portfolio and that of a peer group or benchmark introduces the potential for regret.

For example, some investors experience regret at not holding, or underweighting, emerging markets relative to a world benchmark. Such investors can reduce their potential regret by holding U.S. and international markets—including emerging markets—at their market-capitalization weightings, reflecting consensus expectations. Alternatively, investors who judge their portfolios' performance against the performance of their peers' portfolios will regret having a higher emerging-markets exposure than their peers when these markets underperform. This is especially relevant for institutional investors, who may have to explain any underperformance to an investment committee. To minimize their potential regret, such investors would not deviate from their peers' allocations to emerging markets. Similarly, investors who judge their portfolios' performance against domestic markets' performance will regret their international investments when domestic markets outperform. Such investors can eliminate their potential regret by holding, for example, a U.S.-only portfolio.

²¹ See George Chow (1995) and Grant W. Gardner and Thierry Wuilloud (1995) for potential decision-making frameworks that balance both concerns.

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 returns. Meeting a portfolio's long-term objective should override the goal of minimizing the short-term regret of underperforming peers or benchmarks.

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. There are rational, though difficult to quantify, reasons that may call for a lower allocation to international markets. The factors especially relevant for emerging markets are higher transaction costs, additional taxes, asymmetric information, and restricted access. To the extent that local equities are a better hedge for local liabilities than emerging-markets equities, investors may benefit from lower exposure to emerging markets.²² Rational arguments for home-country bias call for some reduction in the international exposure suggested by market-cap weightings or a mean-variance framework.

Vanguard's recommendation

Our recommended allocation to emerging-markets stocks builds on our contention that a 20%–40% allocation to international stocks can provide meaningful diversification opportunities (Tokat, 2006). Our case for investing in international stocks from developed markets is based primarily on their diversification benefits, not on their expected returns. The case for investing in emerging markets, by contrast, rests primarily on our expectation that these markets will generate superior long-term returns and secondarily on the opportunity to reduce risk through diversification.

Based on a theoretical assessment of emerging markets, as well as on an examination of these markets' limited statistical records, we advise that risk-tolerant investors participate in the potential long-term growth of less-developed markets by investing 10% to 15% of their international allocation in emerging markets. For a portfolio that has 20% of its equities internationally, such an allocation would represent 2% to 3% of a portfolio's overall equity allocation.

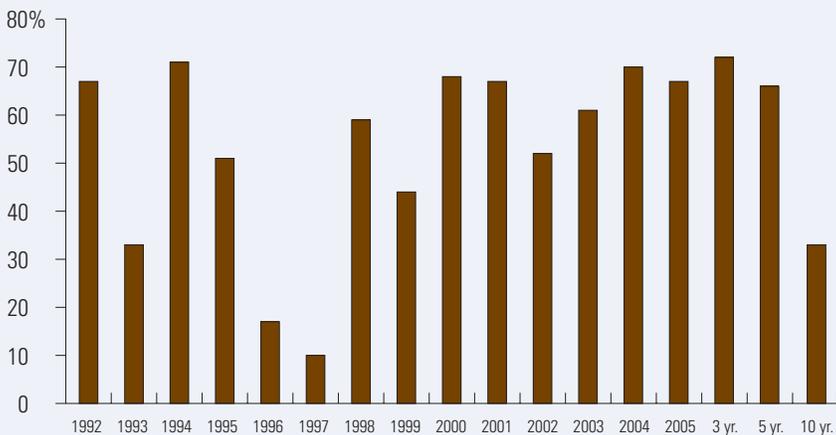
²² Please refer to our companion paper (Tokat, 2006) for rational and behavioral reasons for home-country bias in equity portfolios.

Performance of indexing versus active management for emerging markets

Although it is generally suggested that emerging equity markets are inefficient, providing greater opportunities for outperformance by active managers, the empirical evidence is mixed. Emerging equity markets are characterized by high trading costs, lack of liquidity, restrictions on foreign ownership, and the occurrence of extreme events (Hart et al., 2003), all of which impose a handicap on active managers. Perceived market-timing opportunities based on the observed mean reversion in country returns is in part caused by lack of diversification (that is, firm- or sector-level concentration), infrequent trading, time-varying risk exposures, and/or risk premiums as well as potential fundamental inefficiencies (Bekaert et al., 1998).

Even in potentially less-efficient markets, index investing can be a successful strategy because of advantages from lower trading costs (mostly due to lower turnover) and lower operating expenses. Figure 7 shows that the MSCI Emerging Markets Index has done better than 72% and 66%, respectively, of the emerging-markets funds over the three- and five-year periods ended December 31, 2005. The poor ten-year performance of the MSCI Emerging Markets Index was mostly due to its high exposure to the countries involved in the Asian crisis of 1996–1997.²³ Figure 7 shows that some active managers were able to outperform their benchmarks in the 1992–2005 period. We contend that, as in developed markets, skilled active managers can outperform in the emerging markets. Indexing, however, remains a more successful strategy than a significant proportion of the active management strategies.

Figure 7. The percentage of emerging-markets funds outperformed by the MSCI Emerging Markets Index, 1992–2005



Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

Sources: Lipper, MSCI, and Vanguard Investment Counseling & Research.

²³ The MSCI Emerging Markets Index had a 29.32% allocation to Malaysia, the Philippines, and Thailand in January 1996. Stock market crashes in Thailand in October 1996 and in Malaysia and the Philippines in August 1997 impaired performance of the index significantly. Additionally, the inclusion of China and Taiwan in the index in September 1996 further increased its exposure to Asia by 10.05% right before the second Asian crisis, again hurting the performance of the index.

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