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The 1990s witnessed tremendous growth in the assets of international mutual funds. This growth is likely to continue as more investors seek the diversification benefits of foreign assets, which have relatively low correlations with domestic stock portfolios. Investors may also be attracted to international funds in the popular belief that such funds can earn abnormally high returns because of the relative inefficiency of these markets. But there is little evidence that this notion is valid.

This article sets the stage for investigating whether exploitable foreign market inefficiencies exist by studying the performance of a large sample of international open-end mutual funds during the 1990s. The analysis sorts funds into thirty-two categories and then applies four commonly used performance measures to characterize the funds' return distributions.

The results show that a large percentage of well-diversified international funds outperform their passive benchmarks in a statistically significant manner, but regional and country funds do not. In addition, emerging markets funds exhibit volatilities that are generally higher than those of developed market funds but do not exhibit significantly higher average or abnormal returns.

These findings indicate that the attractiveness of emerging markets investment should be revisited in more detail. The author suggests that the next step is to formulate data tests that can disentangle competing models of international capital markets and thus identify the underlying factors driving the results.

In making monetary policy, the Federal Open Market Committee (FOMC) relies in part on the Beige Book, a report on regional economic conditions released publicly about two weeks before each FOMC meeting. The Beige Book summarizes economic conditions in each of the twelve Federal Reserve districts and provides an overview of national conditions based on the regional reports.

The Reserve Banks gather information for their regional summaries from a variety of sources, including telephone and written surveys, local news reports, and reports on current and expected economic conditions from the Reserve Banks' boards of directors. Some critics consider this type of anecdotal information too subjective to be of much value. However, recent research applying quantitative methods to Beige Book information shows that the reports provide a useful indicator of national and regional economic activity.

This article evaluates the relationship between the Sixth District (Atlanta) Beige Book and regional and state per capita employment, real personal income, and real gross state product growth. The analysis also compares the Atlanta Beige Book to next-quarter estimates of economic activity and examines whether it contains information about regional economic activity in addition to that contained in the national Beige Book summary. The authors find that, despite the Beige Book's anecdotal nature, the report provides timely, reliable information when actual data are not yet available, giving policymakers an early indication of the direction of the economy that helps them make informed decisions.

The Performance of Open-End International Mutual Funds

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O PEN-END MUTUAL FUNDS OFFER INDIVIDUAL INVESTORS A CONVENIENT, LOW-COST VEHICLE
FOR GAINING EXPOSURE TO EQUITY INVESTMENTS OUTSIDE THE UNITED STATES. FROM 1990
TO 1999 GLOBAL AND INTERNATIONAL MUTUAL FUND ASSETS GREW FROM $46.2 BILLION
TO $501.4 BILLION. THIS GROWTH IS LIKELY TO CONTINUE AS MORE INVESTORS SEEK TO

diversify their portfolios into foreign markets. Indeed,
the net new cash flow into international funds in 2000
was $49.9 billion (ICI 2001). Most advocates of inter-
national investing focus on the diversification benefits
of adding assets that have relatively low correlations
with domestic stock portfolios. Another suggested
benefit of international investing, commonly alluded
to in the popular press, is that professional fund man-
agers can earn abnormally high returns in inter-
national equities because of the relative inefficiency
of these markets.[1] However, there is little evidence on
the validity of this assertion. This article takes a step
toward filling this gap by studying the performance of
a large sample of open-end international mutual
funds during the 1990s.

Employing a set of performance measures com-
monly used in the academic and professional evalua-
tion of mutual funds, this study characterizes the
distribution of returns earned by investors. Rather
than answering the question of whether there are
exploitable foreign market inefficiencies, the results
here set the stage for such an investigation by demon-
strating the extent to which fund managers earn
abnormal returns, if at all, and, if so, whether there are

any statistically significant relations between the type
of international fund and abnormal performance.

At the same time, the analysis allows for scrutiny
of commonly accepted "street lore." For example,
are emerging markets funds more volatile than
developed markets funds? Do they earn higher
average returns? Most previous evidence on these
types of questions is based on studies of foreign
market indexes rather than managed mutual funds.
Thus the extent to which such evidence applies to
funds, and therefore matches the experience of
fund investors, is an open empirical question.[2]

The Investment Environment

To properly frame the analysis, the article first
describes the investment environment in
which international mutual fund managers
operate. By definition, international funds invest in
firms domiciled in countries outside the United
States. In the last ten years many countries have
removed or lessened restrictions on foreign invest-
ment. However, international mutual fund man-
agers still face several types of risk that domestic
U.S. equity managers do not, including

- currency risk: Foreign stocks are denominated and traded in units of foreign currency. The dollar-denominated returns on an international fund are thus subject to the fluctuations of not only the underlying stock prices but also the foreign currency–U.S. dollar exchange rates.
- settlement risk and trading costs: Settlement of trades is much less certain in foreign markets, where the delay and failure rate after execution is typically 15 to 20 percent and as high as 33 percent in the least sophisticated financial markets (see Keegan 1999). Delayed and failed executions are the largest contributors to trading costs in emerging markets, which are estimated at 50–100 basis points (see Plexus Group 2000).
- legal and regulatory risk: Laws and regulations governing accounting standards, protection of shareholders, insider trading, and corporate governance and the enforcement of such laws differ widely across countries.[3] These differences not only affect the actual returns on stocks in various countries but also complicate managers' evaluations of potential investments.
- political/country risk: Credit ratings differ dramatically across countries.[4] These credit ratings reflect a country's economic growth potential, the risk of government expropriation of assets, political management of the economy, the outlook for inflation, and similar factors. Erb, Harvey, and Viskanta (1996) establish that country credit risk is associated with differences in expected returns. As with legal and regulatory issues, the political and country-specific considerations magnify the complexity of investment evaluation and add another source of volatility to returns.

Because the severity of these risks and costs varies significantly across countries, one might expect to see this variability reflected in the return performance of mutual funds across categories of foreign investment. As detailed in a later section, this article classifies international mutual funds into three broad types: country funds (which are divided into two subcategories—developed and emerging markets), regional funds, and well-diversified funds. Country and regional funds limit their investments to a particular geographic country or region while well-diversified funds invest in the worldwide universe of stocks. These categories of investment constraints imply an inverse ranking in the ability of fund managers to diversify away the risks and limit the costs listed above; that is, well-diversified funds are likely to have lower volatilities, on average, than country or regional funds. And since managers have differing abilities to evaluate, manage, and hedge these risks

and costs, the degree of heterogeneity among funds in a particular category is of interest as well.

Another useful way to classify funds within each of these three broad categories is to distinguish whether the investments are primarily in emerging or in developed equity markets. If emerging markets are less efficient, as is generally believed, then emerging markets funds are likely to have higher abnormal performance than do developed markets funds. However, to the extent that an "emerging markets" classification is a good proxy for a higher level of settlement risk and trading costs, emerging markets funds will have higher costs and could earn lower average returns after netting out management fees.

Alternative Performance Measures

This study evaluates and compares funds using four different methods to characterize or measure performance:

- the arithmetic average of the monthly returns for each fund over the sample period;
- the standard deviation of the monthly returns for each fund over the sample period;
- the Sharpe ratio, computed as $\text{avg}(R - R^f)/\sigma(R - R^f)$, where R is the return on a given fund, R^f is the monthly rate on three-month U.S. Treasury bills, and σ is the standard deviation of excess return, $R - R^f$; and
- Jensen's alpha, computed as the intercept from the regression $(R - R^f) = \alpha + \beta(R^b - R^f) + \varepsilon$, where R^b is the monthly return on the benchmark index.

The average monthly return smoothes out the time series variation in a fund's return history while the standard deviation of monthly returns highlights the time series return volatility. These two measures are more properly termed return characteristics than performance measures since each does not, by itself, provide a risk-averse investor with a measure to evaluate and rank funds.

The latter two measures do provide such performance evaluation information. A fund's Sharpe ratio is a scale-free reward-to-total variability ratio. It answers the question, How much additional average return per unit of volatility does this fund provide? The ratio analyzes returns in excess of a benchmark, usually the risk-free rate, and so is not the same as the ratio of the average return to the standard deviation of return.

A fund's Jensen's alpha measures its risk-adjusted performance compared to a passive benchmark portfolio representing its universe (global, region, country, etc.) The alpha thus provides a measure of a fund manager's ability to outperform his relevant market,

answering the question, Is there any consistent gain from investing in this actively managed fund instead of the passive index fund? A central issue in the use of alphas as measures of managerial ability is the choice of a benchmark. If the benchmark used does not represent the manager's universe, then finding a significantly positive alpha may be evidence of a style tilt rather than superior stock selection ability. Appropriate benchmarking is particularly critical when evaluating international mutual funds.[5]

The Data

For this study, the data on mutual funds are from the 1999 edition of the Survivorship-Bias-Free Mutual Fund Database from the Center for Research in Securities Prices (CRSP). The sample includes all international equity funds that existed at any time during the 1990–99 period. All measures are based on all available monthly fund returns, denominated in U.S. dollars and net of management fees but not adjusted for any loads.

An advantage of the CRSP database is that it contains data on all mutual funds, including those that were liquidated or merged over this period, and is therefore free from survivorship bias. This property is especially important for studies of mutual fund performance because the funds that terminate as a result of a merger or liquidation are often among the worst performers. Excluding this group of funds from the analysis would provide an incomplete, and potentially misleading, picture of the performance realized by fund investors during this period and the performance likely to prevail in the future.

This analysis sorts funds into thirty-two categories on the basis of three independent classification codes and the fund name (see Table 1).[6] During the 1990–99 period all mutual funds with names suggesting investment in a particular country or region were effectively required to hold 65 percent of their assets in investments with an economic tie to that country or region.[7] Thus the name of a fund was used as the final arbiter of its categorization. While most of the category names are clear, some

require additional explanation. The group of categories termed Well-Diversified includes funds with a large number of holdings that are intended to cover the worldwide universe of investment opportunities. Most of these categories concentrate on developed capital markets. International funds differ from Global/World funds in that they do not include any investments in the United States while Global/World funds may but are not required to do so. International Growth is a classification listed by Strategic Insights while International Income is a category based on the observation that many international funds use "income" in their name. International Miscellaneous funds are those that are designated as international by one of the three classification codes but have names that do not indicate any international investment style. The EAFE fund covers Europe, Australia, and the Far East.

In the case of country funds, each country is further distinguished as developed or emerging using the classification from Morgan Stanley Capital International (MSCI). The classification of emerging markets is based on per capita gross domestic product (GDP), regulatory environment, perceived investment risk, and/or "a general perception by the investment community that the country should be classified as emerging."[8]

Table 1 shows that the most common type of international open-end mutual fund offered to U.S. investors is the well-diversified fund: Global/World, International, and Emerging Markets funds. As of December 1999, this group of funds accounts for 77 percent of the total number of funds and 92 percent of the total international assets under management. One of the

International Income and International Miscellaneous track the MSCI World Ex-U.S. Index much less closely than do International, International Growth, and EAFE funds.

1. For example, see Barker (1999). Not surprisingly, many active portfolio managers share this view of foreign markets as inefficient. For example, Octagon Asset Management has a mission "to focus on emerging markets, where inefficiencies are the greatest" (www.octagonholdings.com/oamhome.htm).
2. One exception is Bekaert and Urias (1999), who focus on the attainability of diversification benefits from emerging markets investment.
3. For an in-depth discussion of this topic, see La Porta and others (1998).
4. See, for example, *World Development Indicators*, a publication of the World Bank.
5. See Reilly and Akhtar (1995) for a study of benchmark sensitivity.
6. The CRSP database classifies funds according to codes from three independent firms — Standard & Poor's Fund Services, Strategic Insights, and Weisenberger.
7. Under Securities and Exchange Commission rule 35d-1, adopted March 31, 2001, this requirement has been raised to 80 percent.
8. See the MSCI Equity Index Methodology at www.msci.com/methodology.

TABLE 1
Categories of International Open-End Mutual Funds and Total Net Assets

	Number of Funds in 1990s	Number of Funds as of 12/99	Total Net Assets as of 12/99 ($U.S. millions)
Well-Diversified Funds			
Global/World	432	359	128,466.28
International	724	619	174,124.58
International Income	57	39	69,997.05
International Growth	42	32	6,410.35
International Miscellaneous	21	16	33,499.05
EAFE	8	5	30,641.50
Emerging Markets	202	171	18,055.69
Regional Funds			
Africa	6	6	5.60
Asia/Pacific Rim	148	120	9,387.57
Australia/Asia	2	0	0.00
Europe	134	112	20,989.34
Latin America	48	44	1,762.32
Nordic	2	1	125.24
North America	2	0	0.00
Developed Country Funds			
Belgium	1	0	0.00
Canada	6	1	47.88
France	1	1	10.27
Germany	5	4	24.44
Holland	1	1	9.17
Italy	2	0	0.00
Japan	45	38	6,580.10
New Zealand	1	1	4.56
Spain	2	0	0.00
Switzerland	1	0	0.00
United Kingdom	4	2	6.43
Emerging Market Country Funds			
China	31	29	895.60
India	5	5	43.53
Israel	4	0	0.00
Korea	4	2	234.97
Mexico	2	1	8.33
Poland	2	1	2.44
Russia	2	2	40.71

Source: Center for Research in Securities Prices

most striking observations is that there are relatively few country-specific open-end funds available to U.S. investors. Excluding the Japan and China funds, twenty-one funds represent just eleven countries as of December 1999. In contrast, MSCI covers fifty countries with its international market indexes. In addition, among funds in all groups (well-diversified, regional, and country) there is a predominance of developed-markets offerings. Finally, a comparison of the total number of funds in each category during the 1990s versus December 1999 illustrates that a significant fraction of funds merged or liquidated during the decade. This pattern underscores the importance of using a survivorship-bias-free data set.

Charts 1 and 2 illustrate some of these comparisons and add the time dimension. For clarity, the funds are classified differently than in Table 1 and are now aggregated into four broad categories: global/international-developed; emerging markets (well-diversified, regional, and country funds); regional-developed; and country-developed. Chart 1 shows that the global/international-developed markets funds dramatically increased their share of the international mutual fund market in the 1990s. The

CHART 1
Total Assets under Management by Type of Fund

Source: Center for Research in Securities Prices

CHART 2
Number of Funds by Category
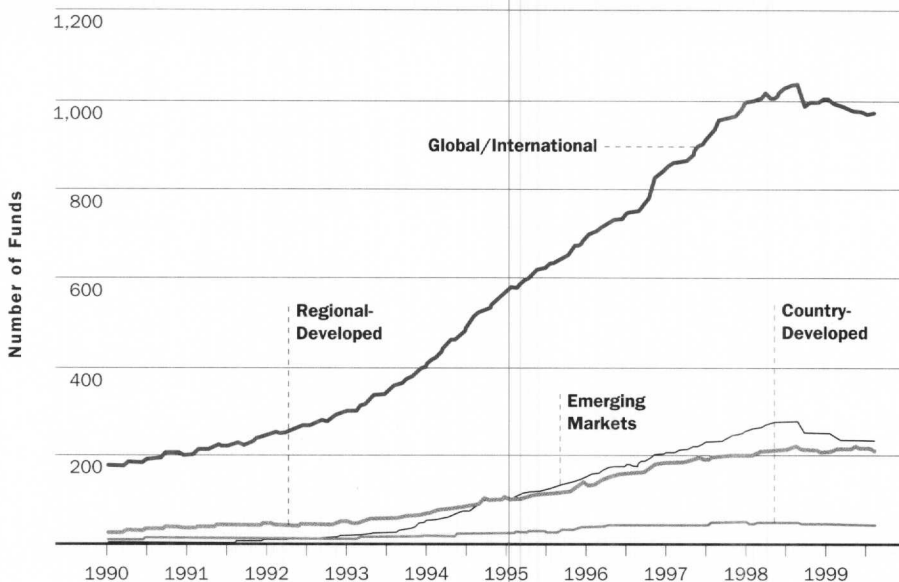
Source: Center for Research in Securities Prices

scale of this graph obscures the tremendous growth of emerging markets funds over this period. Overall, emerging markets assets began the decade with only $105.6 million in assets but grew to $21 billion by December 1999. Chart 2 indicates that the number of global/international-developed markets funds greatly increased as well. The number of emerging markets and regional developed funds also grew while the number of country funds remained relatively constant. It is clear from these charts that well-diversified (global/international) funds have dominated international mutual fund offerings in the 1990s. One potential explanation for this dominance is that U.S. investors desire only a broad

exposure to international markets and do not demand country-specific investments.

For calculation of Jensen's alpha, each fund category is matched with a passive index benchmark from the set of Morgan Stanley Capital International Indices. Each MSCI index represents a value-weighted portfolio accounting for 60 percent of the stated universe of stocks. Individual stocks are included based on industry, size, volume, cross-ownership, and float to capture characteristics of the complete equity universe. In the case of regional or composite indexes, MSCI aggregates individual country indexes by value-weighting their market capitalizations. To facilitate performance comparisons with the sample of open-end mutual funds, all index returns are computed in U.S. dollars and, when possible, reflect restrictions on foreign stock ownership. Thus the fund performance analyzed includes both the return on the foreign investments in their domestic currency and the return due to changes in the exchange rate between that currency and the U.S. dollar.

Charts 3–7 and Tables 2–5 report several types of comparisons based on performance measures calculated for each fund over the entire sample period. These comparisons reflect the underlying questions this study is asking about the data. Consider the analysis of average monthly return. Within each category, one would like to know how similar the funds are in terms of their average return. Did most Global/World funds have about the same average return during the 1990s, or did the funds deliver quite different average returns to their investors? The box plots in Charts 3–7 answer these questions.

(See Box 1 for an explanation of how to read a box plot.) A comparison across categories reveals the relative homogeneity in average return of different types of international funds and makes it possible to determine whether some categories are more (or less) internally heterogeneous than others. Such a comparison also makes it possible to explore the question of whether a fund's location affects its returns; for example, did diversified emerging markets funds earn higher returns on average than did diversified international funds?

Tables 2–5 provide overall averages of the fund performance measures within each category and the results of pairwise statistical comparisons that also help answer this location question. The tables note categories that are statistically significantly different from one another as a conservative estimate of differences that may occur in the future. (Because of small sample sizes, some categories exhibit large differences in their performance measures that are not statistically different.)

Finally, the tables for the average monthly return, the standard deviation of monthly returns, and the Sharpe ratio also include the performance of the Standard & Poor's 500 Index (S&P 500) over this period.[9] This index is a value-weighted average of the 500 largest firms in the domestic U.S. equity market and thus is a proxy for the U.S. market. While a full-blown comparison of U.S. versus international investing is beyond the scope of this study, the performance of the S&P 500 provides a familiar reference point for interpreting the performance of the international funds.

CHART 3
Distribution of Average Monthly Returns by Category, 1990–99
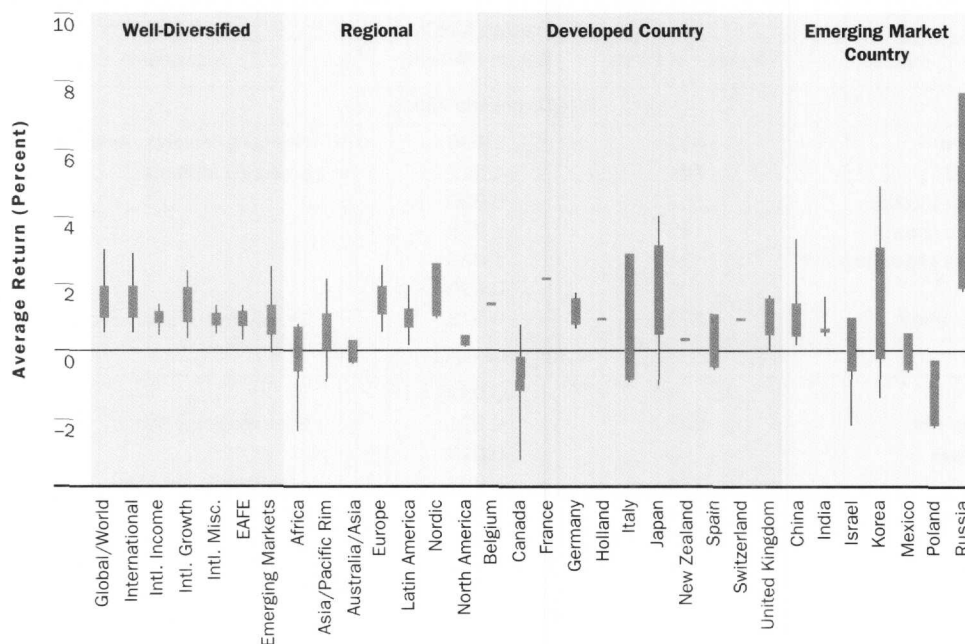
Note: The boxes represent the interquartile range of the distribution of observations—the 25th and 75th percentiles; the whiskers extend to the 10th and 90th percentile values. See Box 1 on page 6.

Source: Center for Research in Securities Prices

Study Results

Average Monthly Return. Chart 3 presents box plots of the distribution of average monthly returns by fund category. The well-diversified and regional fund categories tend to have smaller ranges of returns than the individual country funds do, suggesting that there is substantial heterogeneity even within funds investing in the same country. Given that the universe of stocks for country funds is largely limited to one country, this dissimilarity likely reflects for the most part security selection and currency hedging differences across fund managers. The well-diversified and regional funds are more homogenous in their distributions of average return. Average return differentials within these categories may include security selection differences although such differences are likely to be minimal in a large portfolio, where each security receives a small weight. More likely these differences reflect differences in regional or country exposures.[10]

Table 2 presents the overall average monthly return for each category, which is equivalent to the average return on an equally weighted portfolio of the funds in the category. An analysis of variance reveals that the category designations are significantly related to differences in average monthly return.[11] The average return on Global/World funds is significantly higher, at the 95 percent confidence level, than that of Asia/Pacific Rim funds and Emerging Markets funds but not significantly different from other well-diversified international funds. Though the regional distributions look quite different in Chart 3, only the Europe, Asia/Pacific Rim, and Latin America funds are significantly different, with Europe outperforming both markets by approximately 1 percent per month on average during the decade. These results indicate that there were consistent regional differences in average fund return, suggesting that international and global managers can, indeed, employ regional tilting to affect their average return. Interestingly, the emerging markets

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9. The S&P 500 monthly data are from www.barra.com.

10. See the Mutual Fund Cafe (2000) for some examples of the importance of regional allocation.

11. The F-statistic is 3.61 with a p-value of less than 0.0001. Bonferroni t-tests were used to control the Type I (false rejection) error rate when making multiple pairwise comparisons of the average return across categories. Not surprisingly, as a result of the small number of observations for most country fund categories, only two—the Canada and Russia funds—were found to be statistically different at the 95 percent confidence level.

	Number of Funds	Average Monthly Return (Percent)	Significantly Different
Well-Diversified Funds			
Global/World	432	1.636	Emerging Markets, Asia/Pacific Rim
International	724	1.512	Emerging Markets
International Income	57	0.990	
International Growth	42	1.238	
International Miscellaneous	21	1.033	
EAFE	8	0.920	
Emerging Markets	202	0.973	Global/World, International
Regional Funds			
Africa	6	−0.032	
Asia/Pacific Rim	148	0.901	Europe, Global/World
Australia/Asia	2	−0.020	
Europe	134	1.904	Asia/Pacific Rim, Latin America, Canada
Latin America	48	0.850	Europe
Nordic	2	1.778	
North America	2	0.296	
Developed Country Funds			
Belgium	1	1.388	
Canada	6	−0.779	Europe, Russia
France	1	2.128	
Germany	5	1.160	
Holland	1	0.921	
Italy	2	0.992	
Japan	45	1.625	
New Zealand	1	0.325	
Spain	2	0.273	
Switzerland	1	0.921	
United Kingdom	4	0.993	
Emerging Market Country Funds			
China	31	1.077	
India	5	0.774	
Israel	4	0.165	
Korea	4	1.421	
Mexico	2	−0.064	
Poland	2	−1.238	
Russia	2	4.728	Canada
U.S. Equity: S&P 500		1.480	

Source: Center for Research in Securities Prices

funds do not outperform the developed markets funds as studies using market indexes have found. The large underperformance of the emerging markets funds, on the order of 6.5 percent per year, may reflect additional costs due to settlement delay/failure and portfolio evaluation, as discussed earlier.

Finally, in comparison with the S&P 500, managed international funds did not provide many opportunities for improving average portfolio performance during the 1990s relative to the domestic U.S. market. The well-diversified international funds outperformed the S&P 500 by only 3 basis points per month on average. Thus the gains to broad international investing that have been documented using foreign market indexes are not always realized by investors in managed mutual funds. A few of the country funds realized average returns much higher than that of the S&P 500 (for example, Russia, France, and Japan), but, as the following discussion shows, the returns for these funds were also much more volatile.

Standard Deviation of Monthly Returns (Volatility). Averaging over time suppresses the
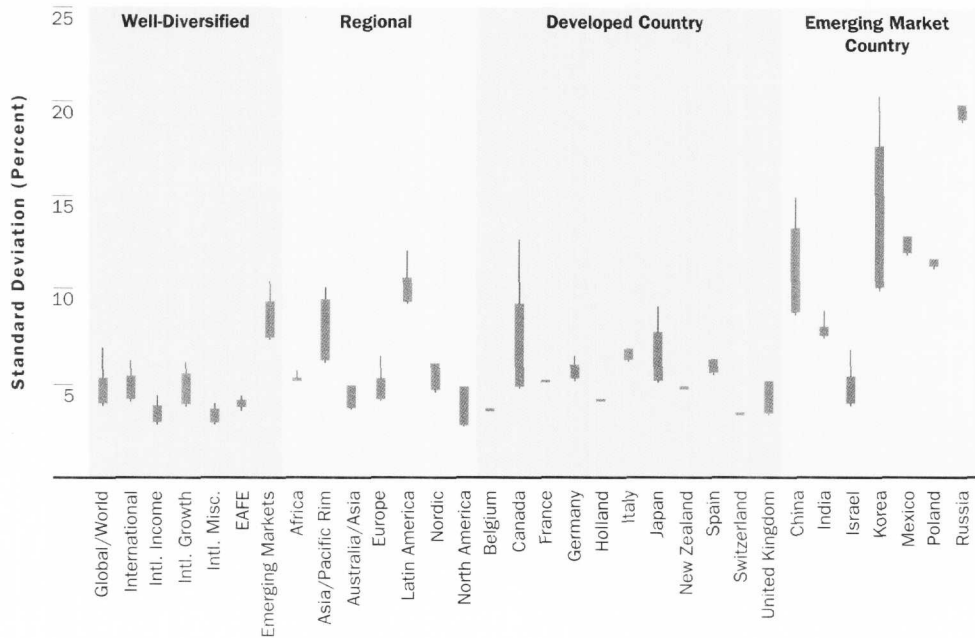
Note: The boxes represent the interquartile range of the distribution of observations—the 25th and 75th percentiles; the whiskers extend to the 10th and 90th percentile values.

Source: Center for Research in Securities Prices

volatility of each fund's return. Using the standard deviation of monthly returns, or total risk, for each fund makes it possible to isolate the fund's time series volatility. The box plots in Chart 4 allow one to compare the volatility of funds within a category and the degree of heterogeneity across categories while Table 3 reveals whether the categories have different volatilities on average.

The funds in emerging markets have some of the most heterogeneous volatilities. For example, two Korea funds have standard deviations double those of the other two Korea funds. In comparison, the well-diversified developed markets funds have much more homogenous volatilities. This contrast is not surprising because a higher level of diversification would tend to increase homogeneity in return variation. The main lesson to be drawn from the chart is, however, that volatilities may vary widely across funds within a given category, especially those investing in emerging markets.

Chart 4 also shows that well-diversified developed markets funds are less volatile than emerging markets funds, as might be expected from the earlier discussion of risks. Table 3 tests this observation using the same methodology as in Table 2 on the average fund volatility within each category. Emerging Markets funds are significantly more

volatile, posting an average standard deviation that is almost double (0.084) that of International, Global/World, and International Growth funds (0.048). This observation extends to regional funds, where the ranking of significantly different average volatilities is Latin America, Asia/Pacific Rim, and Europe (with Europe being a developed region). In the country funds, Korea, Mexico, Poland, and Russia funds have significantly higher average volatilities than all other categories.

Among well-diversified developed markets funds, the International Income and International Miscellaneous funds have significantly lower average volatilities and, as indicated in Chart 4, very homogenous distributions as well. An investor can be reasonably confident that selecting a fund from these groups will result in lower volatility.

A comparison with the volatility of the S&P 500 shows that most foreign fund categories had higher average monthly return volatility than the U.S. domestic market. This result is not surprising in view of the increased risk exposure of these funds. This finding, of course, does not imply that there are not any benefits to combining a foreign mutual fund with a domestic portfolio. Such benefits derive from diversification, which relies on the correlation between the portfolio returns and not just their individual volatilities.

TABLE 3
Standard Deviation of Monthly Returns for International Open-End Mutual Funds, 1990–99

|	Number of Funds	Mean Monthly Standard Deviation	Significantly Different
Well-Diversified Funds			
Global/World	432	0.048	Intl. Income, Intl. Misc., Emerging Markets
International	724	0.048	Intl. Income, Intl. Misc., Emerging Markets
International Income	57	0.033	International, Emerging Markets, Global/World, Intl. Growth
International Growth	42	0.048	Intl. Income, Intl. Misc., Emerging Markets
International Miscellaneous	21	0.032	All other well-diversified except EAFE
EAFE	8	0.041	Emerging Markets
Emerging Markets	202	0.084	All other well-diversified
Regional Funds			
Africa	6	0.052	Latin America
Asia/Pacific Rim	148	0.076	Latin America, Europe
Australia/Asia	2	0.043	Latin America
Europe	134	0.050	Latin America, Asia/Pacific Rim
Latin America	48	0.101	All other regional funds
Nordic	2	0.053	Latin America
North America	2	0.038	Latin America
Developed Country Funds			
Belgium	1	0.036	
Canada	6	0.074	
France	1	0.050	
Germany	5	0.055	
Holland	1	0.040	
Italy	2	0.065	
Japan	45	0.066	
New Zealand	1	0.047	
Spain	2	0.059	
Switzerland	1	0.034	
United Kingdom	4	0.042	
Emerging Market Country Funds			
China	31	0.108	
India	5	0.079	
Israel	4	0.046	
Korea	4	0.138*	
Mexico	2	0.124*	
Poland	2	0.114*	
Russia	2	0.195*	
U.S. Equity: S&P 500		0.039	

* Significantly different from all other fund categories

Source: Center for Research in Securities Prices

The Sharpe Ratio. The Sharpe ratio condenses the benefits and costs of investing—the average return and the standard deviation—into a single performance measure.[12] As an excess reward-to-variability ratio, the Sharpe ratio requires the use of a benchmark. The traditional benchmark is the risk-free rate, measured as the monthly rate on three-month U.S. Treasury bills. This benchmark is relevant, even for international funds, because this study takes the perspective of a U.S. investor whose alternative investment is a risk-free Treasury bill. Thus the Sharpe ratio is defined as the average return in excess of the risk-free rate per unit of fund volatility. If the average and standard deviation are the only two moments of return over which an investor has preferences, or if differential returns are normally distributed, the Sharpe ratio provides a useful measure for ranking funds.[13] The higher the Sharpe ratio, the more preferable the fund is to a risk-averse investor when he is considering an investment in only one

CHART 5
Distribution of Sharpe Ratio by Category, 1990–99
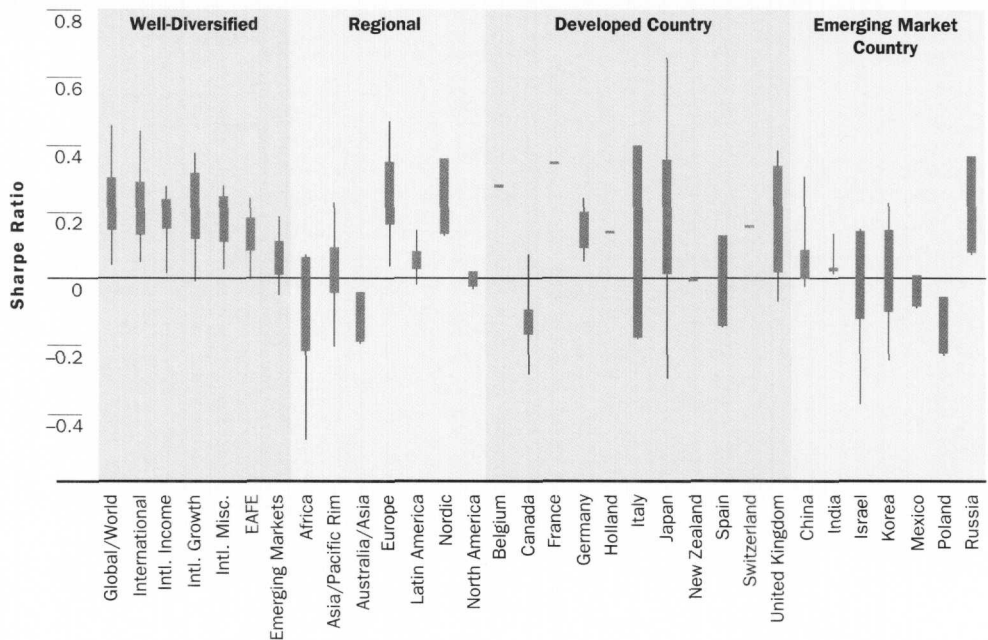
Note: The boxes represent the interquartile range of the distribution of observations—the 25th and 75th percentiles; the whiskers extend to the 10th and 90th percentile values.

Source: Center for Research in Securities Prices

risky portfolio. (See Box 2 on page 13 for a discussion of portfolio choice using Sharpe ratios.)

While all risky portfolios such as these international mutual funds might be expected to exhibit positive Sharpe ratios in equilibrium, this is not the case in practice. Many of the fund categories include a large number of individual funds with negative Sharpe ratios. This result implies that these funds did not beat the U.S. risk-free rate on average in the 1990s. The well-diversified developed markets funds, in contrast, show consistently positive Sharpe ratios. However, there is a fair amount of variation in the Sharpe ratios within any of these categories, as shown in Chart 5. For example, in the Global/World category, the Sharpe ratio at the 75th percentile is more than double the Sharpe ratio at the 25th percentile.

The attractive scale-free nature of the Sharpe ratio can be seen in analyzing the Russia funds. Their high average return is balanced by their high volatilities so that the resulting Sharpe ratios are not different in magnitude from those of well-diversified funds. Similarly, the emerging markets diversified funds are penalized by their generally high volatilities, resulting in Sharpe ratios that are generally lower than those of well-diversified developed market funds.

Table 4 shows these comparisons statistically. Indeed, the Global/World funds do have significantly higher average Sharpe ratios, at the 95 percent confidence level, than Emerging Markets diversified funds and two emerging markets regional funds (Asia/Pacific Rim and Latin America). Thus, a Global/World fund chosen at random can be expected, ex ante, to deliver a higher Sharpe ratio than a randomly chosen Emerging Markets fund. A regional difference noted in the previous tables is echoed here. Europe funds have significantly higher Sharpe ratios than Latin America funds.

It was noted earlier that well-diversified funds have dominated the international open-end mutual fund market. These Sharpe ratio results suggest that, for risk-averse investors wishing to select one international fund, well-diversified developed markets funds were, ex post, the best choice. However, the same investors would have been better off investing in the S&P 500 during this time than randomly choosing one fund from nearly any of the international categories.

12. For a thorough discussion of the foundations and uses of the Sharpe ratio, see Sharpe (1994).
13. See Bekaert and others (1998) for an analysis of the non-normality of emerging markets returns.

	Number of Funds	Mean Sharpe Ratio	Significantly Different
Well-Diversified Funds			
Global/World	432	0.236	Emerging Markets, Latin America, Asia
International	724	0.221	Emerging Markets, Latin America, Asia
International Income	57	0.174	
International Growth	42	0.175	
International Miscellaneous	21	0.197	
EAFE	8	0.129	
Emerging Markets	202	0.066	Global/World, International, Europe
Regional Funds			
Africa	6	−0.081	
Asia/Pacific Rim	148	0.094	
Australia/Asia	2	−0.121	
Europe	134	0.257	Emerging Markets, Latin America
Latin America	48	0.047	Europe, Global/World, International
Nordic	2	0.242	
North America	2	−0.006	
Developed Country Funds			
Belgium	1	0.274	
Canada	6	−0.126	
France	1	0.343	
Germany	5	0.141	
Holland	1	0.133	
Italy	2	0.106	
Japan	45	0.190	
New Zealand	1	−0.009	
Spain	2	−0.010	
Switzerland	1	0.152	
United Kingdom	4	0.174	
Emerging Market Country Funds			
China	31	0.066	
India	5	0.044	
Israel	4	0.008	
Korea	4	0.020	
Mexico	2	−0.041	
Poland	2	−0.142	
Russia	2	0.220	
U.S. Equity: S&P 500		0.279	

Source: Center for Research in Securities Prices

Jensen's Alpha. Jensen's alpha evaluates fund performance quite differently than a Sharpe ratio. An alpha captures the extent to which an actively managed portfolio outperforms a passive market benchmark by taking into account that a portion of the portfolio's return is driven by the benchmark market return. In contrast to the Sharpe ratio's use of total return volatility, the methodology used for Jensen's alpha decomposes total volatility into systematic and idiosyncratic risks. To compute the alpha, each fund category is matched with an MSCI index, and the following time series regression is run:

$$R - R^f = \alpha + \beta(R^b - R^f) + \varepsilon.$$

The alpha is the intercept from the regression $\alpha = \text{avg}(R - R^f) - \beta\text{avg}(R^b - R^f)$, the average return on a fund in excess of its benchmark-risk-adjusted return.

Portfolio Choice Using Sharpe Ratios

Risk-averse investors prefer higher average returns and dislike volatility. Thus the Sharpe ratio, by rewarding those funds with low volatility or high average return, is aligned with investor preferences. The chart illustrates the Sharpe ratio in the traditional mean–standard deviation framework.

The risk-free asset is plotted on the vertical axis since it has no volatility, ex ante. Each risky portfolio, X and Y, is plotted according to its average return and standard deviation. The slope of the line connecting the risk-free asset to a risky portfolio is the portfolio's Sharpe ratio. In this case, portfolio Y has a higher average return but also a much higher volatility than portfolio X. Thus the Sharpe ratio for portfolio X is higher. Any risk-averse investor would choose to invest in X rather than Y as the risky portion of his overall portfolio. To achieve his optimal portfolio, an investor would then allocate his investment capital between X and the risk-free asset according to his risk tolerance.

The Sharpe Ratio
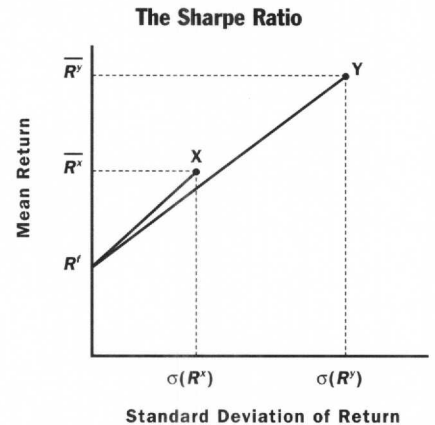
A useful interpretation of the market-risk-adjusted return is that it is the return on a portfolio of the risk-free asset and the passive index benchmark that has the same level of benchmark-related risk as the mutual fund being evaluated. Thus the alpha measures the amount of the fund's return beyond that earned by a passive portfolio with equivalent benchmark risk. This opportunity-cost interpretation is especially appropriate with these international funds because, first, many of the MSCI indexes are tradable as exchange-traded funds on the American Stock Exchange and consequently represent passive alternative investments, and, second, there is no strong evidence for an international capital asset pricing model (CAPM) that gives an economic equilibrium interpretation to these regressions. The R^2 coefficient from this regression is the percentage of the fund's return variation that can be explained by benchmark market return variation. In other words, it measures how closely the returns of the fund track the movements of the market benchmark.

Chart 6 contains box plots of the distribution of the R^2 from the alpha regressions. International, International Income, International Growth, International Miscellaneous, and EAFE all use the MSCI World Ex-U.S. Index. Thus the dramatic differences in the distribution of R^2 for these categories imply that these groupings do in fact pick up a significant difference in the funds. International Income and International Miscellaneous track the index much less closely than do International, International Growth, and EAFE funds. This pattern is in contrast to the other performance measures analyzed, where these groups had more similar distributions.

An interesting fact to note is that the Emerging Markets and Latin America funds track their benchmarks very closely. On average, over 80 percent of their return variability is due to fluctuations in the benchmark. Common street wisdom holds that it is possible to earn abnormal returns in emerging markets because of inefficiencies in the foreign capital markets. If these inefficiencies were firm-specific mispricings, fund managers could, in principle, exploit them by overweighting the underpriced stocks and underweighting the overpriced stocks relative to their benchmarks. Chart 6 shows that managers of Emerging Markets funds and regional funds in emerging markets (like Latin America) do not seem to have engaged in much of this behavior. The high correlation between these funds and their benchmarks may also reflect the higher correlation of stock prices within low-income economies documented by Morck, Yeung, and Yu (2000). When individual stock prices are highly correlated, deviations from the benchmark weighting scheme are less likely to result in a much lower R^2.

Two categories appear to be almost totally unrelated to their benchmark: Australia/Asia and Mexico. The Australia/Asia category is matched with a Pacific Rim Index, so this lack of correlation likely reflects
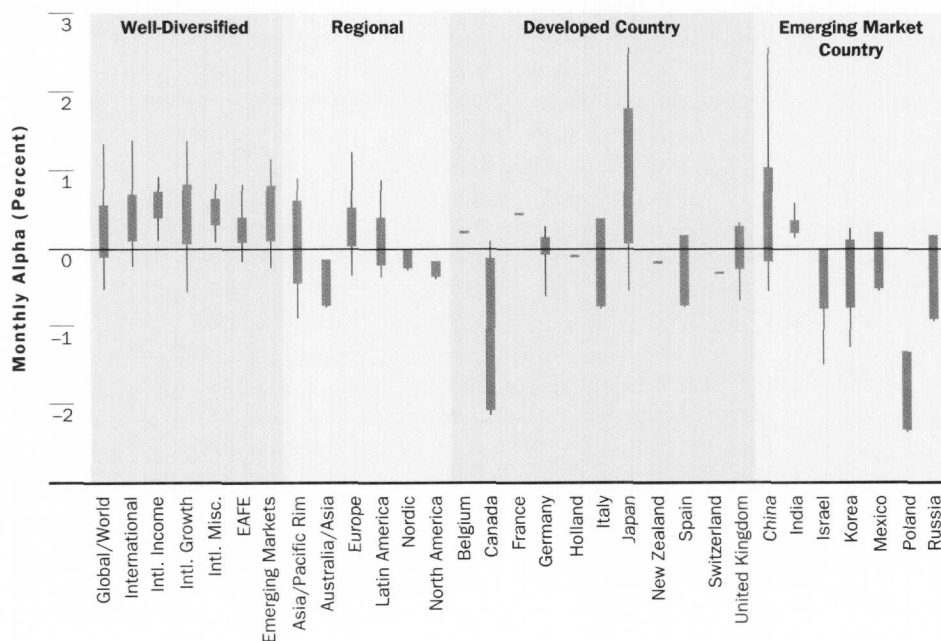
CHART 6
Distribution of R^2 versus Category-Matched MSCI Benchmarks, 1990–99
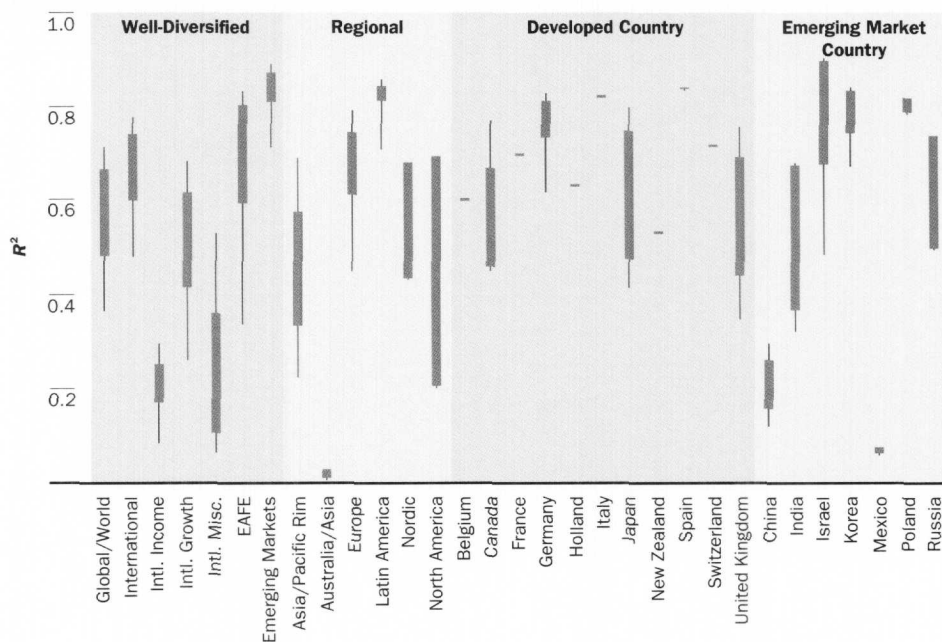
Note: Africa is not shown because no benchmark portfolio is available. The boxes represent the interquartile range of the distribution of observations—the 25th and 75th percentiles; the whiskers extend to the 10th and 90th percentile values.

Source: Center for Research in Securities Prices

CHART 7
Distribution of Monthly Alphas versus Category-Matched MSCI Benchmarks, 1990–99

Note: Africa is not shown because no benchmark portfolio is available. The boxes represent the interquartile range of the distribution of observations—the 25th and 75th percentiles; the whiskers extend to the 10th and 90th percentile values.

Source: Center for Research in Securities Prices

	Number of Funds	Mean Alpha	Percent Significantly > 0	Mean R^2
Well-Diversified Funds				
Global/World	432	0.00359	8.33	0.56
International	724	0.00458	13.95	0.65
International Income	57	0.00543	63.16	0.21
International Growth	42	0.00321	26.19	0.49
International Miscellaneous	21	0.00581	47.62	0.26
EAFE	8	0.00241	25.00	0.68
Emerging Markets	202	0.00407	8.91	0.83
Regional Funds[1]				
Asia/Pacific Rim	148	0.00229	4.73	0.46
Australia/Asia	2	−0.00442	0.00	0.02
Europe	134	0.00600	4.48	0.65
Latin America	48	0.00119	0.00	0.81
Nordic	2	−0.00142	0.00	0.56
North America	2	−0.00261	0.00	0.45
Developed Country Funds				
Belgium	1	0.00206	0.00	0.60
Canada	6	−0.01069	0.00	0.57
France	1	0.00428	0.00	0.70
Germany	5	−0.00070	0.00	0.75
Holland	1	−0.00107	0.00	0.63
Italy	2	−0.00193	0.00	0.82
Japan	45	0.00880	40.00	0.62
New Zealand	1	−0.00187	0.00	0.53
Spain	2	−0.00290	0.00	0.84
Switzerland	1	−0.00324	0.00	0.72
United Kingdom	4	0.00001	0.00	0.57
Emerging Market Country Funds				
China	31	0.00491	0.00	0.21
India	5	0.00311	0.00	0.48
Israel	4	−0.00395	0.00	0.79
Korea	4	−0.00337	0.00	0.79
Mexico	2	−0.00160	0.00	0.07
Poland	2	−0.01835	0.00	0.80
Russia	2	−0.00373	0.00	0.62

[1] Africa is not listed because no benchmark portfolio is available.

Source: Center for Research in Securities Prices; Morgan Stanley Capital International

poor benchmark selection and implies that the alpha results for this category should be interpreted with caution. Mexico funds, however, are matched with the MSCI Mexico Index. The low R^2 for these funds more likely reflects large manager deviations from a broad coverage of the Mexican market and so indicates a large proportion of idiosyncratic risk.

The alpha measures themselves (see Chart 7) show that the street lore that international managers can significantly outperform their benchmarks (in contrast to domestic U.S. equity managers) is true only for well-diversified funds. Country funds in emerging markets might be expected to have the most inefficiencies to exploit and consequently the most significantly positive alphas. However, with the exception of Japan funds, none of the country funds exhibit a statistically significant alpha at the 95 percent confidence level.

In Table 5, the Asia/Pacific Rim and Europe categories exhibit slightly more funds with significant

alphas (4.73 percent and 4.48 percent, respectively) than would be expected given a random draw of 148 and 134 alphas and a two-sided 95 percent confidence test. Well-diversified funds, however, show very high percentages of funds that have significant alphas at the 95 percent confidence level. A startling 63 percent of International Income funds have significantly positive alphas compared to their MSCI index.

Are these results evidence of superior stock selection ability by international fund managers? Perhaps they are, and perhaps not. Stock selection is only one of the active strategies a fund manager can employ in an attempt to outperform the MSCI World Ex-U.S. Index. First, because the MSCI index is an unhedged U.S.–dollar denominated index, mutual fund managers can affect their average return by altering their currency risk exposure. Managers can also engage in regional tilting of their portfolios. The results of this study confirm earlier evidence in the literature that there are regional differences in average returns. Thus broad-market managers can deviate from a value-weighted index such as the MSCI World Ex-U.S. by overweighting some regions and underweighting others. Finally, similar to domestic U.S. equity managers, international managers can engage in market timing and style tilting (for example, book-to-market, value, small cap) strategies. Thus the positive alphas imply some sort of ability on the part of international fund managers, but a more complete understanding of underlying forces behind the documented alphas requires a sophisticated performance attribution analysis.[14]

Conclusion

There are several big-picture conclusions that may be drawn from the results of this study. First, international open-end mutual funds, even within a narrowly defined category, are quite heterogeneous in terms of their average return, volatility, and performance measures. Overall, however, well-diversified funds are more homogeneous as a group than are regional or country funds.

Second, the well-documented result that the average manager of a domestic fund does not outperform the U.S. market does not extend to the entire international fund market. A large percentage of managers of well-diversified international funds do outperform their passive MSCI benchmarks in a statistically significant manner. Managers of regional and country funds, however, do not show the same ability to outperform.

Finally, emerging markets funds do not exhibit significantly higher average or abnormal returns than developed markets funds. Moreover, their volatilities are generally higher than those of funds investing in developed markets. Thus the attractiveness of emerging markets investment should be revisited in more detail given the performance of these managed funds.

An important question is whether these results will persist into the future. The answer, of course, depends on the underlying economic factors that are driving the observed performance differences. For example, if the high volatility observed in emerging markets is the result of the additional risks described earlier, then the volatility can be expected to persist as long as the underlying country risks and trading systems do not change. If, however, international trade settlement becomes more standardized as trade failure rates fall, then volatilities on these international portfolios may drop as well. This change might be expected to occur first in the developed markets, but there is some evidence to suggest that emerging markets, which are designing trading systems from scratch, will lead in this area.

The results of this study, by documenting the past, actually yield more questions than answers in the quest to forecast the future. The next step is to formulate tests of the data that can disentangle competing models of international capital markets. These tests in turn would identify the underlying factors driving the results and allow for a rigorous study of their persistence into the future.

14. For an example of such an analysis focusing on currency hedging strategies, see Singer and Karnosky (1995).

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