

## ▶ Low Correlation Investing and ITS IMPACT

### Background

In January 2000, a respected Wall Street professional caused a stir by predicting that the Dow would reach 30,000 in the not-too-distant future. This futuristic, highly controversial view was born of the belief in the “New Economy” paradigm. During the preceding years, huge strides in telecommunications and information technology had helped fuel investor confidence, and the belief that companies could grow their earnings forever drove the market to new highs. Simply put, investors were willing to pay high prices in the hope of achieving exponential future growth. Unfortunately, this dynamic did not last, and in March 2000, many investors saw the beginning of a three-year downturn that would destroy more wealth than any bear market in history.

There may be a simple explanation as to why the most recent bear market was more painful than most: investors had simply lost their balance. Since then, there has been a gradual shift in investor sentiment. The high-flying, double-digit return expectations of the 1990s generally have given way to a more conservative, less volatile capital preservation-oriented approach to investing today. Time-tested strategies like asset allocation and diversification are back in the spotlight. As a result, many of today’s investors are more interested in the relationship (or correlation) between all investments in their portfolio.

This paper will explore the relationships between asset classes by looking at the following topics:

- What is correlation?
- Correlation between common investment benchmarks
- Changing times: correlations between various alternative investments
- What is low-correlation investing?
- What are alternative investments/hedge funds? Who is using what?
- Potential benefits of adding non-traditional assets to a portfolio

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## What is correlation?

Correlation measures the relationship between two series of numbers over time. Correlation is often used to compare two asset classes or a fund to its benchmark. A correlation of 1.0 means that the two are perfectly synchronized, or correlated. Thus, they will both be expected to rise and decline at the same time and in a constant proportion to each other. In contrast, a correlation of zero suggests a completely random relation. A negative correlation means that the two factors being compared tend to move in opposite directions under similar market conditions. The lower the correlation, the greater is the expected divergence of their returns and volatility. Correlation between assets is expressed as a correlation coefficient. (Some readers may wish to refer to Appendix 1 to find the formula for calculating these coefficients.)

It is important to keep in mind that the correlation between asset classes is based on historical data, can change over time, and is not necessarily an indicator of future results.

### Correlation between common investment benchmarks

Let's review the long-term relationships between several of the most popular equity and bond indexes. The data in **Table 1** support what most investors already know: bonds can be a great way to diversify a portfolio consisting of equity securities. This is demonstrated by the low-correlation coefficients between the Lehman Aggregate Bond Index and various equity

indexes. **Chart A** illustrates this point further. The Lehman index produced an annualized return of just over 7.50% in the period 1/1/90–9/30/05, while the S&P 500 produced an annualized return of almost 9.0%—but with much greater volatility (expressed as “Annualized Standard Deviation”).

If we created a hypothetical portfolio that invested 60% of its assets in the S&P 500 and 40% in the Lehman Brothers Aggregate Bond Index, it would have had a higher annualized return (8.0%) than the Lehman bond index over the same period with less volatility than the S&P 500 during that period. This simply illustrates the point that a mixed portfolio, featuring stocks and bonds, may reduce volatility, while at the same time producing attractive returns over an extended period of time.

It is also interesting to note the correlations between equity-only indexes. The small/large cap, growth/value, or global equity indexes have historically had moderate to high correlations to each other. Therefore, an equity portfolio that is only diversified through market caps and management style may be exposed to more volatility than some investors expect.

### Changing times

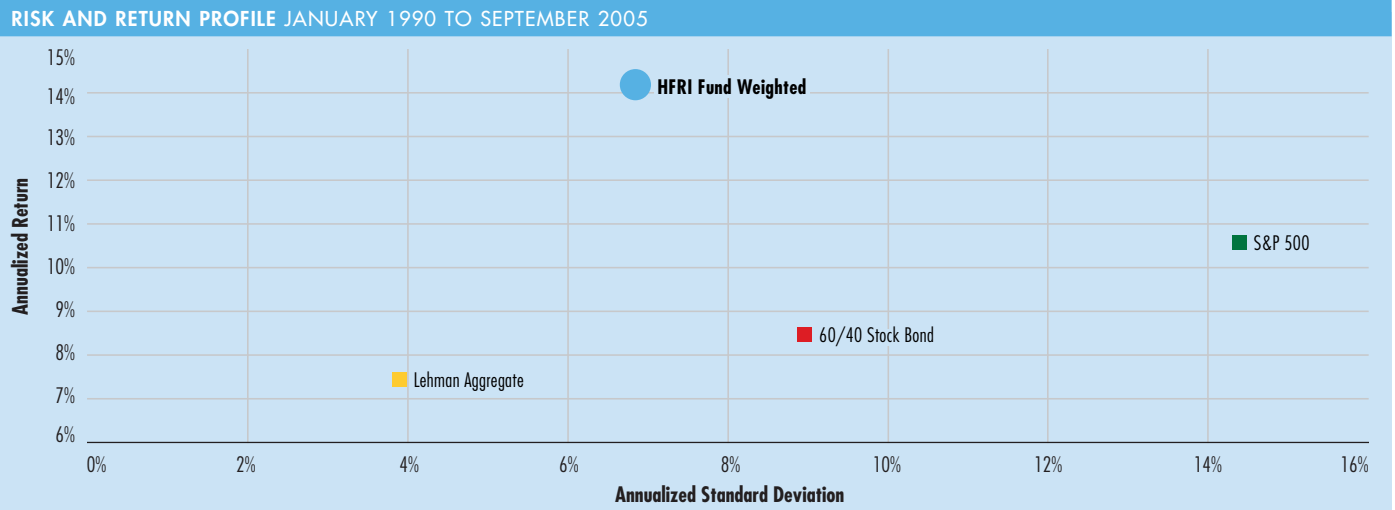
One of the biggest challenges facing financial professionals today is monitoring an investment arena that is changing daily. Changing attitudes towards investments in real estate,

**Table 1**

TRADITIONAL INVESTMENT INDEXES							
CORRELATION COEFFICIENT (JANUARY 1979–SEPTEMBER 2005)							
	S&P 500	MSCI World	R 1000 Growth	R 1000 Value	R 2000 Growth	R 2000 Value	Lehman Agg. Bond
S&P 500	<b>1.00</b>	0.85	0.96	0.94	0.79	0.78	<b>0.23</b>
MSCI World	0.85	<b>1.00</b>	0.81	0.80	0.70	0.68	<b>0.21</b>
R 1000 Growth	0.96	0.81	<b>1.00</b>	0.82	0.84	0.72	<b>0.20</b>
R 1000 Value	0.94	0.80	0.82	<b>1.00</b>	0.70	0.81	<b>0.26</b>
R 2000 Growth	0.79	0.70	0.84	0.70	<b>1.00</b>	0.87	<b>0.10</b>
R 2000 Value	0.78	0.68	0.72	0.81	0.87	<b>1.00</b>	<b>0.18</b>
Lehman Agg. Bond	<b>0.23</b>	<b>0.21</b>	<b>0.20</b>	<b>0.26</b>	<b>0.10</b>	<b>0.18</b>	<b>1.00</b>

Note: < .5 = **Low Correlation**; .6 – .8 = **Moderate Correlation**; .8 + = **High Correlation**  
 Source: S&P 500 Index, Morgan Stanley, Frank Russell Co., Lehman Bros. Index<sup>1</sup>

Chart A



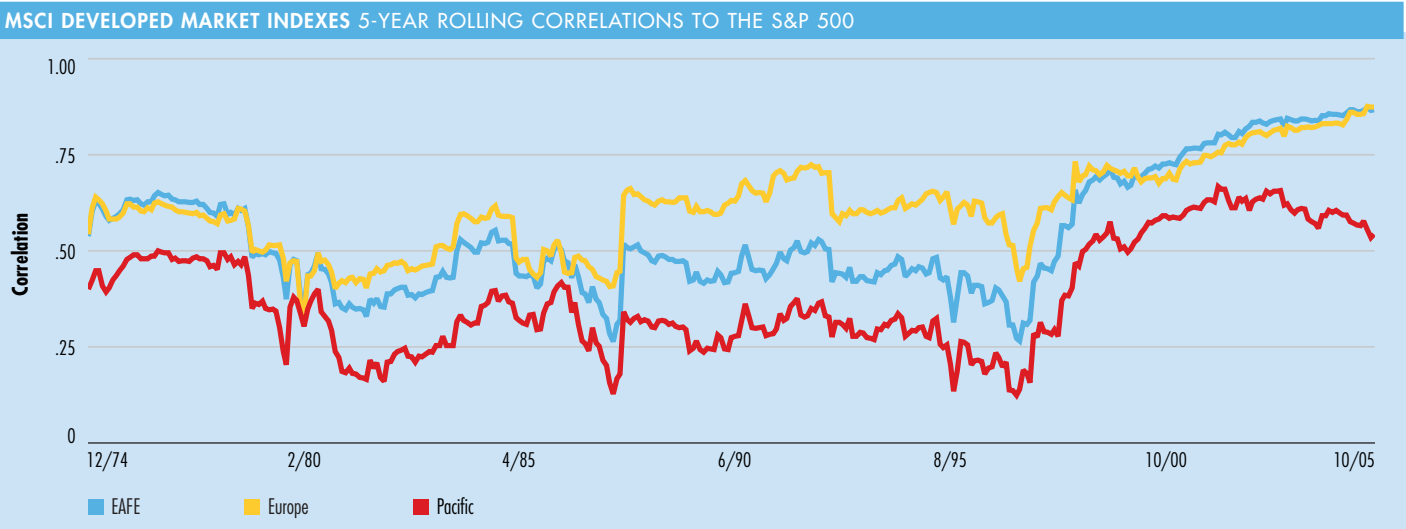
Note: The information in Chart A does not reflect the performance of any actual investment portfolio. Rather, it shows a hypothetical portfolio consisting of an investment in the securities comprising S&P 500 and the Lehman Aggregate Bond Index during the period from January 1990 to September 2005, and was created with the benefit of hindsight. An index is unmanaged and one cannot invest in an index. The returns shown do not reflect the deduction of any investment management fees or expenses, nor do they reflect the performance of any fund or managed account.  
 Source: Lehman Bros. Index, S&P 500 Index

natural resources, hedge funds, futures contracts, swaps, and arbitrage opportunities have had a large impact on investors' portfolios.

The historic relationship between asset classes can and has changed. For instance, economic globalization is influencing the very core of "investing basics." Since 1996, there has been a gradual but consistent increase in the correlation

coefficients of the MSCI Europe Australasia Far East (EAFE), MSCI Europe, and MSCI Pacific indexes to the S&P 500 (see **Chart B**). Some investors have begun to recognize that the historic low correlation benefits derived from global investing have diminished. As a result, growing consideration is being given to other "low-correlation" investments as a possible way to diversify portfolios.

Chart B



Source: Morgan Stanley

Table 2

CORRELATION COEFFICIENT JANUARY 1990—SEPTEMBER 2005							
	S&P 500	Goldman COM	HFRI Distressed	HFRI FoFs	HFRI Equity Hedge	NA REIT	Lehman Agg. Bond
S&P 500	1.00	-0.08	0.39	0.44	0.66	0.36	0.15
Goldman COM*	-0.08	1.00	-0.01	0.17	0.13	-0.08	-0.01
HFRI Distressed	0.39	-0.01	1.00	0.59	0.58	0.39	0.03
HFRI FoFs	0.44	0.17	0.59	1.00	0.76	0.20	0.09
HFRI Equity Hedge	0.66	0.13	0.58	0.76	1.00	0.30	0.07
NA REIT	0.36	-0.08	0.39	0.20	0.30	1.00	0.17
Lehman Agg. Bond	0.15	-0.01	0.03	0.09	0.07	0.17	1.00

Note 1: < .5 = **Low Correlation**; .6 – .8 = **Moderate Correlation**; .8 + = **High Correlation**

Note 2: HFRI stands for Hedge Fund Research Indexes. Hedge Fund Research generates indexes that represent certain “style boxes.” HFRI indexes focus only on hedge funds. Alternative investments in a broader sense will be covered in greater detail later in this paper.

\*Goldman COM (Goldman Sachs Commodity Index) is designed to provide investors with a publicly available benchmark for investment performance in the commodity markets. As such, this index is a composite of commodity sector returns, representing an unleveraged, long-only investment in commodity futures that is broadly diversified across the spectrum of commodities. Indexes are not managed and one cannot invest in an index.

Source: S&P 500 Index, Goldman Sachs, Hedge Fund Research Index (HFRI), NAREIT, Lehman Bros. Index

### What is low-correlation investing?

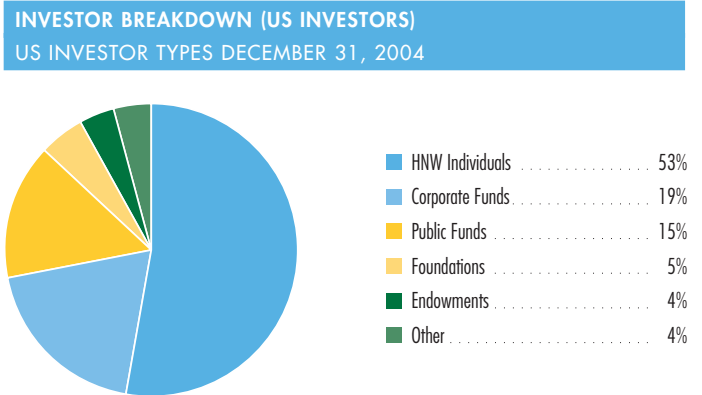
Low-correlation investing is the process of diversifying a portfolio through the use of various traditional and non-traditional asset classes/strategies that have low correlations to one another. As can be seen in **Table 2**, several of the “alternative investments” indices have historically had low correlations with the S&P 500 and Lehman Brothers Aggregate Bond Index. In addition, some non-traditional investment indices such as the Goldman COM (a commodity index) and the NAREIT (a Real Estate Investment Trust [REIT] index) not only have low historical correlations to the S&P 500 and the Lehman Aggregate Bond Index, but also have low to moderate correlations to one another.

### What are alternative investments/hedge funds?

#### Who is using what?

“Alternative investments” are often thought of broadly as investments that tend to have low historical correlations to traditional investments. Alternative investments may have a global or domestic focus, and include such asset classes as real estate, precious metals, commodities, natural resources, and securities, including investments in hedge funds. Hedge funds in turn may utilize strategies such as arbitrage, shorting equity positions, or currency swaps and may invest in emerging markets, distressed situations, mergers, and fixed-income arbitrage opportunities, to name but a few.

Chart C

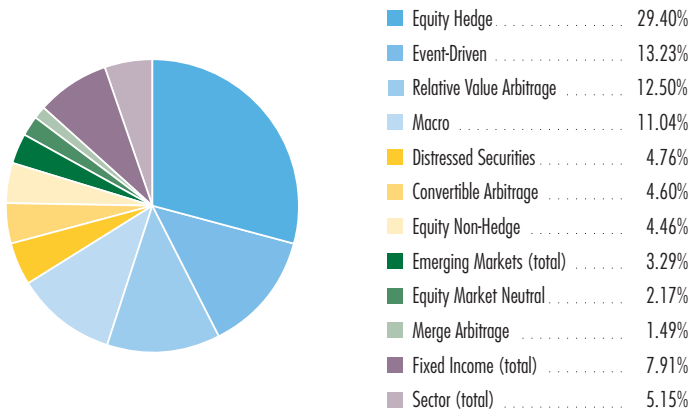


Source: Morgan Stanley Prime Brokerage

Although hedge funds have existed for over 50 years, their real growth has come in the last 15 years. In 1990, total assets under management in hedge funds were approximately \$40 billion. In 2005, according to Hedge Fund Research, investments in hedge funds total more than \$1 trillion. There are, perhaps, three major reasons for this exponential growth. First, hedge funds have become more broadly accepted within pension plans. Second, high-net-worth and affluent investors have increasingly been turning to hedge funds (see **Chart C**) as an investment choice. Finally, about 15 different hedge fund strategies have become well recognized across the industry (see **Chart D**).

**Chart D**

**2004 HEDGE FUND STRATEGY ASSETS**



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**Hedge fund strategies**

There is a wide variety of hedge fund strategies offering differing historical risk/return characteristics.

Many hedge fund managers have the ability to invest long or short, and have the flexibility to use stocks, bonds, futures, derivatives, and leverage. In general, they have more latitude in their investment choices than regulated mutual fund managers and are able to take advantage of a variety of opportunities and inefficiencies in the market. During the period January 1990–September 2005, certain conservative and aggressive hedge fund indices have performed favorably when compared against traditional asset class indices, including the S&P 500. In certain instances, this performance has been generated with lower volatility, as measured by standard deviation (as illustrated in **Table 3**). There is no guarantee, however, that such returns and volatility will be replicated in the future. Hedge funds generally are considered to present greater risk of loss and typically bear higher management and other fees than regulated mutual funds.

**Table 3**

**A SELECTION OF HEDGE FUND RETURNS AND STANDARD DEVIATIONS**

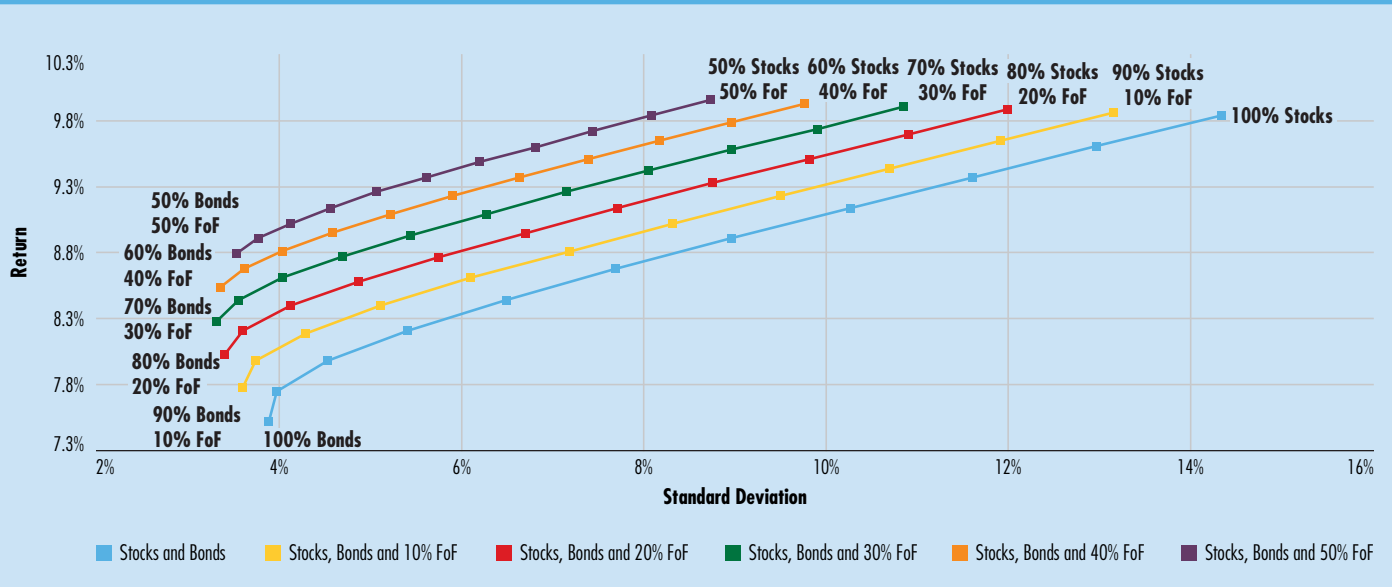
RETURN VS. RISK—JANUARY 1990 TO SEPTEMBER 2005

Strategy	Annualized Rtn.	Annualized Std. Dev.
S&P 500	10.58%	14.39%
HFRI Equity Hedge	17.27%	8.81%
HFRI FoF Index	9.91%	5.55%
MSCI World	7.17%	14.36%
HFRI Macro	15.79%	8.30%
MSCI EMF	10.00%	22.83%
HFRI EM	15.66%	14.65%
Lehman Agg. Bond	7.44%	3.89%
HFRI Relative Value	12.00%	3.60%
HFRI Merger Arb.	10.34%	4.27%
HFRI Market Neutral	9.24%	3.13%

Source: Hedge Fund Research Indexes (HFRI), S&P 500 Index, Lehman Index and MSCI Index.

Chart E

RISK AND RETURN PROFILE (JANUARY 1990 TO SEPTEMBER 2005)



The data assembled and used in this chart was developed by Hedge Fund Research, Inc. It is not known whether any fund managed by a Franklin Templeton entity was included in the data used to develop these charts.

Not all funds or funds of funds allocate fund investments in the same percentages shown in the chart above. Amounts allocated between stocks and bonds (or funds that invest in either type of investment) will have a bearing on the risk and return characteristics of any fund or fund of funds.

The information in Chart E does not reflect the performance of any actual investment portfolio. Rather, it shows several hypothetical portfolios consisting of varying percentages of investments in the securities comprising the S&P 500 Index, the Lehman Brothers Aggregate Bond Index and in an “alternative investment basket” featuring equal weightings in the NAREIT Index, the Goldman Sachs Commodities Index and the HFRI Funds of Funds Index. The chart was created with the benefit of hindsight, and the returns shown do not reflect the deduction of any investment management fees or expenses, nor do they reflect the performance of any fund. Indexes are not managed and one cannot invest in an index.

Source: Lehman Bros Index, S&P Index, Hedge Fund Research Index (FOHF Index)

Potential benefits of adding non-traditional assets to a portfolio

Non-traditional assets may be used to complement a traditional investment portfolio consisting exclusively of stocks and bonds. **Chart E** illustrates this point by showing a series of hypothetical portfolios. The lower, blue line shows the return/volatility characteristics of a portfolio that is 100% invested in bonds (represented by the Lehman Aggregate Index) at its bottom, and 100% in stocks (represented by the S&P 500) at its top, with a variety of combinations of the Lehman and S&P 500 represented by the dots in between.

The five additional lines show the effects of replacing 10%, 20%, 30%, 40% or 50% of this “traditional” portfolio with an “alternative investment” basket consisting of an equal weighting in real estate (represented by the NAREIT Index), commodities (the Goldman Sachs Commodities Index), and hedge funds (HFRI FoFs). In most cases, the non-traditional portfolios either had reduced volatility (standard deviation), increased returns or, in many cases, both.

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## Conclusion

By blending different investments into one portfolio, an investor is able to modify the risk of the entire portfolio. That is because a portfolio's total risk is not only a function of weightings and individual securities' standard deviation, but also a function of the interaction between assets. A core goal of diversification is to combine various assets that complement one another in such a manner as to reduce a portfolio's overall volatility.

The challenge in effectively diversifying a portfolio lies in the selection of underlying assets. Selecting assets that do not have a high historical correlation to one another may help reduce portfolio volatility during various economic cycles. History shows that, over time, relationships between asset types and styles change. For instance, simply diversifying globally is not as effective today as it once was, yet there are still tangible benefits to be had from allocating investments between growth/value, small/large cap, equity/fixed, domestic/international, and traditional/alternative. Investors should be prepared to consider low-correlating alternative assets that historically have been shown to reduce correlation within portfolios as a possible strategy, to seek to reduce risk and provide more consistent returns over time.

## Appendix 1

### Correlation coefficient

$$\rho_{xy} = \frac{Cov(r_x, r_y)}{\sigma_x \sigma_y}$$

A measure that determines the degree to which two variables' movements are associated. The correlation coefficient will vary from -1.0 to 1.0. A coefficient of -1.0 indicates perfect negative correlation, and 1.0 indicates perfect positive correlation.

<sup>4</sup>Important note: This report does not constitute or form a part of any offer for shares of any fund. Hedge funds and funds of funds may present certain risks not otherwise present in more traditional forms of investments. For instance, hedge funds may employ leverage, which can make its returns more volatile and increase the risk of loss. Opportunities for redemptions and transferability of interests in such funds of funds are typically restricted so investors may not have access to their capital if and when it is needed. Typically, no secondary market exists for an investor's interest in such hedge funds or funds of funds. Moreover, hedge funds and funds of funds often feature performance fees, which may create an incentive for the investment manager to make investments that are riskier or more speculative than those that might have been made otherwise.



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