

## **The Benefits of Hedge Funds**

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### Introduction

The alternative investment universe consists of a number of investment strategies that offer risk and return opportunities not commonly found in traditional long only stock and bond investment. A natural way to differentiate between different alternative investment strategies is to examine the liquidity of the investment vehicle. The most illiquid are investment trusts such as venture capital funds, leverage buyout funds and natural resource partnerships that do not, as a general rule, allow selective redemptions. Hedge funds are moderately liquid alternative investments. *Hedge funds* likewise manage client assets on a discretionary basis and generally represent 'leveraged' investment strategies that use global cash as well as global futures and options markets.

This article focuses on the academic evidence on the benefits of adding hedge funds to an investment portfolio. Hedge funds trade in both cash and derivative markets, and can provide returns based not only on market direction but also unique return opportunities available in individual markets and securities. However, for hedge funds to continue to grow as an investment alternative, individuals need to increase their knowledge and comfort level as to their use in investment portfolios. Exactly, what are the benefits of hedge funds as part of an investor's overall asset portfolio? While, it is impossible in a short synopsis to convey all the details of the benefits of hedge funds, hedge funds offer the opportunity to:

- (1) reduce portfolio volatility risk,
- (2) enhance portfolio returns in economic environments in which traditional stock and bond investments offer limited opportunities, and
- (3) participate in a wide variety of new financial products and markets not available in traditional investor products.

### General Description of Hedge Funds

Hedge funds have been described as skill-based investment strategies. Skill-based strategies obtain returns from the unique skill or strategy of the trader. As a result, hedge funds have also been described as *absolute return* strategies, as these returns do not depend on the long-term return in underlying traditional stock and bond markets. Because hedge funds are actively managed, trader skill is certainly important, as are the basic trading strategies behind most hedge fund investments. However, more recently, hedge fund returns have been shown to be driven largely by market factors such as changes in credit spreads or market volatility, so one can think of their returns as a combination of manager skill and an underlying return to the strategy itself. With the increased use of hedge fund vehicles in investment management, industry practitioners and academics have created return series for hedge fund strategies that can be used as benchmarks for hedge fund investors. Investors should note that each hedge fund return series has its own approach to performance presentation, manager selection, and investment style

classification. In this article we use primarily the hedge fund indices compiled by Evaluation Associates Capital Markets (EACM). A short description of the EACM classification follows:

## Hedge Fund Performance Series

Hedge funds are often classified according to investment style (for example, relative value). Within each style category, funds are then classified according to the underlying markets traded. For example, within the relative value style classification, there are a number of sub-groups, including long/short equity, convertible hedging, and bond hedging. EACM classifies hedge funds into the following categories.

- (1) **Relative Value:** Balanced, or hedged, long and short positions with subindices such *Market Neutral or Long/Short equity* (long undervalued equities/short overvalued equities usually on an equal dollar bases); *Convertible hedging* (long convertible bonds or preferred, short underlying common); *Bond hedging* (yield curve arbitrage or long/short debt positions); *Rotational* (multiple relative value strategies, including all of the above).
- (2) **Event Driven:** (Corporate transactions and special situations) subindices including *Deal Arbitrage* (long/short equity securities of companies involved in corporate transactions); *Bankruptcy/Distressed* (long undervalued securities of companies usually in financial distress or operating under Chapter 11). Multi-strategy includes deal funds dealing in both deal arbitrage and bankruptcy.
- (3) **Equity Hedge Funds:** Long and short securities with varying degrees of exposure and leverage such as *Domestic Long Equity* (long undervalued US equities; short selling is used sparingly); *Domestic Opportunistic Equity/Long short Equity* (long and short U.S. equity with ability to be net short overall) and *Global International* (primarily long undervalued equities with the ability to use short selling opportunistically)
- (4) **Global Asset Allocators:** Opportunistically long and short multiple financial and/or non-financial assets. Sub-indices include *Systematic* (long or short markets based on trend-following or other quantitative analysis) and *Discretionary* (long or short markets based on qualitative/fundamental analysis often with technical input)
- (5) **Short Selling:** Short sale of U.S. equities with expectation of price declines.

In addition to EACM, other firms that provide active hedge fund manager returns, such as HFR and CSFB/Tremont provide similar groupings as well as additional subset groupings. Empirical results in this paper are presented using the EACM hedge fund returns, however, results are similar using other hedge fund reporting services (results available from authors on request).

## The Growth and Benefit of Alternative Investments

Investment firms have always followed proprietary trading strategies involving both cash market and derivative positions. More recently, institutional investors such as corporate and public pension funds, endowments and trusts, and bank trust departments have been including hedge funds as one segment of a well-diversified portfolio. Growth in investor demand for hedge fund products indicates investor appreciation of the potential benefits of trading in derivatives markets. There are also a number of advantages that derivatives markets have over cash markets, including lower transaction costs, lower market impact costs, and inexpensive access to leverage. In addition, certain trading strategies that rely primarily on exchange-traded derivatives offer the additional benefits of market integrity, safety, and government oversight.

## Hedge Funds: Risk and Return Performance

Results in Exhibit 1 show the performance of a number of assets and combinations of assets (traditional assets and hedge funds) over the past twelve years (1990-2002).<sup>1</sup> These assets include the EACM 100 index and several measures of U.S. and global stock and bond performance. The EACM 100 index has a higher Sharpe ratio than any of the other assets.<sup>2</sup> The benefit of including hedge funds in diversified portfolios is illustrated in Exhibit 2. When the hedge fund index (EACM 100) is added to the U.S. stocks, Treasury Bonds, or a portfolio of U.S. stocks and bonds, the risk/return profile improves.

### Exhibit 1

Performance: January 1990 - December 2002					
	EACM 100	S&P 500	Lehman Gov./Corp. Bond	MSCI	Lehman Global Bond
Annualized Return	12.83%	9.68%	8.30%	4.20%	7.65%
Annualized Standard Deviation	4.28%	15.28%	4.25%	15.08%	5.03%
Sharpe Ratio	1.88	0.32	0.83	-0.04	0.57
Minimum Monthly Return	-4.45%	-14.46%	-2.45%	-13.35%	-2.97%
Correlation With EACM 100	1.00	0.41	0.15	0.41	0.04
	Portfolio I S&P 500 & Lehman Bond	Portfolio II S&P 500, Lehman Bond and EACM 100	Portfolio III MSCI and Lehman Bond	Portfolio IV MSCI, Lehman Bond and EACM 100	
Annualized Return	9.30%	10.05%	6.21%	7.55%	
Annualized Standard Deviation	8.25%	7.00%	8.43%	7.11%	
Sharpe Ratio	0.55	0.75	0.17	0.39	
Minimum Monthly Return	-6.25%	-5.89%	-5.63%	-5.39%	
Correlation with EACM 100	0.42		0.37		

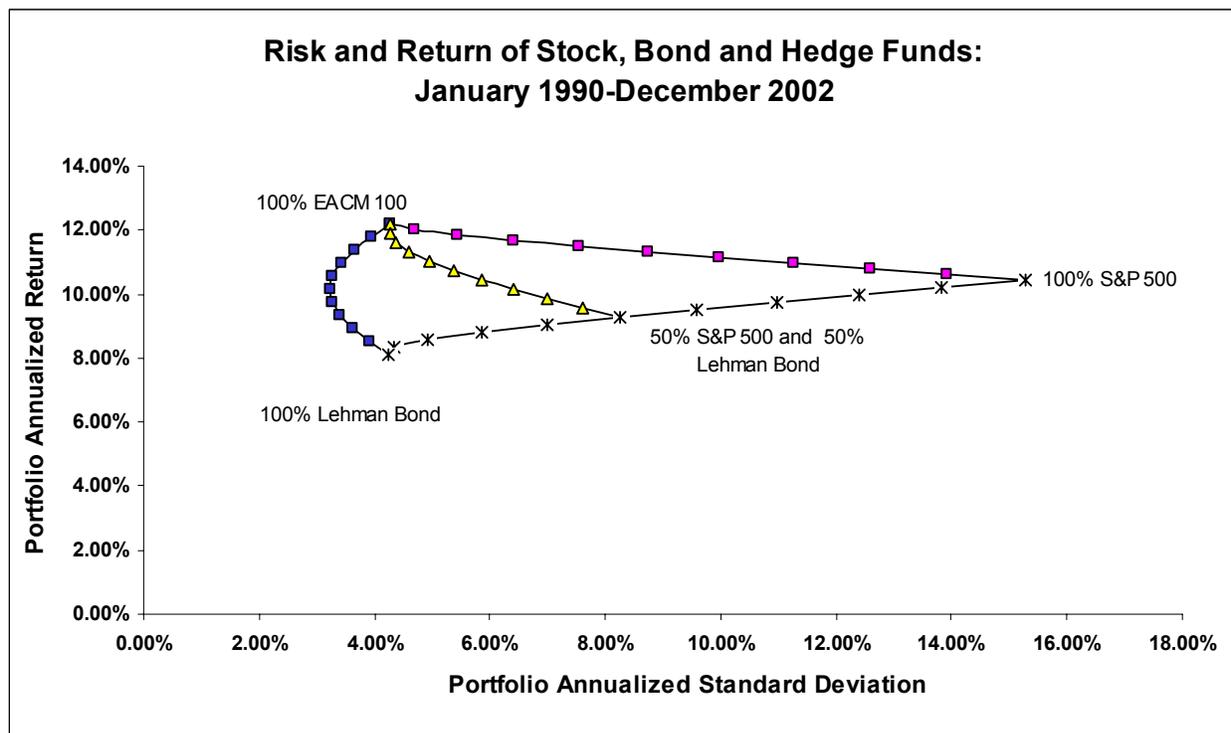
Portfolio I = 50% S&P 500 and 50% Lehman Brothers Gov./Corp. Bond  
 Portfolio II = 40% S&P 500, 40% Lehman Brothers Gov./Corp. Bond and 20% EACM 100  
 Portfolio III = 50% MSCI and 50% Lehman Brothers Global Bond  
 Portfolio IV = 40% MSCI, 40% Lehman Brothers Global Bond and 20% EACM 100  
 EACM 100 = Index of Hedge Fund Strategies

Source: EACM, Datastream

<sup>1</sup> The annual and monthly returns presented in their nominal form. Annualized standard deviations are derived by multiplying the monthly data by the square root of 12.

<sup>2</sup> In this study, Portfolio I is a portfolio comprised of the S&P500 (50%), and Lehman Brothers Bond Indices (50%), Portfolio II is a portfolio comprised of EACM 100 (20%), S&P500 (40%), and Lehman Brothers Bond (40%). Portfolio III and IV are similar to Portfolios I and II with the substitution of the MSCI World Equity and Lehman Brothers Global Bond Index for the S&P 500 and Lehman Brothers Bond Index, respectively.

## Exhibit 2



## Risk/Return Opportunities for Hedge Fund Subindices

Results in Exhibit 1 and 2 show the performance of the EACM 100 index. The actual performance of EACM subindices could differ from that of the overall hedge fund index performance. The risk and return benefit of a wide range of hedge fund indices and subindices as well as their correlations with the traditional indices are given in Exhibit 3 and Exhibit 4.

## Exhibit 3

Performance: EACM Hedge Fund Strategies, CISDM CTA Index and Traditional Assets (January 1990-December 2002)

	Annual Return	Standard Deviation	Sharpe Ratio	Minimum Monthly Return	Correlation with S&P 500	Correlation with Lehman Bond Index
EACM100	12.83%	4.28%	1.88	-4.45%	0.41	0.15
Relative Value	9.74%	3.33%	1.49	-6.07%	0.12	-0.04
Event Driven	12.02%	5.11%	1.42	-7.48%	0.49	0.06
Equity Hedge	14.99%	10.47%	0.98	-9.81%	0.62	0.07
Global Asset Allocators	16.04%	9.98%	1.13	-5.38%	0.07	0.25
CISDM CTA \$ Weighted	11.19%	10.14%	0.63	-6.00%	-0.13	0.28
S&P 500	9.68%	15.28%	0.32	-14.46%	1.00	0.16
Lehman Bond Index	8.30%	4.25%	0.83	-2.45%	0.16	1.00

Source: EACM, Datastream

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## Exhibit 4

Performance: EACM Hedge Fund Strategies and Traditional Assets (January 1990-December 2002)

	Return	Standard Deviation	Sharpe Ratio	Minimum Monthly Return	Correlation with S&P 500	Correlation with Lehman Bond
<b>Relative Value</b>						
Market Neutral	8.50%	3.21%	1.16	-2.62%	-0.17	0.18
Convertible Hedge	9.76%	5.27%	0.95	-6.90%	0.17	0.04
Bond Hedge	6.30%	4.78%	0.32	-7.09%	0.18	-0.10
Rotational	14.23%	6.35%	1.49	-13.98%	0.07	-0.14
<b>Event Driven</b>						
Arbitrage	8.56%	6.06%	0.63	-11.10%	0.49	0.11
Bankruptcy	13.48%	6.43%	1.35	-8.17%	0.34	0.02
Multi-Strategy	13.94%	5.26%	1.75	-8.29%	0.46	0.03
<b>Equity Hedge</b>						
Domestic Long	12.53%	15.41%	0.50	-15.11%	0.69	0.07
Long/Short	16.11%	10.03%	1.13	-5.15%	0.24	-0.01
Global/International	15.63%	10.94%	0.99	-9.17%	0.60	0.11
<b>Global Asset Allocators</b>						
Discretionary	14.07%	9.19%	1.01	-15.87%	0.33	0.08
Systematic	17.21%	16.20%	0.77	-9.85%	-0.10	0.26
<b>Short Selling</b>	1.75%	22.11%	-0.14	-12.99%	-0.78	-0.06
<b>S&amp;P 500</b>	9.68%	15.28%	0.32	-14.46%	1.00	0.16
<b>Lehman Bond Index</b>	8.30%	4.25%	0.83	-2.45%	0.16	1.00

Source: EACM, Datastream

However, the actual performance of certain subindices is dependent on the unique market conditions in traditional markets. As shown in Exhibit 5, hedge fund indices with exposure to market factors such as the return of the stock and bond market or stock market volatility may not necessarily provide diversification relative to traditional stock and bond market returns especially in periods of high market uncertainty. For instance, while the relative value has a low correlation with the S&P 500 and the change on the S&P 500 volatility, the equity hedge is positively correlated with the S&P500 while negatively correlated with the change on the S&P 500 volatility. It is also interesting to point out that systematic trading advisors (e.g., managed futures) have a positive correlation with the change on the S&P 500 volatility.<sup>3</sup>

The different sensitivity of various hedge fund strategies to various market factors results in different correlations among hedge fund strategies themselves. The correlations between various hedge fund strategies are given in Exhibit 6.

<sup>3</sup> While some research (Schneeweis and Pescatore ed., 1999) has focused on Commodity Trading Advisors (CTAs) as offering exposure to long volatility, unless specifically designed to capture volatility, systematic CTA strategies often make returns in periods of low volatility high trend markets. Systematic commodity trading programs (e.g., CTAs) are positively correlated with various passive trend-following indices. See The Benefits of Managed Futures (CISDM, University of Massachusetts, 2002) and [www.cisdms.org](http://www.cisdms.org) for information. In Exhibit 5, credit spread is the yield on the Moody's Baa corporate bond yield less the yield on the Moody's Aaa corporate bond yield; the term spread is the 10 year government yield less the one year T-bill yield; the VIX is the implied volatility on the S&P100 (weighted average of the at the money). Stock and bond volatility is measured as monthly volatility using daily returns on the S&P 500 and Lehman Brothers bond indices.

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## Exhibit 5

Factor Correlations (January 1990-December 2002)

	S&P 500	Lehman Bond Index	Change in Credit Spread (Baa-Aaa)	Change in VIX	Change in Term Spread	Change in Bond Volatility	Change in Stock Volatility
EACM100	0.41	0.15	-0.22	-0.23	-0.06	-0.17	-0.32
Relative Value	0.12	-0.04	-0.24	-0.01	0.11	-0.17	-0.14
Event	0.49	0.06	-0.28	-0.44	0.02	-0.12	-0.40
Equity Hedge	0.62	0.07	-0.20	-0.41	-0.02	-0.06	-0.33
Global Asset Allocators	0.07	0.25	-0.02	0.00	-0.10	-0.13	-0.11
CISDM CTA \$ Weighted	-0.13	0.28	0.01	0.21	-0.17	-0.13	-0.04
S&P 500	1.00	0.16	-0.14	-0.68	0.01	0.01	-0.28
Lehman Bond Index	0.16	1.00	-0.07	0.02	-0.55	-0.09	-0.04

## Exhibit 6

Correlations (January 1990-December 2002)

	EACM 100	Relative Value	Event Driven	Equity Hedge	Global AA	S&P500	Lehman Bond	MSCI World	Lehman Glob. Bond
EACM100	1.00								
Relative Value	0.51	1.00							
Event Driven	0.53	0.45	1.00						
Equity Hedge	0.80	0.27	0.54	1.00					
Global Asset Allocators	0.62	0.08	0.01	0.16	1.00				
S&P500	0.41	0.12	0.49	0.62	0.07	1.00			
Lehman Bond	0.15	-0.04	0.06	0.07	0.25	0.16	1.00		
MSCI World	0.41	0.16	0.43	0.61	0.03	0.86	0.11	1.00	
Lehman Global Bond	0.04	-0.14	-0.08	0.00	0.20	0.10	0.73	0.21	1.00

Source: EACM, Datastream

## Multi-Manager Hedge Fund Portfolios: Naïve and Planned Asset Allocation

Modern portfolio theory points out that the true measure of risk for investors is the expected standard deviation of a portfolio of investments. Past research has shown that an equally-weighted diversified portfolio of 8 to 10 randomly selected equity securities will result in a portfolio standard deviation similar to that of the investment population from which it is drawn. Similarly, for hedge funds, Henker [1998] show that a randomly selected, equal-weighted portfolio of 8-10 hedge funds has a standard deviation similar to that of the population from which it is drawn. Thus, as is true for equity portfolios, multi-manager hedge fund portfolios may have risk levels similar to that of a larger population of hedge funds. As important, a portfolio of randomly selected hedge funds has a correlation in excess of 0.90 with that of a typical hedge fund benchmark. Thus, the use of a smaller subset of hedge funds can represent the performance of the EACM 100 hedge fund index, just as a smaller portfolio of stocks or mutual funds can represent, respectively, the performance of the S&P 500 or mutual fund indices.

Actual investment with alternative investments (e.g., hedge funds), however, requires investors to determine the actual level of investment within the alternative investment universe as well as between alternative investments and traditional investments. As shown in Exhibit 7, as the investor moves from high return and risk tradeoff to lower return and risk tradeoff the amount of investment into more market neutral investments (e.g., long/short equity or global asset allocators) increases.

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## Exhibit 7

Optimal Asset Allocation using historical risk, return, and correlation data (1990-2002)															
Performance Criteria			Portfolio Asset Allocations												
Monthly Standard Deviation	Monthly Return	Sharpe Ratio	S&P 500	Lehman Bond	US T-Bills	Long/Short Equity	Convertible Hedge	Bond Hedge	Rotational	Bankruptcy	Multi-Strategy	Domestic Long	Domestic Opportunistic	Global International	Global Asset Alloc.
4.02%	1.29%	0.22											100.00%		
4.00%	1.29%	0.23											99.41%		0.59%
3.00%	1.29%	0.30											47.29%	8.65%	44.06%
2.00%	1.20%	0.41							27.81%		24.52%		20.82%	1.97%	24.88%
1.00%	0.88%	0.49		14.61%	2.07%	35.44%	5.65%		10.94%	0.12%	22.37%		4.78%		4.03%

Optimal Asset Allocation using historical risk, return, and correlation data and constraints of at least 30% S&P 500 and 30% Lehman Bond															
Performance Criteria			Portfolio Asset Allocations												
Monthly StDev	Monthly Return	Sharpe Ratio	S&P 500	Lehman Bond	US T-Bills	Long/Short Equity	Convertible Hedge	Bond Hedge	Rotational	Bankruptcy	Multi-Strategy	Domestic Long	Domestic Opportunistic	Global International	Global Asset Alloc.
2.37%	0.98%	0.25	30.00%	30.00%									40.00%		
2.20%	0.98%	0.27	30.00%	30.00%									30.48%		9.52%
2.00%	0.97%	0.29	30.00%	30.00%					7.09%				16.95%		15.96%
1.70%	0.90%	0.30	30.00%	30.00%		7.33%			23.27%				4.15%		5.25%
1.50%	0.74%	0.23	30.00%	30.00%	12.05%	20.47%			7.48%						

Source: Datastream

## Risk/Return Opportunities in Periods of Market Underperformance/Overperformance

The correlation between alternative investments and most traditional investments are close to zero (Exhibit 5). However, when asset returns are segmented according to whether the traditional asset increased or decreased in value, certain hedge funds are often negatively correlated in months when traditional asset returns are negative while being positively correlated when traditional asset returns are positive. For instance, as shown in Exhibit 8 and Exhibit 9, for the period 1990 through 2002, commodity trading advisors are negatively correlated (-0.36) with the S&P 500 when with the S&P 500 posted its forty-eight worst months and yet are positively correlated (0.11) when the S&P 500 reported its best forty-eight months. In contrast, certain hedge funds (e.g., equity hedge) have low correlation with the S&P 500 when it is rising and high correlation with the S&P 500 when it is falling. Thus the benefits of hedge funds with equity or credit exposure may arise less from their diversification advantages with equity-based portfolios than from their higher expected return/risk tradeoffs.

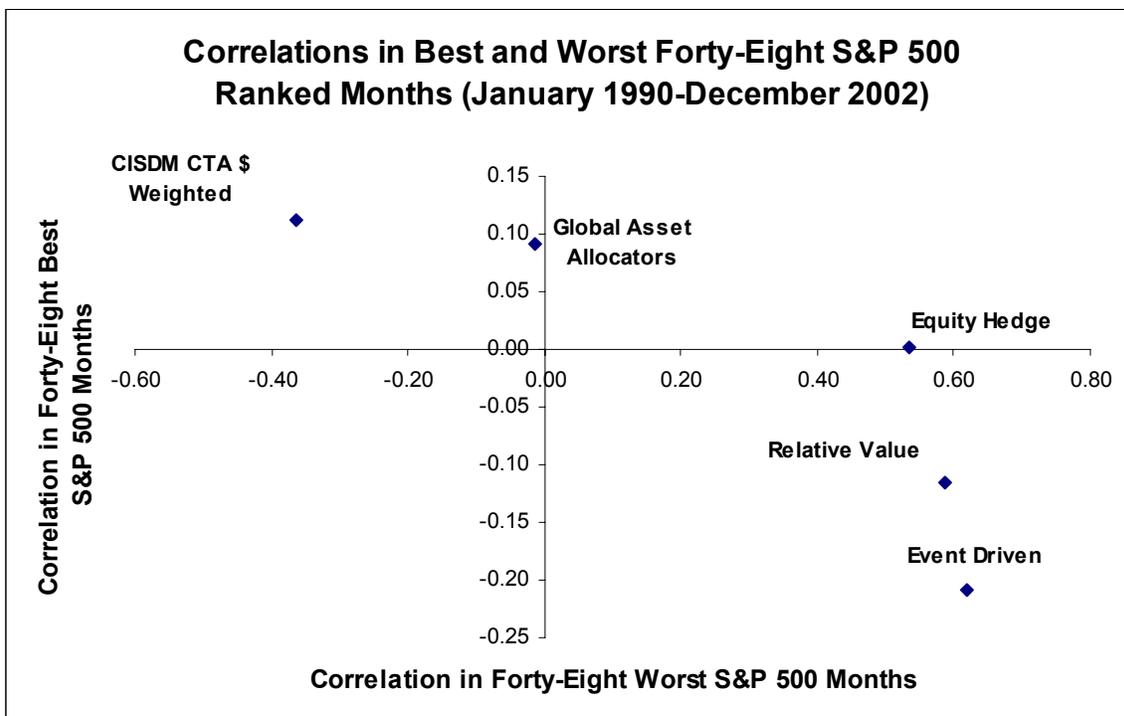
### Exhibit 8

**Correlations in Best and Worst Forty-Eight S&P 500 Ranked Months (January 1990-December 2002)**

	All S&P Months	Worst S&P 500 Forty-Eight Months	Best S&P 500 Forty-Eight Months
Relative Value	0.12	0.59	-0.12
Event Driven	0.49	0.62	-0.21
Equity Hedge	0.62	0.54	0.00
Global Asset Allocators	0.07	-0.01	0.09
CTA \$ Weighted Index	-0.13	-0.36	0.11

Source: EACM, Datastream

### Exhibit 9



## Recent Performance (1998-2002)

The benefits of adding hedge funds to a diversified portfolio may, however, be affected by the historical high returns achieved by hedge funds in the first half of the 1990's. In Exhibit 11, the return and risk frontier of adding the EACM 100 to the S&P 500 and Lehman Govt./Corp. Bond index portfolio is given for the recent five year period, 1998-2002. As shown in Exhibit 10, in the period 1998-2002, the return of the EACM 100 was lower and the risk was higher than for the full period 1990-2002.<sup>4</sup>

### Exhibit 10

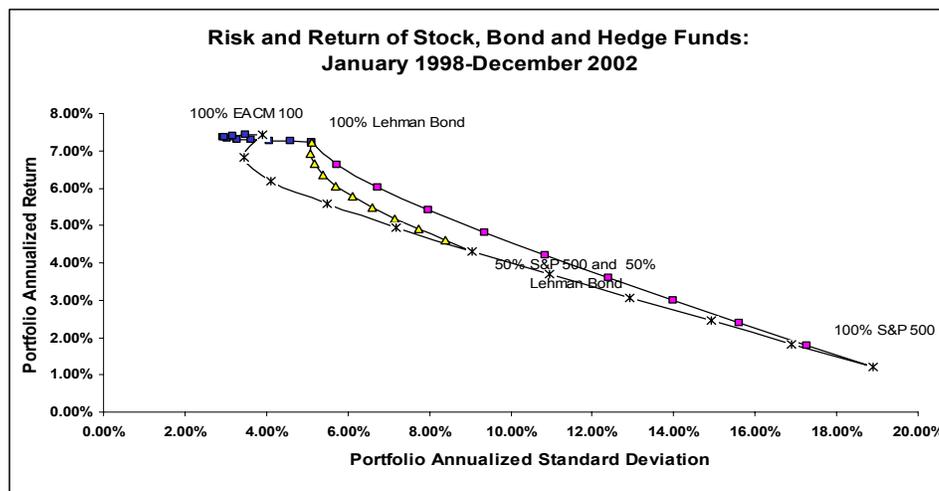
Performance: January 1998 - December 2002

	EACM 100	S&P 500	Lehman Gov./Corp. Bond	MSCI	Lehman Global Bond
Annualized Return	7.33%	-0.59%	7.62%	-2.11%	5.66%
Annualized Standard Deviation	5.12%	18.91%	3.91%	17.41%	5.49%
Sharpe Ratio	0.61	-0.25	0.87	-0.36	0.27
Minimum Monthly Return	-4.45%	-14.46%	-2.38%	-13.35%	-2.97%
Correlation with EACM 100	1.00	0.45	-0.12	0.53	-0.16
	Portfolio I S&P 500 & Lehman Bond	Portfolio II S&P 500, Lehman Bond and EACM 100	Portfolio III MSCI and Lehman Bond	Portfolio IV MSCI, Lehman Bond and EACM 100	
Annualized Return	3.98%	4.70%	2.16%	3.22%	
Annualized Standard Deviation	9.05%	7.75%	8.84%	7.61%	
Sharpe Ratio	-0.02	0.06	-0.23	-0.13	
Minimum Monthly Return	-6.25%	-5.89%	-5.63%	-5.39%	
Correlation With EACM 100	0.45	0.55	0.47	0.58	

Portfolio I = 50% S&P 500 and 50% Lehman Brothers Gov./Corp. Bond  
 Portfolio II = 40% S&P 500, 40% Lehman Brothers Gov./Corp. Bond and 20% EACM 100  
 Portfolio III = 50% MSCI and 50% Lehman Brothers Global Bond  
 Portfolio IV = 40% MSCI, 40% Lehman Brothers Global Bond and 20% EACM 100  
 EACM 100 = Index of Hedge Fund Strategies

Source: EACM, Datastream

### Exhibit 11



<sup>4</sup> Similar improvements in the return/risk frontier result from using the CISDM \$ Weighted CTA index. See Benefits of Managed Futures, CISDM, University of Massachusetts, 2002.

## Comparison of Traditional and Alternative Investment Vehicles

While alternative and traditional investment may differ in terms of their strategies and investment goals, there is very little difference in the methods of structuring and packaging the returns. For instance, in the hedge fund area, as in the traditional asset area, investors can obtain 1) an active investment index reflecting the expected return of a particular investment strategy or 2) open and closed-end funds that track a particular investment strategy offered by managers. These open and closed end funds may be single or multiple-manager in form, private pool/limited partnerships and segregated accounts (private investment trusts). Many new alternative investment products have also been developed to assuage investor concerns. For example, guaranteed investment structures remain a principal source of investment offerings. These products eliminate or minimize the risk of loss of principal if held to maturity. Guaranteed products have a lower return than direct investment in the underlying fund.

Many alternative investments are not materially different from traditional stock and bond investments in terms of market structure, product structure, or security design. Stock and bond investments share many common features with alternative assets. These features include institutional issues such as government regulation and professional oversight. While some hedge funds trade primarily on relatively unregulated over-the-counter markets, most hedge funds and commodity trading advisors trade on regulated exchanges such as the New York Mercantile Exchange or the Chicago Board of Trade in which financial products are traded in real-time liquid markets. Investors must appreciate that the essential difference between alternative and traditional investments is not how they are governed, marketed or even measured in terms of market performance, but that alternative investments offer unique risk and return properties not easily available through traditional investment securities or investment products. These return opportunities stem from the expanded universe of securities available to trade and the strategies that can be employed. Funds can access both financial and nonfinancial (commodity) markets and can easily take, long, short, spread, and option positions in any of these markets. Expanding the set of investment opportunities results in providing diversification benefits to a portfolio that cannot be replicated through traditional stock, bond, and real estate investment strategies.

### Summary and Conclusion

For alternative investments such as hedge funds to grow as an investment alternative, individuals need to increase their knowledge and comfort level as to their use in investment portfolios. The logical extension of using investment managers with specialized knowledge of traditional markets to obtain maximum return/risk tradeoffs is to add specialized managers who can obtain the unique returns in market conditions and types of securities not generally available to traditional asset managers; that is, hedge funds. In addition, investors must compare the unique returns available to each of the hedge fund styles to insure that the particular style does not duplicate existing investment opportunities.

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