



ASPEN PARTNERS
ASPEN MANAGED FUTURES BETA INDEX

The Ultimate Diversifier
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Key Points

- *Diversification is the ideal form of risk management, because it can both increase performance and reduce portfolio risk.*
- *Managed futures, as represented by the Aspen Managed Futures Beta Index, has excellent diversification characteristics, including positive expected return and low-to-negative correlation to traditional asset classes.*
- *The “ultimate diversifier” is an asset that has substantial positive expected return but low-to-negative correlation to an existing portfolio. An allocation to managed futures may improve the expected return and substantially decrease the expected volatility of a diversified portfolio.*

Introduction

Tools available for financial risk management can be placed into three general buckets: hedging, insurance, and diversification.

1. **Hedging** (e.g., forwards, swaps, offsetting short positions) immunizes against downside risk, but it also prevents additional upside gains.
2. **Insurance** (e.g., options) immunizes against downside risk, but is very expensive. In fact, insurance has a negative expected return.
3. **Diversification** is the only form of financial risk management that potentially adds to portfolio return while simultaneously reducing portfolio risk. *Diversification is the ideal form of risk management.*

Diversification is the ideal form of risk management because portfolio risk can be reduced without reducing returns.

The basic concept of diversification is simple. When combining assets, the portfolio return is the weighted average of the asset returns; but the portfolio risk will be less than the weighted average of the asset risks if the assets are not perfectly correlated. The “ultimate diversifier” is an asset that has **substantial positive expected return but low-to-negative correlation** to an existing portfolio. The appeal is even greater if the candidate diversifier has positive convexity, meaning higher correlation during up periods for a portfolio and lower correlation during down periods for the portfolio.

The Search for the Ultimate Diversifier

The following analysis will utilize a broad stock portfolio (as represented by S&P 500 total returns¹) to determine the diversification characteristics of various investment alternatives. These include fixed income, REITs, hedge funds, gold, long-only commodities, and managed futures, as represented by the Aspen Managed Futures Beta Index (Aspen MFBI)². One “insurance” method (maintaining a constant position in index puts) will also be examined.³

¹ Bloomberg is used as the source for all investment data except for Aspen MFBI pro forma returns, which are provided by Quantitative Equity Strategies.

² Aspen MFBI returns are calculated net of 1.50% for estimated fees and other expenses.

³ Asset classes are represented by the following indices: “Stocks”: S&P 500 Total Return Index; “Fixed Income”: JP Morgan Global Aggregate Bond Index; “REITs”: FTSE NAREIT Index; “Hedge Funds”: HFRX Global Hedge Fund Index; “Gold”: Gold price minus 0.40%/year (matches GLD ETF returns, but longer history available); “Commodities”: S&P GSCI Index; “Long Puts”: Short S&P 500 Put Write Strategy.

Table 1 shows the stand-alone risk/return characteristics of these alternatives. Note that the insurance strategy, long puts, has a strongly negative return over the test period, as is expected for a negative expected return strategy like put buying.

Table 1: Investment Returns and Risk Characteristics, 1/2003 through 12/2016

	Stocks	Fixed Income	REITs	Hedge Funds
Annualized Return	9.12%	4.28%	10.55%	1.50%
Annualized Standard Deviation	13.63%	5.78%	21.90%	5.46%
Return/Standard Deviation	0.67	0.74	0.48	0.28
Sharpe Ratio (1.3%)	0.57	0.52	0.42	0.04
	Gold	Commodities	AMFBI	Long Puts
Annualized Return	8.49%	-3.05%	7.29%	-8.47%
Annualized Standard Deviation	18.23%	23.59%	9.41%	10.14%
Return/Standard Deviation	0.47	-0.13	0.78	-0.84
Sharpe Ratio (1.3%)	0.39	-0.18	0.64	-0.96

Note the very poor return and risk statistics produced by long-only commodity investments. For a number of reasons, commodity ETFs have a pronounced tendency to underperform the returns of their underlying physical commodities, while proving just as volatile. Bloomberg BusinessWeek has strongly recommended against purchasing commodity ETFs for this reason.⁴

Long-only commodity ETFs have badly underperformed underlying physical commodity prices.

The correlation of each alternative to the S&P 500 is shown as Table 2. REITs and hedge funds have fairly high correlation to stocks. This does not mean that they cannot be good diversifiers, but it does increase the hurdle return required before they should be included in a portfolio.

Table 2: Correlation of Monthly Returns, 1/2003 through 12/2016

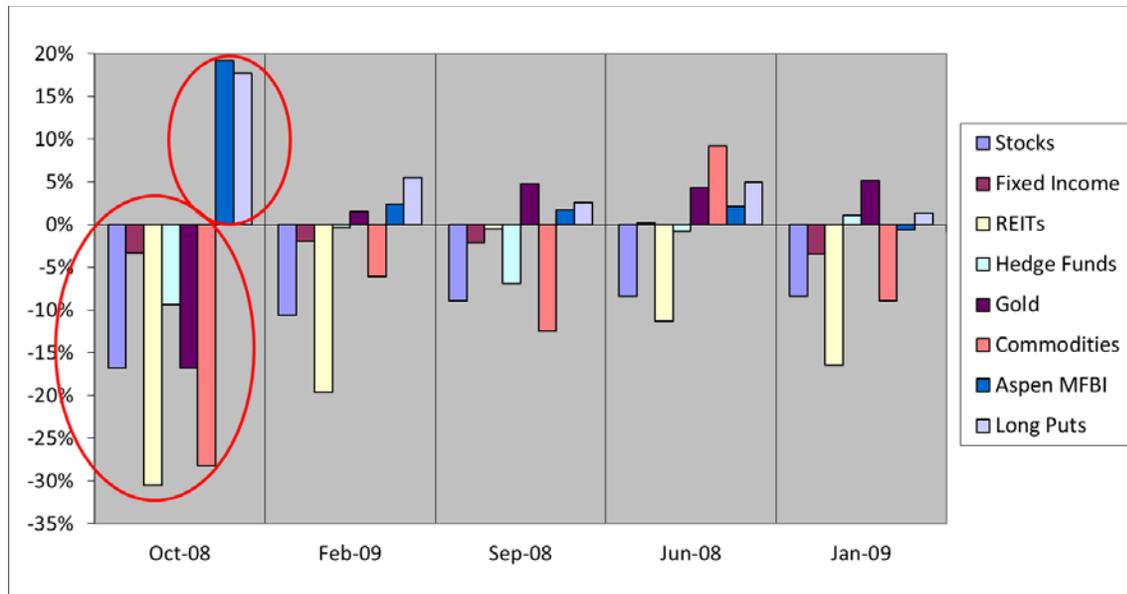
	Stocks	Fixed Income	REITs	Hedge Funds
Stock Correlation	1.00	0.23	0.73	0.73
Stock Up-Month Correlation	1.00	0.25	0.46	0.49
Stock Down-Month Correlation	1.00	0.27	0.70	0.60
	Gold	Commodities	AMFBI	Long Puts
Stock Correlation	0.06	0.39	-0.16	-0.85
Stock Up-Month Correlation	0.11	0.19	-0.03	-0.73
Stock Down-Month Correlation	0.05	0.46	-0.54	-0.85

⁴ "Amber Waves of Pain," Bloomberg Businessweek Magazine, July 26 – August 1, 2010, pages 50-57.

Aspen MFBI is the only diversifier with negative correlation to stocks. (Recall that Long Puts represent insurance rather than diversification.) **Moreover, only Aspen MFBI and Gold have positive convexity, and for Gold (unlike Aspen MFBI) the convexity effect is very weak.** Managed futures correlation is higher in up months for stocks and lower in down months for stocks. This convexity characteristic can be most important in times of extreme market stress, when correlations of various long-only investment options can become alarmingly high. For example, in Figure 1, note the behavior of Aspen MFBI vs. all other diversification candidates in the disastrous month of October, 2008.

Managed futures has displayed long-term negative correlation to traditional asset classes

Figure 1: Worst 5 Months for Stocks, 1/2003 through 12/2016



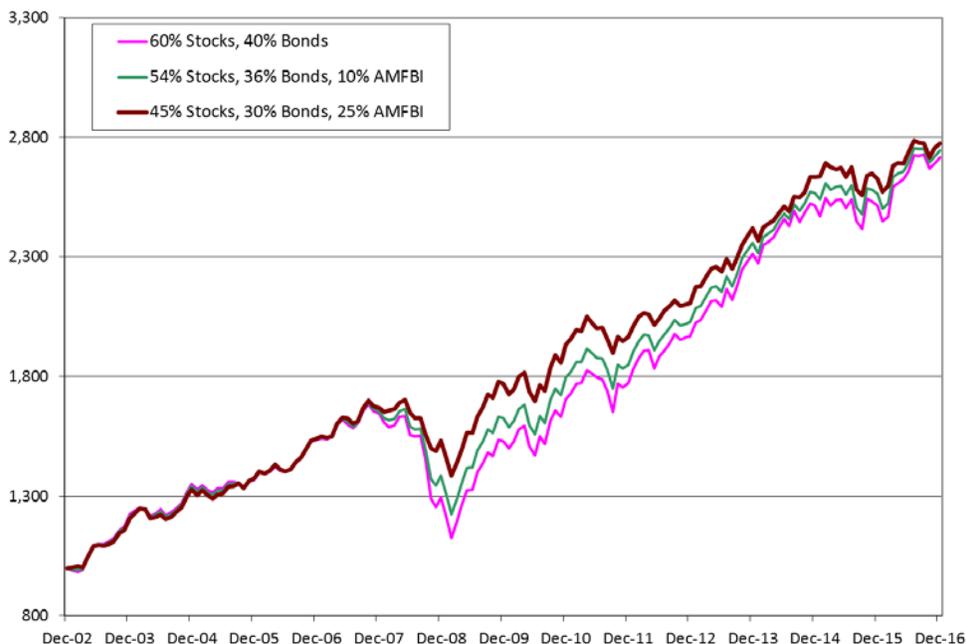
Diversifier Implementation

Due to its “ultimate diversifier” characteristics, managed futures (as represented by Aspen MFBI) can have a materially positive effect on an investment portfolio. For example, consider the following four portfolios:

1. Initial diversified portfolio: 60% Stocks, 40% Bonds
2. Diversification with managed futures: 54% Stocks, 36% Bonds, 10% Aspen MFBI
3. More aggressive diversification: 45% Stocks, 30% Bonds, 25% Aspen MFBI

As Figure 2 shows, the diversification process improves portfolio returns by a modest amount over the period 1/2003 - 12/2016. However, the biggest improvement comes in the form of reduced portfolio volatility, as shown in Table 3.

Figure 2: Growth of \$1,000 for Stocks and Diversified Portfolios



As the amount of diversification in the portfolio increases, the returns increase slightly, but the annualized portfolio volatility decreases dramatically, from about 14% for stocks alone to just 7% for the most diversified portfolio. Consequently, risk-adjusted return measures like the Sharpe ratio improve substantially. (This occurs even though overall correlation to the initial stock portfolio remains high.), As a result the diversified portfolios generate a sizable alpha.

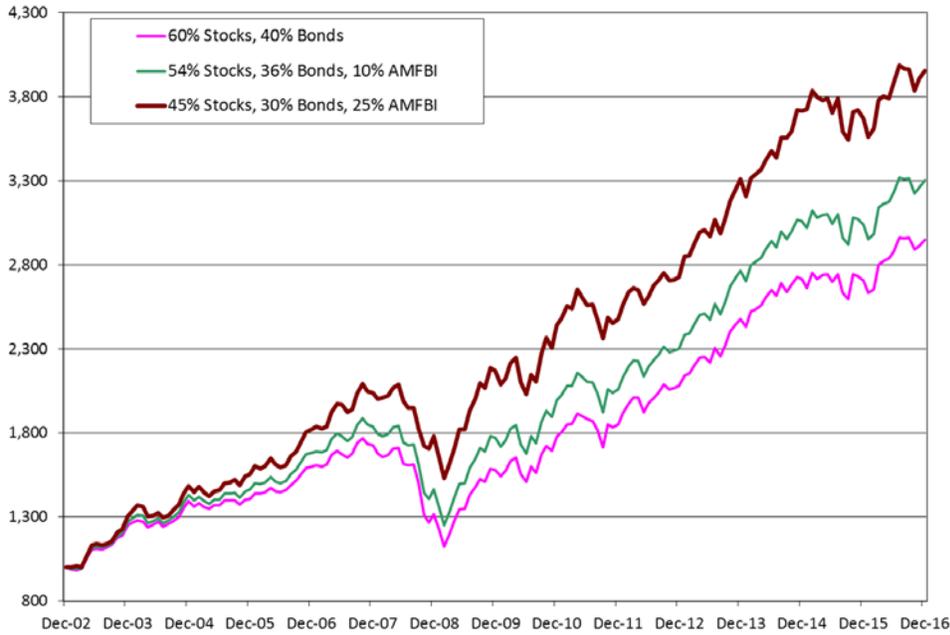
Allocating to managed futures can simultaneously increase portfolio return and significantly reduce portfolio volatility

Table 3: Statistics for Stocks and Diversified Portfolios

	60/40	54/36/10	45/30/25
Annualized Return	7.40%	7.48%	7.56%
Annualized Standard Deviation	8.99%	8.01%	6.83%
Return/Standard Deviation	0.82	0.93	1.11
Sharpe Ratio (1.3%)	0.69	0.78	0.93
Correlation to Stocks	0.97	0.96	0.90
Alpha to Stocks	1.14%	1.81%	2.0%

Graphically, these results can best be seen by applying a theoretical constant risk budget. As shown in Figure 3, if each portfolio were levered up or down such that all portfolios maintained the same target volatility, the risk reduction inherent in diversification would translate into major improvements in long-run return.

Figure 3: Growth of \$1,000 for Various Portfolios, Adjusted to 10% Long-Run Volatility



The effect is similar even for relatively risk-averse fixed income investors. In Table 4, note the reduction in portfolio volatility achieved by adding ostensibly “risky” Aspen MFBI to a risk-averse bond portfolio.⁵ This volatility reduction and an increase in total return are obtained concurrently. It is for reasons like these that the “ultimate diversifier” characteristics of managed futures in general, and the Aspen Managed Futures Beta Index in particular, are so appealing.

Even for risk-averse fixed income investors, an allocation to managed futures can reduce portfolio volatility, while simultaneously improving returns.

Table 4: Statistics for Stocks and Diversified Portfolios

	100% Fixed Income	90% FI / 10% Aspen MFBI	75% FI / 25% Aspen MFBI
Annualized Return	4.80%	5.10%	5.53%
Annualized Standard Deviation	5.57%	5.08%	4.75%
Return/Standard Deviation	0.86	1.00	1.16
Sharpe Ratio (1.3%)	0.64	0.76	0.91
Correlation to Fixed Income	1.00	0.98	0.87
Alpha to Fixed Income	0.00%	0.67%	1.66%

⁵ Fixed Income portfolio represented by 90% JP Morgan Global Aggregate Bond Index, 10% Credit Suisse High Yield Index.

Important Disclosures

Past performance is no guarantee of future results.

All Aspen MFBI monthly returns shown do not include transaction cost, but are net of 1.50% for estimated fees and other expenses. An investor cannot invest directly in an index.

This document does not constitute an offer to sell or solicitation of an offer to buy any security. The information contained herein is provided for educational purposes only and is not intended to solicit interest in any investment opportunity.

Data has been obtained from reliable sources. Aspen Partners believes the information herein to be reliable; yet no warranty or guarantee is made as to its accuracy or completeness.

Benchmarks & Indices

The Aspen Managed Futures Beta Index (Aspen MFBI) is constructed using a quantitative, rules-based model designed to replicate the trend-following and counter-trend exposure of futures markets by allocating assets to liquid futures contracts of certain financial and commodities futures markets. The Index therefore seeks to reflect the performance of strategies and exposures common to a broad universe of futures markets, i.e., managed futures beta.

“Stocks” are represented by the S&P 500 Index, a widely recognized index of 500 large-cap US stocks.

“Fixed Income” and “Bonds” are represented by JP Morgan Global Aggregate Bond Index, a global investment grade bond index.

“REITS” is represented by FTSE NAREIT Index, an unmanaged index considered representative of global real estate companies and real estate investment trusts.

“Hedge Funds” is represented by the HFRX Global Hedge Fund Index, considered to be representative of the overall composition of the hedge fund universe.

“Gold” is represented by the spot price of gold minus 0.40% (which is closely correlated to the SPDR Gold Trust ETF (“GLD”) but with a longer track record).

“Commodities” is represented by the Goldman Sachs Commodity Index, a composite index of commodity sector returns which represents a broadly diversified, unleveraged, long-only position in commodity futures.

“Long Puts” is represented by a short version of the S&P 500 PutWrite Index, an unmanaged benchmark index that measures the performance of a hypothetical portfolio that sells S&P 500 Index (SPX) put options against collateralized cash reserves held in a money market account

The JP Morgan Global Aggregate Bond Index, FTSE NAREIT Index, HFRX Global Hedge Fund Index, S&P 500 PutWrite Index, S&P 500 Index and Goldman Sachs Commodity Index are unmanaged and do not represent the attempt of any manager to generate returns on an investment. These benchmark indices do not include transaction costs, fees, and other expenses. An investor cannot invest directly in an index.

Definitions

Annualized Return: The year-over-year growth rate of an investment over a specified period of time. The rate of return that, if compounded every year, would have produced the same total return as was produced by the investment.

Correlation: A statistical measure of how an index moves in relation to another index or model portfolio.

Sharpe Ratio: A measurement of risk-adjusted performance which subtracts the “risk-free” rate of return from an investment’s performance.

Standard Deviation: A measurement of the annual rate of return’s dispersion from its mean, indicating an investment’s volatility.