

THE CASE FOR MANAGED FUTURES

Winter 2013

EXECUTIVE SUMMARY

In an effort to reduce risk and improve total returns over time, the diversification of traditional US stock/bond portfolios may be improved with the inclusion of alternative investments. Such diversification may be historically evaluated and shown to provide quantifiable benefits to investors. The inclusion of Managed Futures trend following strategies in investment portfolios can potentially reduce overall risk (resulting in less severe portfolio drawdowns during turbulent markets and in times of crisis) and provide for more consistent long term wealth accumulation.



LONGBOARD

LIQUID ALTERNATIVE INVESTMENTS

THE NEED FOR DIVERSIFICATION

Every investment involves a tradeoff between risk and return. The idea behind modern portfolio theory is that portfolio diversification maximizes the investor's return per unit of risk. Portfolios with the strongest return on risk are best able to protect and compound wealth. Alternative investments may increase portfolio diversification because their values generally move asynchronously with those of traditional investments. A diversified mixture of both traditional and alternative investments often produces a higher return on risk than portfolios of either investment type alone.

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Periods of economic turmoil, such as the 2007 to 2009 credit crisis, cause many traditional investments to suffer. Without proper portfolio diversification into alternative investments, these events can severely interrupt the compounding of wealth. Today, many investors are searching for accessible, cost effective alternative investments that will support their need for diversification.

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MANAGED FUTURES

Academics and practitioners alike both espouse the diversification benefits of Managed Futures¹. Managed Futures trend following strategies seek to capture long and short profit opportunities across 100+ global markets. These markets represent all major asset classes, including equities, commodities, fixed income and currencies. Managed Futures is one of the few liquid alternatives available in SEC regulated mutual funds. As a result, Managed Futures trend following strategies are now accessible and appeal to both investment advisors and the broader investment community. The balance of this paper focuses on the quantifiable benefits of portfolio diversification using Managed Futures trend following strategies.

RETURN AND RISK

Modern portfolio theory suggests that investors generally prefer portfolios that maximize the ratio of return to risk. A stronger return on risk results in more consistent, dependable, and emotionally agreeable investment portfolio growth. How do we measure the return and risk of an investment?

Investors are generally concerned with an investment's ability to consistently increase wealth. Thus, return is best represented by the compound annual growth rate (CAGR). The compound annual growth rate is the smoothed year-over-year growth rate by which an investment compounds wealth. Often, it is meaningful to look at the excess compound annual growth rate, which is the compound annual growth rate earned in excess of the compound annual growth rate of a risk-free investment such as US T-Bills. The compound annual growth rate and excess compound annual growth rate represent the true potential earning power of an investment.

¹ Lintner Revisited: A Quantitative Analysis of Managed Futures. CME Group. 2012.

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Most investors agree that the potential for negative returns represents the risk of any investment. The possibility of loss is often referred to as an investment's downside risk. Investors are particularly concerned with large, sustained losses that may severely interrupt the compounding of wealth and can potentially cause investors to fall short of their investment goals. Downside deviation and maximum drawdown are two measures of downside risk. Downside deviation estimates the range and variation of an investment's potential losses while maximum drawdown suggests how severe an investment's sustained losses could be.

Two commonly used ratios for measuring an investment's return on risk are:

- » Excess compound annual growth rate divided by downside deviation (the Sortino Ratio); and
- » Compound annual growth rate divided by maximum drawdown (the Calmar Ratio).

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MANAGED FUTURES IN TRADITIONAL PORTFOLIOS

A well diversified portfolio should contain both traditional and alternative investments. In this section, we will analyze the diversification benefits of incorporating Managed Futures into a traditional investment portfolio.

The "traditional" portfolio often contains 60% US stocks¹ and 40% US bonds². To increase return on risk, the investor can divide his or her capital between the traditional 60/40 portfolio and Managed Futures³. The question is, "How much Managed Futures exposure is appropriate?"

A well diversified portfolio should contain both traditional and alternative investments.

Figure 1 shows the Sortino and Calmar Ratio for a diversified portfolio that divides its capital between the traditional 60/40 portfolio and Managed Futures. The period examined was 1987 to 2012 and the percentage of the portfolio allocated to Managed Futures is shown on the horizontal axis. To maintain the proportion of traditional 60/40 investments to Managed Futures, the portfolio holdings were rebalanced annually.

The indices used consistently throughout this paper to represent US stocks, US bonds, and Managed Futures are the S&P 500 Total Return Index, the Barclays Capital Aggregate Bond Index, and the Barclay BTOP 50 Index, respectively. A summary of each index is provided in Appendix A.

From Figure 1 we see that the Sortino Ratio was maximized when the portfolio

¹S&P 500 Total Return Index; ²Barclays Capital Aggregate Bond Index; ³Barclay BTOP50 Index

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contained approximately 55% Managed Futures and 45% traditional 60/40 investments. Similarly, the Calmar Ratio was maximized when the portfolio contained approximately 60% Managed Futures and 40% traditional 60/40 investments. In our view, a prudent and well diversified portfolio would contain a minimum of 25% Managed Futures exposure, and possibly more, depending on the portfolio's preexisting constituents. However, it is up to the individual investor to decide what level of diversification best fits their investment goals and disciplines.

A prudent and well diversified portfolio would contain a minimum of 25% Managed Futures exposure, and possibly more.

FIGURE 1: EFFECTS OF MANAGED FUTURES ALLOCATIONS ON TRADITIONAL PORTFOLIO RETURN ON RISK (JAN. 1987 TO SEP. 2012)



SOURCE: S&P 500 Total Return Index, Barclays Capital Aggregate Bond Index and the Barclay BTOP50 Index
Index Information was obtained from reputable sources and is presumed, but not guaranteed, to be accurate.
See Appendix A for index source definitions and the last page of this paper for important Disclosures.

To better see the effects of diversification, Table 1 compares the Sortino Ratio, Calmar Ratio, and investment growth of four portfolios containing 100% stocks, 100% Managed Futures, 100% traditional 60/40, and 75% traditional 60/40 with 25% Managed Futures, respectively. Again, the period of time examined was Jan. 1987 to Sep. 2012 and portfolio weights were rebalanced annually.

The diversified portfolio containing 75% traditional 60/40 and 25% Managed Futures outperforms the other portfolios in terms of both the Sortino and Calmar Ratios, but it does not have the highest total return on initial investment. This is because the compound annual growth rate of a Managed Futures investment from 1987 to 2012 was slightly lower than the compound annual growth rate of US stocks and US investment grade bonds. However, the benefit of Managed Futures comes from the material improvement in the downside deviation and maximum drawdown over a less diversified portfolio. In our view, the consistency, dependability, and emotional stability that comes from maximizing return on risk makes the well diversified portfolio the strongest choice.

The benefit of Managed Futures comes from the material improvement in the downside deviation.

TABLE 1: COMPARING PORTFOLIOS WITH VARYING LEVELS OF DIVERSIFICATION (JAN. 1987 TO SEP. 2012)

	100% US STOCKS	100% MANAGED FUTURES	100% TRADITIONAL 60/40 PORTFOLIO	75% TRADITIONAL & 25% MANAGED FUTURES
Return ¹	9.64%	8.71%	9.03%	9.17%
Volatility ²	15.64%	10.34%	9.68%	7.66%
Sortino Ratio	.54	.90	.80	1.15
Calmar Ratio	.19	.65	.29	.45

¹ CAGR: Compounded Annual Growth Rate

² Annualized Standard Deviation

SOURCE: S&P 500 Total Return Index, Barclays Capital Aggregate Bond Index and the Barclay BTOP50 Index

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UNDERSTANDING THE BENEFIT

What performance characteristics of Managed Futures are responsible for substantially improving return on risk? Figure 2 shows that the quarterly returns (1987 to 2012) of Managed Futures are positively skewed. In other words, most calendar quarters center around a modest median return of +1.45%. However, the average return is pulled up to +2.23% per quarter by large positive returns that are atypical of the majority of the quarters from 1987 through 2012.

FIGURE 2: QUARTERLY RETURNS OF MANAGED FUTURES (JAN. 1987 TO SEP. 2012)

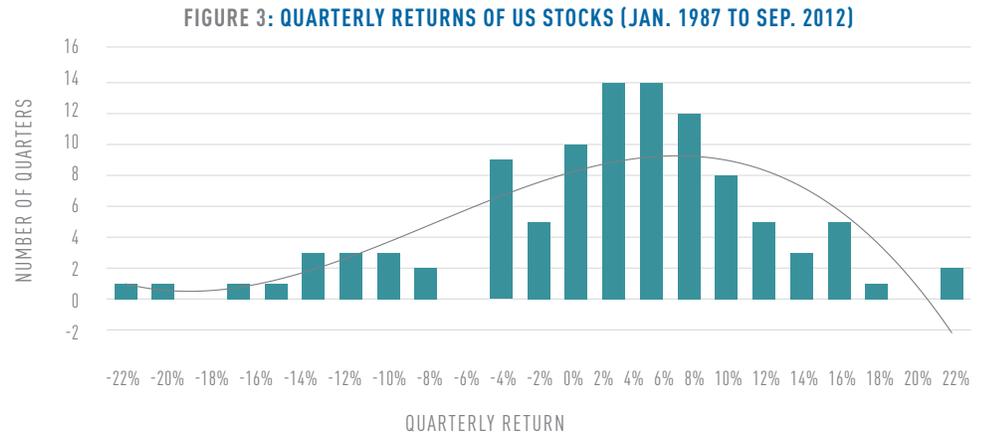


SOURCE: Barclay BTOP50 Index

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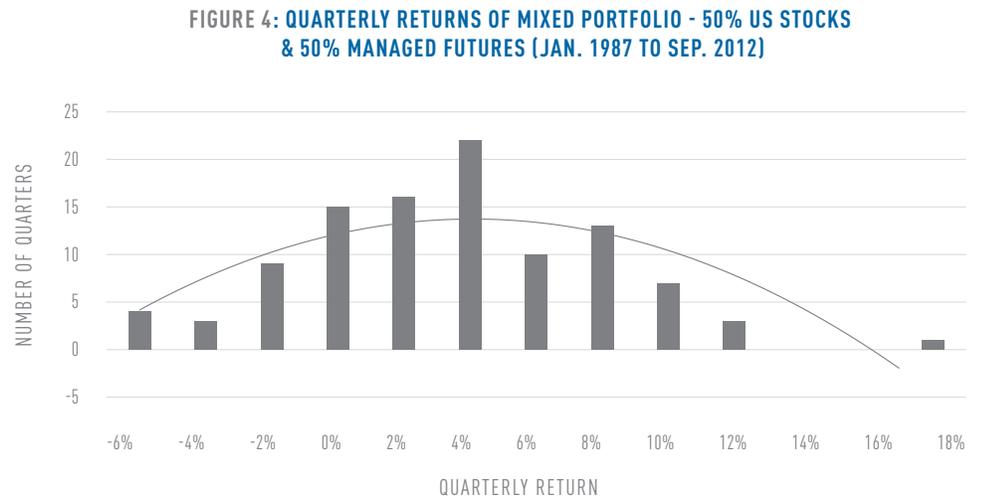
In contrast, Figure 3 shows that the quarterly returns of US stocks are strongly negatively skewed. Most calendar quarters center around a respectable median return of +3.3%. However, the average is pulled down to +2.69% by large negative returns that are atypical of the majority of the quarters from 1987 through 2012.

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SOURCE: S&P500 Total Return Index

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SOURCE: S&P500 Total Return Index and the Barclay BTOP50 Index

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Managed Futures returns seem to be characterized by noticeably large gains and US stocks are plagued by equally significant losses. This presents an interesting opportunity for portfolio construction. If the long tailed “upside” of Managed Futures mitigates the long tailed “downside” of US stocks, a portfolio of both investments would have substantially reduced risk and thus, a higher return on risk. Figure 4 shows the quarterly returns of a portfolio of 50% US stocks and 50% Managed Futures. At first glance, it seems like the two tails do indeed mitigate each other’s effects. The result is a less variable, less skewed, more compoundable performance.

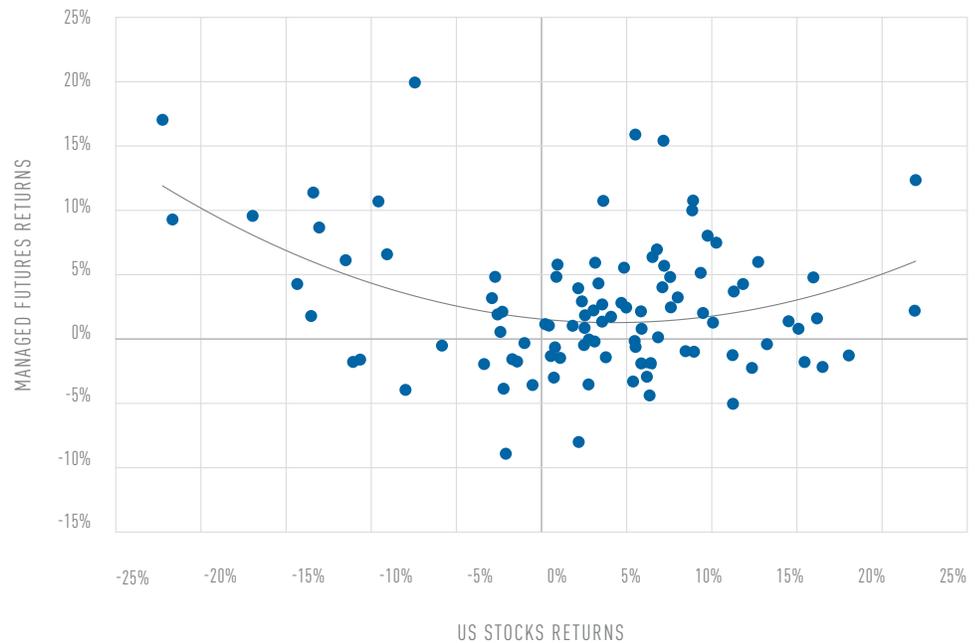
How do these tails interact with one another? To answer this, we must more thoroughly examine the relationship between the returns of Managed Futures and US stocks. Figure 5 (see following page) compares the quarterly returns of

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Managed Futures to those of US stocks. The black trendline suggests a relationship between the returns. The upward sloping left tail of the trendline indicates that when US stocks suffer due to large atypical losses, Managed Futures deliver strong atypical gains. To a lesser degree, the upward sloping right tail of the trendline suggests that when US stocks experience relatively large returns, Managed Futures also deliver respectable gains.

The result is a less variable, less skewed, more compoundable performance.

**FIGURE 5: QUARTERLY RETURNS OF US STOCKS VS. MANAGED FUTURES (JAN. 1987 TO SEP. 2012)
MANAGED FUTURES HAS HISTORICALLY PERFORMED WELL IN BULL AND BEAR MARKETS**



SOURCE: S&P500 Total Return Index and the Barclay BTOP50 Index

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You will note that incorporating Managed Futures in a stock portfolio causes the returns trendline (as seen in the above graph) to “smile.” It seems that an effective way to make an investor’s traditional portfolio “smile” is to allocate a significant portion of the portfolio’s capital to Managed Futures.

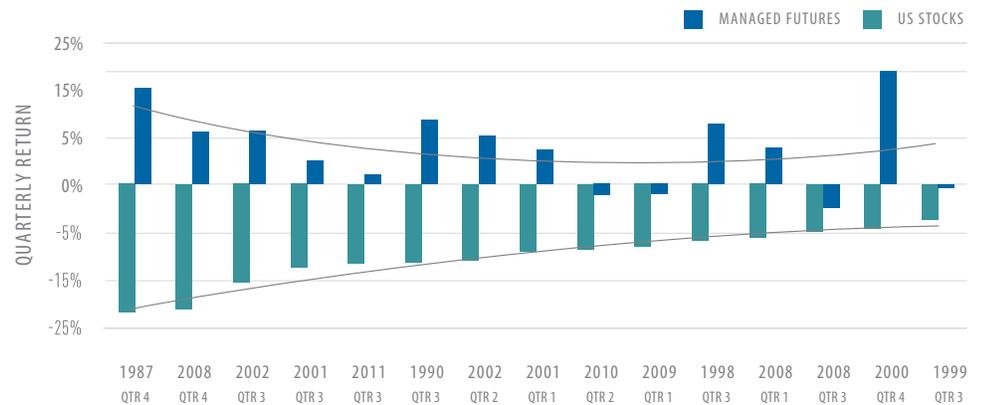
Let’s examine the upward sloping left tail of Figure 5’s trendline more closely. Figure 6 (see following page) shows the returns of Managed Futures compared to the worst 15 quarters (1987 through 2012) for US stocks. We can see that Managed Futures have been effective at countering the downside risk found in US stocks. These findings have been supported by others. In her work, *In Search of Crisis Alpha*, Kathryn M. Kaminski, Ph.D. asserts, “Following the onset of a market crisis, a Managed Futures strategy will be one of the select (few) strategies which are able to adapt to take advantage of the persistent trends across the wide range of asset classes they trade in, delivering crisis alpha to their investors.”

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Intuitively, we can understand this result. The economic events that cause directional volatility in traditional investments such as US stocks affect trends in other related markets. Managed Futures trend following strategies can tactically search for developing trends across more than 100 global markets representing all major asset classes. Managed Futures trend following strategies also have the flexibility to go long or short to capture profitable trends in many different market environments. As a result, Managed Futures differ substantially from passively managed, long only investments in a single asset class such as US stocks. As we have shown, Managed Futures do not move up or down in synchrony with US stocks and may continue to provide valuable portfolio diversification against strong market dislocations in the future.

Managed Futures may continue to provide valuable portfolio diversification against strong market dislocations in the future.

FIGURE 6: RETURNS OF MANAGED FUTURES DURING 15 WORST STOCK MARKET QUARTERS



SOURCE: S&P 500 Total Return Index and the Barclay BTOP50 Index

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CONCLUSION

“The results [of including managed futures] are so compelling that the board of any institution, along with *the portfolio manager, should be forced to* articulate in writing their justification in not having a substantial allocation....” Dr. John Lintner, Harvard Business School

In our view, Managed Futures trend following strategies continue to provide strong diversification benefits and should command a respectable allocation in a portfolio of traditional investments. Depending on an investor’s goals and disciplines, we believe that a traditional portfolio of US stocks and bonds should have a minimum of 25% Managed Futures exposure.

The Case for Managed Futures

The downside protection offered by Managed Futures trend following strategies can help mitigate events that could otherwise seriously interrupt the compounding of wealth. For that reason, adding Managed Futures to a portfolio of traditional assets often materially improves return on risk. This result is consistent with the substantial improvement in return on risk for such diversified portfolios as seen in Table 1 (see page 5). As always, past performance is not indicative of future results.

Managed Futures trend following strategies can help mitigate events that seriously interrupt the compounding of wealth.

APPENDIX A: INDEX SOURCES

US Stocks

S&P 500 Total Return index: The S&P 500 is a float weighted index of the top 500 publicly traded US companies as determined by Standard & Poor's. The S&P 500 Total Return index tracks both the capital gains of the S&P 500 over time, and assumes that any cash distributions, such as dividends, are reinvested back into the index. An index's total return is a more accurate representation of the index's realized performance for investors.

US Bonds

Barclays Capital Aggregate Bond Index: The Barclays Capital Aggregate Bond Index is a market capitalization-weighted index that tracks the performance of most US investment grade bonds. The index includes Treasury securities, Government agency bonds, Mortgage-backed bonds, corporate bonds, a small amount of foreign bonds traded in U.S., and municipal bonds. Treasury Inflation-Protected Securities are excluded, due to tax treatment issues.

Managed Futures

Barclay BTOP50 Index: [From BarclayHedge.com] The BTOP50 Index seeks to replicate the overall composition of the managed futures industry with regard to trading style and overall market exposure. The BTOP50 employs a top-down approach in selecting its constituents. The largest investable trading advisor programs, as measured by assets under management, are selected for inclusion in the BTOP50. In each calendar year the selected trading advisors represent, in aggregate, no less than 50% of the investable assets of the Barclay CTA Universe. To be included in the BTOP50, the following criteria must be met:

- » Program must be open for investment
- » Manager must be willing to provide us daily returns
- » Program must have at least two years of trading activity
- » Program's advisor must have at least three years of operating history
- » The BTOP50's portfolio will be equally weighted among the selected programs at the beginning of each calendar year and will be rebalanced annually.

This paper uses the following Sortino Ratio definition for an investment with n monthly returns:

$$\text{Sortino Ratio} \equiv \frac{(\text{CAGR of Investment}_{1,n} - \text{CAGR of 3 month US TBills}_{1,n})}{\text{Downside Risk}_{1,n}} \quad \text{where,}$$

$$\text{CAGR}_{1,n} = \left(\frac{\text{Investment Ending Value}}{\text{Investment Beginning Value}} \right)^{\left(\frac{1}{12}\right)^n} - 1$$

$$\text{Downside Risk} = \sqrt{\frac{1}{n} \sum_{t=1}^n (\text{return}_t - \text{TBill return}_t)^2 \times x(t)} \quad \text{and} \quad \begin{cases} x(t) = 1 \text{ if } \text{return}_t < \text{TBill return}_t \\ x(t) = 0 \text{ if } \text{return}_t \geq \text{TBill return}_t \end{cases}$$

The Sortino Ratio relates an investment's realized excess earnings to its root mean squared underperformance. In this paper, underperformance is measured by comparing an investment's point in time return to the corresponding point in time return of a month US T-Bills.

Similarly, this paper uses the following CALMAR Ratio definition for an investment with n monthly returns:

$$\text{CALMAR Ratio} \equiv \frac{\text{CAGR of Investment}_{1,n}}{\text{Maximum Drawdown}_{1,n}} \quad \text{where } \text{CAGR}_{1,n} \text{ is defined as above and,}$$

$$\text{Maximum Drawdown}_{1,n} = \text{Min} \left\{ \frac{\text{Investment Value}_t}{\text{Max} \{\text{Investment Values}_{1,t}\}} - 1 \right\}, \quad \forall t = 1, \dots, n-1, n$$

In this case, the brackets $\{x\}$ signify an array of values.

DISCLOSURE

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Past performance is not indicative of future results.

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Hypothetical performance results have many inherent limitations, one of which is that they are generally prepared with the benefit of hindsight. There are numerous factors which cannot be fully accounted for in the preparation of hypothetical performance results, all of which can adversely affect actual trading results. There are frequently sharp differences between hypothetical and actual performance results. No representation is being made that any actual account will achieve profits or losses similar to the hypothetical results shown.

The risk of trading commodities, futures, options, derivatives and other financial instruments is substantial and may not be suitable for everyone.

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