

The State of Risk Nanagenend

May 2016

Improving risk-adjusted returns with risk management

Using volatility as the risk metric



Date Source: Morningstar, CBOE, S&P. Calculations: Newfound Research. **Past performance does not guarantee future results**. Volatility is a statistical measure of the amount of variation around the average returns for a security or strategy. All returns are hypothetical index returns. You cannot invest directly in an index and unmanaged index returns do not reflect any fees, expenses, sales charges, or trading expenses. Index returns do include the reinvestment of dividends. No index is meant to measure any strategy that is or ever has been managed by Newfound Research. Please refer to the index definitions page at the end of this presentation for a description of the indices used to represent each strategy. The indices constructed by Newfound (Tactical Equity, Risk Parity, 50/50 Stock/Bond, and Diversified) were calculated on 3/31/2016 and are therefore backtested.



Improving risk-adjusted returns with risk management

Using drawdown as the risk metric



Maximum Drawdown

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No individual strategy is perfect

Each strategy has market environments where it excels and where it struggles

2006*	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*	
+4.1%	+5.9%	+57.9%	-1.8%	+6.5%	+12.7%	-4.9%	+6.9%	+4.8%	+3.0%	+4.1%	Risk Parity
+2.8%	+4.0%	+38.8%	-3.6%	-0.6%	+10.6%	-5.3%	+0.0%	+3.8%	0.6%	+3.9%	Low Vol. Equities
-0.9%	+0.7%	+38.8%	-7.2%	-0.6%	+2.9%	-5.5%	-5.3%	+0.0%	-0.4%	+0.8%	50/50 Stock/Bond
-1.5%	+0.7%	+37.4%	-8.8%	-1.7%	+1.1%	-5.7%	-8.6%	-2.4%	-0.4%	+0.2%	Puts
-2.7%	-0.5%	+35.5%	-9.3%	-3.4%	+1.0%	-6.0%	-8.8%	-2.5%	-1.4%	-0.5%	Managed Futures
-2.7%	-0.7%	+21.4%	-10.1%	-4.3%	-1.7%	-6.0%	-16.0%	-3.8%	-4.3%	-0.6%	Put Spread
-2.8%	-1.0%	+18.0%	-17.8%	-8.3%	-2.7%	-6.8%	-17.1%	-4.5%	-5.3%	-1.1%	Target Volatility
-3.0%	-4.6%	+16.9%	-18.2%	-10.9%	-3.5%	-9.2%	-25.4%	-4.9%	-5.4%	-1.3%	Indexed Annuity
-5.3%	-4.9%	+15.6%	-23.7%	-12.0%	-5.5%	-15.6%	-28.1%	-9.5%	-5.4%	-1.3%	T-Bills
-7.4%	-4.9%	+13.4%	-26.3%	-14.9%	-6.0%	-15.9%	-31.6%	-10.6%	-6.5%	-2.4%	Collar
-12.8%	-6.0%	+5.3%	-28.1%	-15.5%	-11.0%	-27.6%	-32.3%	-13.7%	-7.3%	-9.2%	Tactical Equity
11.1%	5.5%	-37.0%	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	1.3%	S&P 500

Relative Returns vs. S&P 500 (March 2006 to March 2016)

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*2006 is a partial year beginning on 3/31/2006. 2016 is a partial year ending on 3/31/2016.

No individual strategy is perfect

Relative performance compared to historical bounds

Relative 1-Year Returns vs. S&P 500 (March 2006 to March 2016)



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Individual approaches do not out/ underperform at the same time

Is there an opportunity for diversification?



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The power of diversifying risk management strategies

A diversified approach outperforms the best individual strategy



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The power of diversifying risk management strategies

A diversified approach can temper the ebbs and flows of individual strategies

2006*	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016*	
+4.1%	+5.9%	+57.9%	-1.8%	+6.5%	+12.7%	-4.9%	+6.9%	+4.8%		+4.1%	Risk Parity
+2.8%	+4.0%	+38.8%	-3.6%	-0.6%	+10.6%	-5.3%	+0.0%	+3.8%	0.6%	+3.9%	
-0.9%	+1.2%	+38.8%	-7.2%	-0.6%	+4.2%	-5.5%	-5.3%	+0.0%	-0.4%	+0.8%	50/50 Stock/Bond
-1.5%	+0.7%	+37.4%	-8.8%		+2.9%		-8.6%	+0.0%	-0.4%	+0.2%	Puts
-2.7%	+0.7%	+35.5%	-9.3%	-2.5%	+1.1%	-6.0%	-8.8%	-2.4%	-1.4%	-0.1%	Diversified
-2.7%	-0.5%	+34.0%	-10.1%	-3.4%	+1.0%	-6.0%	-16.0%	-2.5%	-1.7%	-0.5%	Managed Futures
-2.8%	-0.7%	+21.4%	-14.9%	-4.3%	-1.7%	-6.8%	-17.1%	-3.8%	-4.3%	-0.6%	Put Spread
-3.0%	-1.0%	+18.0%	-17.8%	-8.3%	-2.7%	-9.2%	-17.2%	-4.5%	-5.3%	-1.1%	Target Volatility
-3.1%	-4.6%	+16.9%	-18.2%	-10.9%	-3.5%	-10.2%	-25.4%	-4.9%	-5.4%	-1.3%	Indexed Annuity
-5.3%	-4.9%		-23.7%	-12.0%	-5.5%	-15.6%	-28.1%	-9.5%	-5.4%	-1.3%	T-Bills
-7.4%		+13.4%	-26.3%	-14.9%	-6.0%	-15.9%	-31.6%	-10.6%	-6.5%	-2.4%	Collar
-12.8%	-6.0%	+5.3%	-28.1%	-15.5%	-11.0%	-27.6%	-32.3%	-13.7%	-7.3%	-9.2%	Tactical Equity
11.1%	5.5%	-37.0%	26.5%	15.1%	2.1%	16.0%	32.4%	13.7%	1.4%	1.3%	S&P 500

Relative Returns vs. S&P 500 (March 2006 to March 2016)

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The power of diversifying risk management strategies

Historically, a more consistent downside risk profile



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Methodology

Our "power rankings" approach to comparing the historical value-add of different risk management strategies considers four factors:

- 1. Drawdown We want to penalize downside volatility/loss of capital without penalizing upside volatility.
- 2. Return Drawdown can easily be managed by sitting in cash; risk evaluation only makes sense within the context of long-term returns.
- **3. Diversification** All things being equal, we prefer risk management strategies with unique return profiles. In fact, strategies with unexceptional risk/return metrics can be highly valuable if they out/ underperform at different times that other strategies.
- **4. Profile** Risk management means different things for different people. An approach that may make sense for someone nearing retirement may not make sense for someone in their 20's.

For a full description of our methodology, please feel free to reach out to us.



"Open" Division – No return hurdle, purely the highest excess return to drawdown



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RESEARCH +

"Conservative" Division - Excludes portfolios with returns lower than 25/75 stock/bond portfolio



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"Moderate" Division – Excludes portfolios with returns lower than 50/50 stock/bond portfolio



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RESEARCH T

"Growth" Division – Excludes portfolios with returns lower than 75/25 stock/bond portfolio



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Index Definitions

- 50/50 Stock/Bond: Calculated by Newfound Research. The index reflects a portfolio with a 50% allocation to the S&P 500 Index and a 50% allocation to the Barclays Aggregate Bond Index. The index is rebalanced back to 50%/50% on an annual basis. This index is backtested.
- Indexed Annuity: Calculated by Newfound Research. The index uses the S&P 500 and is calculated assuming a 4.0% bonus on the initial deposit and monthly point-to-point crediting with a 1.4% cap. This index is backtested.
- Low Volatility Equities: S&P 500 Low Volatility Index. The index measures the performance of the 100 least volatile stocks in the S&P 500.
- Managed Futures: S&P Systematic Global Macro Index. The index is designed to represent the global macro and managed futures/Commodity Trading Advisor (CTA) universe. The index uses a quantitative methodology to track the prices of a globally diversified portfolio of over 30 commodity, foreign exchange, and financial futures contracts.
- Options Collar: CBOE S&P 500 95-110 Collar Index. The index is designed to provide investors with insights as to how one might protect an investment in S&P 500 stocks against steep market declines The index's strategy accepts a ceiling or cap on S&P 500 gains in return for a floor on S&P 500 losses. The passive collar strategy reflected by the index entails holding the stocks in the S&P 500 index, buying three-month S&P 500 put options to protect the portfolio from market decreases and selling three-month S&P call options to help finance the cost of the put options.
- Options Puts: CBOE S&P 500 5% Put Protection Index. The index is designed to track the performance of a hypothetical strategy that holds a long position indexed to the S&P 500 and buys a monthly 5% out-of-the-money S&P 500 Index (SPY) put option as a hedge.
- Options Put Spreads: CBOE S&P 500 Zero-Cost Put Spread Collar Index. The index is designed to track the performance of a hypothetical option trading strategy that 1) holds a long position indexed to the S&P 500 index; 2) on a monthly basis buys a 2.5% 5% S&P 500 Index (SPX) put option spread; and 3) sells a monthly out-of-the-money (OTM) SPX call option to cover the cost of the put spread.
- Risk Parity: Calculated by Newfound Research. The index uses trailing volatility to target equal volatility contributions (assuming constant and equal correlations) between equities, interest rates, and real assets. The equities bucket is split 50/50 (on a risk basis) between U.S. equities (ticker: SPY) and foreign equities (ticker: EFA). The interest rates bucket uses long-dated U.S. Treasuries (ticker: TLT). The real assets bucket targets an equal risk contribution between broad-based commodities (ticker: GSG), gold (ticker: GLD), and REITs (ticker: VNQ). The index assumes a monthly rebalance. This index is backtested.
- Tactical Equity: Calculated by Newfound Research. The index is invested in the S&P 500 when that index's 50-day moving average is at or above its 200day moving average. If this is not the case, the index is allocated to the Barclays 1-3 Month Treasury Bill Index. This index is backtested.
- Target Volatility: S&P 500 Risk Control 15% Index. The index is designed to provide a way for investors to gain exposure to the S&P 500 while targeting a constant volatility level of 15%.
- T-Bills: Barclays 1-3 Month U.S. Treasury Bill Index. The index is designed to reflect the performance of U.S. Treasury Bills with maturities of between 1 and 3 Months.

Important Disclosures

All performance data included in this presentation is hypothetical index data, some of which is backtested. None of this performance data reflects any strategies that are or have ever been managed by Newfound Research.

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Important Disclosures

Investors should understand that while the performance results may show a general rising trend at times, there is no assurance that any such trends will continue. If such trends are broken, then investors may experience real losses. Newfound has never managed any account seeking to track the performance of the indices presented in this document. No representation is being made that any account will achieve performance results similar to those shown in this presentation. In fact, there may be substantial differences between backtested performance results and the actual results subsequently achieved by any particular investment program. There are other factors related to the markets in general or to the implementation of any specific investment program which have not been fully accounted for in the preparation of the hypothetical/backtested performance results, all of which may adversely affect actual portfolio management results. The information included in this presentation reflects the different assumptions, views and analytical methods of Newfound as of the date of this presentation.

Backtested index performance is not based on live results produced by an investor's actual investing and trading, but was achieved by the retroactive application of a model designed with the benefit of hindsight, Hypothetical results are not based on live results produced by an investor's investment and trading, and fees, expenses, transaction costs, commissions, penalties or taxes have not been netted from the gross performance results except as is otherwise described in this presentation. The performance results include reinvestment of dividends, capital gains and other earnings.

While Newfound believes the outside data sources cited to be credible, it has not independently verified the correctness of any of their inputs or calculations and, therefore, does not warranty the accuracy of any third-party sources or information.