

QuantX Risk Managed Funds

Investment Case



Summary

- **How We Define Risk Management:** Risk Management can be defined in many different ways. At QuantX Funds, we manage for risk, with the ultimate focus on our portfolios' ability to efficiently reduce risk-based asset exposure by transitioning to cash and/or fixed income during times of market turbulence.
- **Be Agile:** The simple math of investing shows that it is critical to manage overall risk in order to reduce the sequence of returns risk and the time spent in draw downs. With an agile approach, investors can enhance both their compound and risk-adjusted returns over a complete market cycle.
- **Portfolio Tools, not Products:** Investors don't need more products - they need tools to help create efficient portfolios. Each fund in our Risk Managed Family is designed to meet different investor goals and asset class exposures such as Growth, Income, Real Assets or Absolute Return. They were designed to be used as building blocks to help construct a risk managed core portfolio.
- **Seek to Enhance Your Asset Class Exposure:** Our Risk Managed family can also be used as replacements or compliments to holding various traditional asset classes such as Global Equities, Fixed Income, Real Assets, Commodities and Alternatives.
- **Automated Portfolio Management:** Most importantly our Risk Managed family has built in a rules-based methodology for asset class selection and risk management. This helps to enhance returns through broader market diversification, while attempting to reduce exposure to substantial market declines all through an efficient ETF structure.
- **Why Not Do it Yourself?** Buying ETFs with built-in risk management and asset class selection can be far more tax efficient than using a separately managed account strategy or doing it yourself because the trading is done inside of an ETF wrapper which improves execution, timeliness and reduces costs and taxes.
- **Our Distinct Portfolio Management Approach:** Using our proprietary methodology, we consider multiple sources of information to make asset class selection and risk management decisions. We believe that this gives us a distinct edge versus traditional models. We also trade multiple time frames in an attempt to improve robustness, as well as to reduce noise and improve trade efficiency. Our model parameters use a dynamic approach in an attempt to improve responsiveness. Finally, we employ multiple strategies, parameters and asset class universes to generate process diversification for each specific strategy.

Each of these asset classes has its own set of investment characteristics and risks and investors should consider these risks carefully prior to making any investments. Diversification does not ensure profit or protect against loss.

Tools for Smarter Portfolio Design

The number of products available to investors can be overwhelming. Often these products fall into the ‘same old’ categories. At QuantX, we aren’t offering another “me too” product line. Why? Because we know that Investors need tools, and distinct ones, in an attempt to create smarter portfolios. To this end, we set out to create portfolio tools that are designed to attempt to achieve better investment outcomes for investors. Our experience as a separate account manager fueled our conviction that we needed smarter tools that were built to last; tools with the inherent flexibility to accommodate different investor objectives while remaining tax and cost efficient to implement.

QuantX Risk Managed Fund Family

	Fund	Objective	Exposure
QXGG	QuantX Risk Managed Growth ETF Growth and capital appreciation over time by investing in domestic and international equity markets.	Growth	Global Equities
QXMI	QuantX Risk Managed Multi-Asset Income ETF Providing a higher level of income than Treasuries by investing in a broad range of higher yielding asset classes.	Income	Credit, Fixed & Equity Income
QXRR	QuantX Risk Managed Real Return ETF Providing a return that is linked to inflation by investing in commodities and/or equities.	Real Assets	TIPS & Cyclical Equities
QXTR	QuantX Risk Managed Multi-Asset Total Return ETF A substitute to owning alternatives, providing absolute returns in a broad range of market environments by investing in the most favorable asset classes including equities, real estate, fixed income and alternative securities.	Absolute Return	Dynamic Multi-Asset

There is no guarantee that this investment strategy will achieve its objectives, goals, generate positive returns, or avoid losses.

Investing is Challenging

Investing can be rewarding but ultimately it is a challenging game. Buy and hold works well over long time horizons which favors younger investors but can be problematic for investors close to or in retirement, or for those who can’t seem to ‘hold’ when its necessary to do so. Sequence of returns risk - or the timing of when you receive your returns - leaves financial planning success subject to random chance that investors generally can’t afford. During any time period, drawdowns and volatility can harm long-term returns and most importantly can cause investors (and force advisors) to make mistakes with their asset allocation.

We believe that any intelligent investment strategy should take the time to account for the consequences of a risk, should it happen. In effect, the risk management should be ‘built-in’ to the strategy and not considered solely at the portfolio level. What are your options?

Passive investors who invest solely in index based strategies primarily to lower management fees do not have built in risk management, rather, they only have hope that their asset allocation will save them in times of market crisis. The reality is that bear markets can devastate investor portfolios and wreak havoc on the best laid financial plans - bear markets are a painful reality of the economic cycle. Having the ability to actively manage risk in your portfolio in a bear market like 2008 may be critical to long term investing success. Would you go skydiving without a parachute? We would not invest without managing risk. We prefer to invest with confidence.

The Case for Risk Management

QuantX Risk Management Seeks to Reduce Investing Pitfalls

The QuantX Risk Managed family of funds incorporates a built-in risk management overlay which is designed to minimize large drawdowns through a flexible framework that can increase holdings in cash and fixed income exposure during prolonged market declines. The goal is to help investors to participate in the underlying asset class performance with less volatility. We believe that having a disciplined tool for managing cash and fixed income exposure when the market gets too risky is the closest thing that you can get to packing a parachute.

It stands to reason that managing risk can help protect capital, but there are other reasons why risk management may be beneficial. Perhaps the most important reason for managing the risk of loss is driven by the need to manage investor behavior. Research shows that most of the under performance relative to benchmarks for the average investor is caused by poor timing decisions. This problem is exacerbated by the time, cost and tax implications of making changes among separate investments within a diversified portfolio.

The Mathematics of Risk

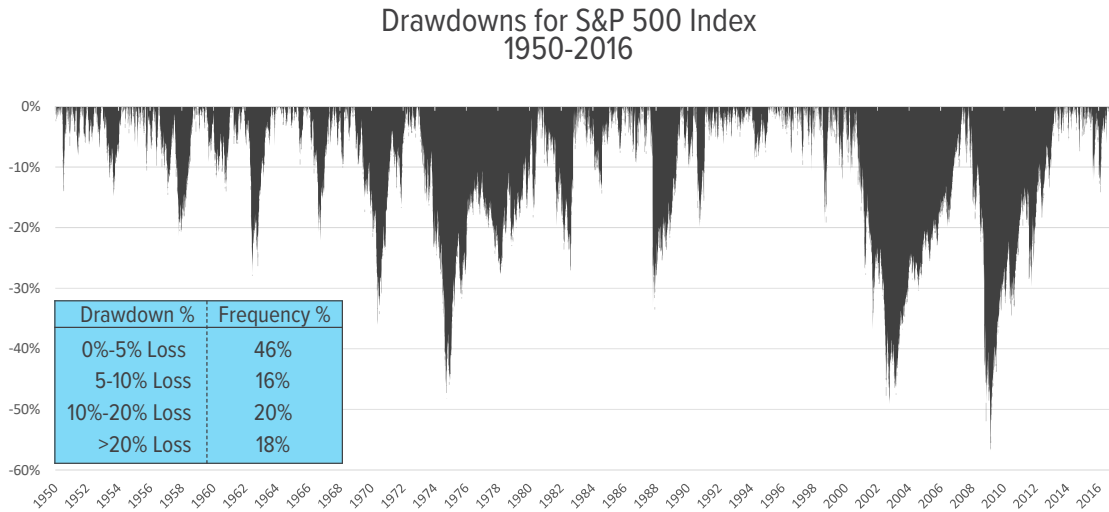
There are also concrete mathematical reasons why risk management may be an option for your portfolio.

Markets Have (Fat Tails) – Black Swan events

Most investment advice in finance is built upon empirical observations. The “buy and hold” philosophy behind passive investing is just another backtest - there is no reason to believe that investors will earn a specified level of return. One empirical observation that has more statistical grounding is that markets have demonstrated a greater probability for extreme losses than gains.

Research shows that (fat tails) happen most often in bear markets. By managing risk it is possible to avoid or reduce the impact of these (fat tails) on your portfolio.

The chart below shows the drawdowns for the S&P500 Index since 1950, you can see there are many painful losses incurred on a regular basis.

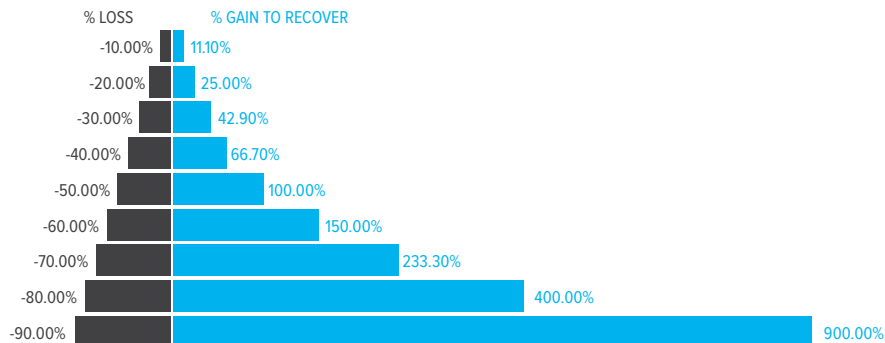


Past performance is not indicative of future results. Shown performance is not meant to represent the Fund. Investors cannot directly invest in an index and unmanaged index returns do not reflect any fees, expenses or sales charges.

Why Small Losses Require Big Gains to Overcome

There are no “laws of physics” in finance, but the math of compounding and volatility are as close as we can get. The first mathematical conclusion that we can draw is that gains and losses are not equal - a loss requires higher comparable returns and longer periods of time to recover. Managing risk can help reduce drawdowns and the time required to recover. Period.

As you can see in the chart below, recovery from losses becomes more and more difficult as the losses get larger. In some cases they become seemingly impossible to overcome. It is these types of losses that we believe must be protected against using improved methods of risk management that compliment an investor’s current allocation.



The referenced performance illustration above is shown for illustrative purposes only and is not meant to represent the Fund

Why the Sequence of Returns Matters: Same Returns Create Different Results

For investors withdrawing funds over a period of time, the order of returns can make a big difference to your final results. Let's look at an example: Two investors start with \$1,000,000 and each withdrawal \$50,000 per year. One investor starts with a big loss, the other finishes with one. Managing risk can help reduce the sequence of returns risk.

SEQUENCE OF RETURNS	INVESTOR A	INVESTOR B
YEAR 1	-50%	15%
YEAR 2	25%	10%
YEAR 3	10%	25%
YEAR 4	15%	-50%
PORTFOLIO ENDING VALUE	\$540,812	\$653,750

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Volatility Can Disrupt the Power of Compound Returns

Investors don't receive returns, they receive compound returns. Portfolios effectively reinvest their gains (or losses) and this means that volatility (or risk) can have a substantial impact on your compound returns. A common way of looking at compound returns is as follows:

Compound Returns = Arithmetic Return – ($\frac{1}{2}$ x Volatility Squared)

In short, the higher the volatility relative to the underlying return, the lower the compounded return. The chart below shows the probability of a positive return across three strategies with the same expected/arithmetic return, but with different compound returns. Notice how volatility can harm compound returns; Strategy C has half the compound return of Strategy A because it has a much higher standard deviation.

Furthermore, your probability of having positive returns - or consistency in performance- decreases from year to year with higher volatility. In short, managing risk can improve your compound returns and positively impact the probability that you may have a positive performance in any given year.

	Strategy A	Strategy B	Strategy C
Arithmetic Return	8%	8%	8%
Compound Return	8%	6%	4%
Standard Deviation	10%	20%	30%
Probability of a Positive Return	77%	62%	55%

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Redefining Risk Management

Risk management has become a mantra for many investment firms, but the reality is that the strategies employed are often not designed with the breadth and agility required to accomplish this critical task. At QuantX we focus on two key tenants in establishing our risk management framework:

Low volatility does not equal low drawdowns

This is particularly true when considering that most investors define risk management as the avoidance of loss or minimizing drawdowns. Traditional risk management that emphasizes low volatility is helpful but still does not ensure that you will avoid large losses during bear markets. Most low volatility equity strategies would have had drawdowns exceeding 35% in 2008. To truly reduce risk, you need to reduce your exposure to risk asset classes and hold cash or fixed income during specific market periods.

Diversification alone isn't sufficient to reduce risk

One solution commonly proposed to reduce risk is to diversify across asset classes. However this is also not an adequate solution. Many investors learned the hard way in 2008 that broad diversification cannot protect you from a nasty bear market. Correlations tend to increase to one when the market goes down, and the only way to reduce your downside exposure in this scenario is to hold more cash or fixed income. As correlations between asset classes have been increasing steadily over time, in our opinion, it is likely that future bear markets will not be any kinder than 2008.

Even if Advisors and Investors are able to predict market downturns and seek to adjust portfolios, what we believe is that both will be insufficient and inefficient to do so within a traditional portfolio construct. In our opinion, a diversified approach within the ETF construct is best positioned to provide efficient exposure through market cycles.

Built-In to Outlast: How QuantX Risk Management Differs

Why 'Do It Yourself' Can Not Be Done:

QuantX Funds' built-in risk management and asset class selection approach can be implemented far more efficiently with lower trading costs when implemented through our ETFs versus using a mutual fund or separately managed account format. The primary reason for this improvement is a function of the ETF product wrapper itself, which has improved tax efficiency and liquidity relative to using other products. Furthermore, as a pooled vehicle there is also improvement in trading efficiency and execution costs versus using separately managed accounts.

There are several reasons why we feel our approach may be superior and cost effective:

Disciplined Quantitative Process:

Investors and their Advisors want to believe that they won't get caught as they did in 2008 and that they can time the market or move to cash before the next 2008. This is the eternal optimism that makes us all human, but the data shows that this is very difficult to do in practice for a variety of reasons, even if you had a crystal ball. First, investors have behavioral biases - it's hard to be purely rational when your life savings are on the line. Second, most portfolio managers inherently lack the systematic capacity to make risk allocation decisions on a timely basis, and even if they do they may not be proven or effective. Knowing what information to use to manage risk is critical. Most of the indicators widely cited by the mainstream fail to have predictive power upon more detailed analysis. As a result, we built our own. At QuantX, we use a disciplined and evidence-based approach to managing the risk that is implemented quantitatively. This ensures that we have a consistent, timely and repeatable process.

Most investors do not react quickly to what is happening in the market. Even for vigilant portfolio experts, it takes time to read and digest information and calculate different indicators within an analytical framework. Worse still is that when the market moves against your portfolio, it is easy to become a "deer in the headlights" and to fail to act while hoping that this is just a minor correction. At QuantX, we are monitoring risk and making thousands of calculations every single day using the most up to date market data. We are ready to act at all times in our risk-managed funds in an attempt to protect capital. Our indicators are nimble by design, in an attempt to act faster and respond more quickly than standard approaches that use long historical windows of data. We are designed to be as agile as possible toward managing risk.

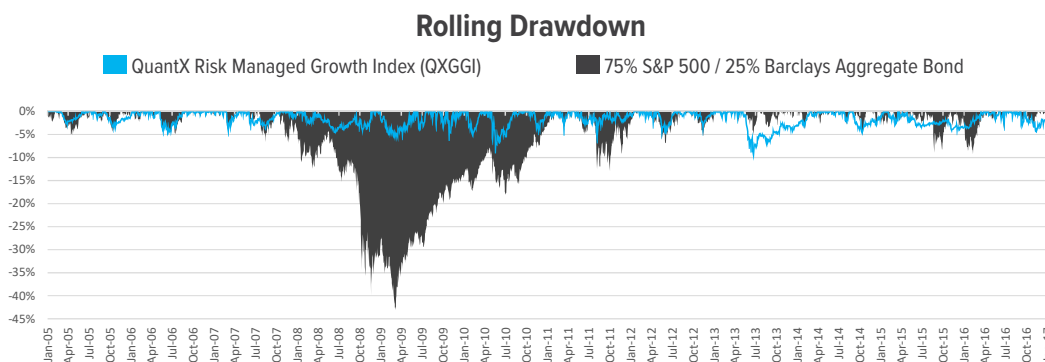
Tax Efficiency:

By managing risk underneath the ETF wrapper the capital gains are minimized. This is especially important when you are holding large gains in a bull market and are trying to make the decision whether or not to pull the trigger and sell. It is also important when you want to switch from one stock or asset class to another. How many times have investors held on to a stock as it soared to high levels, but rode it all the way down because they were afraid of paying the capital gains? Or chose not to buy a better performing asset class because of taxes? In our risk-managed funds, we can sell our holdings the moment our models indicate a higher probability of loss or if another asset class within the portfolio allocation is expected to have a higher return. We can actively manage the portfolio without significant concern for the tax consequences due to the custom

creation and redemption process inherent in the ETF structure. So while buying passive ETFs that have lower management fees and seeing to implement risk management independently may seem cheaper on the surface, we believe that it will be far more expensive after-tax for the end client even if the performance were identical.

Our Distinct Approach: Manage Risk While Seeking to Enhance Returns

Using our proprietary methodology, we consider multiple sources of information to make asset class selection and risk management decisions. We believe that this gives us a distinct edge versus traditional models. We also trade multiple time frames in an attempt to improve robustness, as well as to reduce noise and improve efficiency. Our model parameters use an adaptive approach to enhance responsiveness. Finally, we employ multiple strategies, parameters and asset class universes to properly diversify within each specific strategy. As you can see in the chart below, our distinct approach can add value when markets are turbulent.



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The MRI Model: A Distinct Approach to Risk Management

Instead of just looking at momentum or simple moving averages, we manage risk by employing a “Macro Risk Indicator” or MRI that generates signals to de-risk or re-risk for a given asset class. The MRI is a mathematical calculation that describes the probability that an asset class will outperform holding cash on a scale ranging from 0 to 100. The score is used to determine how much ‘offense’ or risk assets to hold, versus ‘defense’ or risk-off assets. The MRI model incorporates up to seven different distinct sources of information as outlined below.

Dynamic Factor Momentum:

In an attempt to enhance returns, we also seek to tilt our allocations within the risk managed funds to the better performing asset classes. Instead of using simple momentum or historical returns, we use a combination of the following factors to rank asset classes: 1) volatility 2) historical returns 3) short-term interest rates 4) inflation 5) credit risk 6) equity market risk 7) treasury market risk. This gives us more pieces of information and a distinct edge over traditional methods.

Trading Multiple Time Frames:

While a standard approach to using momentum or moving averages tends to look at data only once a month, we have designed our process to trade on multiple time frames. Our model looks at daily, bi-weekly and monthly data which reduces noise as well as the 'luck' factor in the timing of execution.

Dynamic Parameters:

We have designed our process to adjust parameters to more accurately capture signals as they arrive in the market; we believe that this makes our portfolios more responsive.

Process Diversification:

We diversify across different sub-universes of asset classes and utilize different algorithms and parameters in an attempt to reduce increase the robustness of our investment process. Our research shows that this can help produce more consistent outcomes

Universe Selection:

We select the most liquid and cost-efficient ETFs that also are distinct and diverse enough in an attempt to maximize the performance of our models. Most of the ETFs we trade have tight bid-ask spreads and have significant volume. They also tend to track the best-in-class indices with low expense ratios. In terms of the choice of ETF universe, we select asset classes that work well together as a team rather than trying to cover every possible category, sector or style. This is determined through extensive quantitative research into which asset classes are redundant and which are the most useful.

Conclusion

In our opinion, the QuantX Risk Managed Funds are designed to serve as complete market cycle solutions in both bull and bear markets. Utilizing the ETF structure and our proprietary risk management approach, we seek to provide a diversified tool set for investors who seek the asset class exposure and agility to take advantage of various market conditions, while maintaining the efficiency of a single ETF holding.

Definitions & Terms:

Index References: The S&P 500 Index is an American stock market index based on the market capitalizations of 500 large companies having common stock listed on the NYSE or NASDAQ. The QuantX Risk Managed Growth Index (QXGGI) consists of ETF's focused in domestic and international markets ranked and weighted based on future expected return and overlaid with a proprietary risk management approach. Barclays US Aggregate Bond Index he Bloomberg Barclays US Aggregate Bond Index to track the investment results of an index composed of the total U.S. investment-grade bond market. (Sources Bloomberg and QuantX)

Drawdown: A measure of a fund's sensitivity to market movements.

Volatility: A measure of how much the stock price fluctuated during a given time period.

Correlation: A measure of the degree to which two securities move in relation to each other.

Disclosures:

Investors should carefully consider the investment objective, risks, charges and expenses of the QUANTX ETFs Funds. This and other information is contained in the prospectus and should be read carefully before investing. For a prospectus please call 866-270-0300. The Fund is distributed by Northern Lights Distributors, LLC, member FINRA/SIPC. Northern Lights Distributors, LLC and Blue Sky Asset Management, LLC are not affiliated.

ETFs involve risk, including possible loss of principal. There is no guarantee the fund will meet its objective.

A substantial portion of a portfolio is held in cash or cash equivalents, there is the risk that the value of the cash account, including interest, will not keep pace with inflation, thus reducing purchasing power over time. The Fund may focus its investments in securities of a particular industry to the extent the Index does. The use of derivative instruments, such as swaps, involves risks different from, or possibly greater than, the risks associated with investing directly in securities and other traditional investments. Investing in emerging markets involves not only the risks described below with respect to investing in foreign securities, but also other risks, including exposure to economic structures that are generally less diverse and mature, and to political systems that can be expected to have less stability, than those of developed countries. Investing in the commodities markets may subject the Fund to greater volatility than investments in traditional securities.

Fluctuations in the value of equity securities held by the Fund will cause the net asset value ("NAV") of the Fund to fluctuate. Fluctuations in the value of equity securities held by the Fund will cause the net asset value ("NAV") of the Fund to fluctuate. The market prices of Shares will fluctuate in response to changes in NAV and supply and demand for Shares and will include a "bid-ask spread" charged by the exchange specialists, market makers or other participants that trade the particular security. ETFs in which the Fund invests are subject to investment advisory and other expenses, which will be indirectly paid by the Fund. As a result, the cost of investing in the Fund will be higher than the cost of investing directly in the ETFs and may be higher than other mutual funds that invest directly in stocks and bonds.

When the Fund invests in fixed income securities, the value of your investment in the Fund will fluctuate with changes in interest rates. Since the Fund's investments may include foreign securities, the Fund is subject to risks beyond those associated with investing in domestic securities. The Fund does not utilize an investing strategy that seeks returns in excess of the Index. Therefore, it would not necessarily sell a security unless that security is removed from the Index, even if that security generally is underperforming. Lower-quality bonds, known as "high yield" or "junk" bonds, present greater risk than bonds of higher quality, including an increased risk of default.

The Fund is a new fund with a limited history of operations for investors to evaluate. As the Fund may not fully replicate the Index, it is subject to the risk that investment management strategy may not produce the intended results. Overall stock market risks may affect the value of the Fund. The Fund is not actively managed and the Adviser will not sell shares of an equity security due to current or projected underperformance of a security, industry or sector, unless that security is removed from the Index or the selling of shares of that security is otherwise required upon a rebalancing of the Index as addressed in the Index methodology. A higher portfolio turnover will result in higher transactional and brokerage costs. There are risks associated with the sale and purchase of call and put options. The value of the Fund's investments in REITs may change in response to changes in the real estate market such as declines in the value of real estate, lack of available capital or financing opportunities, and increases in property taxes or operating costs.

The earnings and prospects of small and medium sized companies are more volatile than larger companies and may experience higher failure rates than larger companies. Swaps are subject to tracking risk because they may not be perfect substitutes for the instruments they are intended to replace.

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6382-NLD-3/16/2017



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