HARVEST INVESTMENT SERVICES

"Harvest Gains and Limit Losses"

AlphaSolutions Low Volatility Model

A portfolio that focuses on equity holdings with lower overall volatility

Portfolio Goals

Primary: Seeks to provide equity growth.

Secondary: Seeks to reduce equity market volatility with positions that historically have mitigated downside risk, while including technical signals that when triggered will reduce equity exposure.

Suitability

Investors that seek long term capital appreciation.

Investors that are comfortable with investments in common stock.

Investors that wish to minimize volatility by utilizing a low volatility factor investing.

Investors would like active portfolio management to minimize risk.

Investment Strategy

The goal of the AlphaSolutions Low Volatility model is to participate in a broad-based rising market by being fully invested in equity holdings. Secondary, our process to minimize downside risk is two folds; the first is by factor-based investing that seeks to invest in equity positions that historically have demonstrated lower volatility. Low Volatility strategies provide greater downside protection than traditional cap-weighted investments. The second is to utilize technical analysis overlap that helps to further minimize downside risk during a prolonged precipitous bear market.

We screen for and invest in Exchange Traded Funds that historically have lower volatility than their benchmark or major market indices.

The importance of a low volatility investment strategy is that investments with smaller losses do not have to recover as much to break even. Mathematically, the recovery is similar to the drawdown, however, as losses are magnified a greater increase is required to break even or surpass prior levels.

Percentage Decline Portfolio	Percentage required for recovery.
5%	**5.26%**
10%	**11.11%**
15%	**17.65%**
30%	**42.86%**
50%	**100.00%**

For Illustrative purposes only

We start the ETF screening process by filtering for ETF's that either factor directly for low volatility holdings or indirectly for factors that make the ETF less volatile.

Current Trend Status

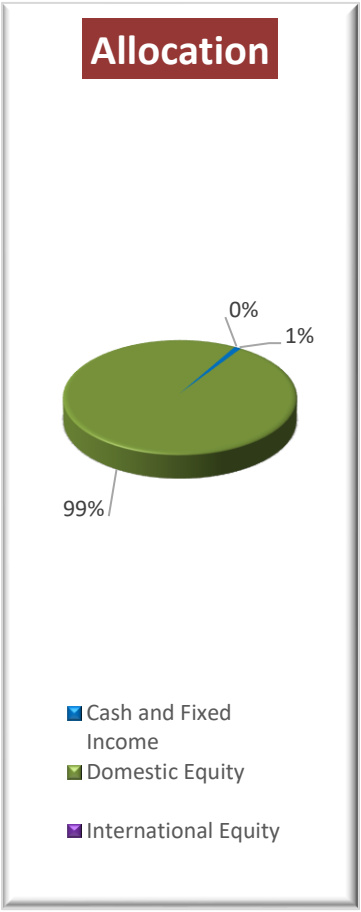
Portfolio Characteristics

Cost-effective diversification is primarily derived from the use of Exchange Traded Funds which may track an entire index or sector without exposure to a smaller group or even an individual security.

Each portfolio is managed within a single separate account and is not part of a pooled portfolio.

Technical analysis used to minimize risk and asset class rotation based on relative performance to potentially enhance returns.

Allocation



Cash and Fixed Income	1%		
Cash		1%	0%
FPE		0%	3.8%
Domestic Equity	99%		
SPLV		10%	1.7%
LGLV		40%	1.4%
XMLV		25%	1.4%
XSLV		9%	0.8%
TDIV		15%	1.6%
International Equity	0%		
EFAV		0%	3.3%

Equity Strategy

The AlphaSolutions Low Volatility model primarily utilizes ETFs that specifically screen for ETF's that implement a low volatility strategy. An example of how a low volatility ETF is created is as follows

For Illustrative purposes only

An ETF that is utilized in the AlphaSolutions Low Volatility model is SPLV, the S&P 500 Low Volatility ETF. It invests in the one hundred companies of the S&P 500 with the lowest realized volatility over the past 12 months. The drawdowns during these six periods, marked as large drawdown periods, were at times substantially lower in the low volatility ETF as opposed to the market cap weighted S&P 500.

SPLV provided significant protection during each of the large drawdown periods since its inception

Large drawdown periods	S&P 500 Index return	SPLV return (NAV)	% of market decline captured by SPLV
7/7/2011 - 10/3/2011	-18.38%	-8.00%	43.55%
4/2/2012 - 6/1/2012	-9.58%	-2.41%	25.19%
9/18/2014 - 10/15/2014	-7.28%	-2.32%	31.91%
5/21/2015 - 2/11/2016	-12.81%	-1.30%	10.18%
1/26/2018 - 2/8/2018	-10.10%	-8.92%	88.40%
9/20/2018 - 12/24/2018	-19.36%	-10.73%	55.40%

Source: Bloomberg L.P., as of March 31, 2019. ***Past performance does not guarantee future results.*** *An investment cannot be made directly into an index. Index returns do not represent fund returns. Drawdown periods are periods during which the S&P 500 Index had its largest declines from peak to trough, May 5, 2011 to March 31, 2019.*

The low volatility ETF performed well during the market sell off that took place from September to October 2014. Furthermore, during the market rebound the low volatility strategy kept pace with the market, resulting in considerable outperformance during the full market cycle. The low volatility strategy will participate in rising markets and market rebounds but will tend to underperform due to its more conservative construction

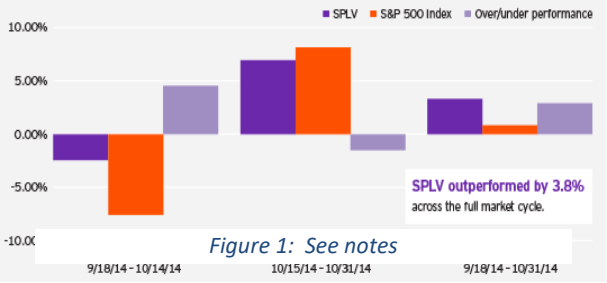


Figure 1: See notes

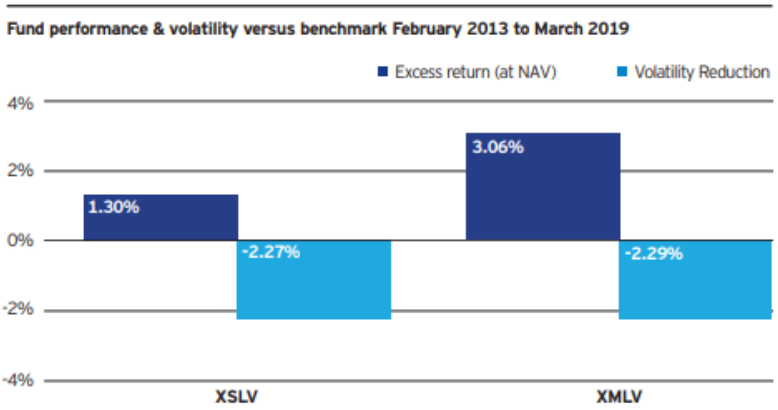
Small and Mid-Cap have historically out-performed Large-Cap. However, they have done so with more volatility relative to the S&P 500 index.

	10-year return	10-year volatility
S&P SmallCap 600 Index	14.49%	18.16%
S&P MidCap 400 Index	14.85%	15.96%
S&P 500 Index	14.21%	13.57%

1 Source: Bloomberg L.P., as of March 31, 2019. Performance data quoted represents past performance and does not guarantee future results. An Investment cannot be made in an index. Index returns do not represent fund returns.

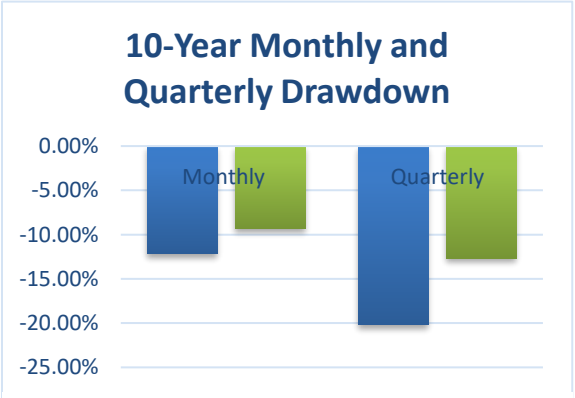
Over the 10- year period small and mid-cap relative volatility has been 33.78% greater and 17.55% greater than large-cap volatility.

The AlphaSolutions Low Volatility model utilizes Low Volatility MidCap and SmallCap ETF's that since inception has experienced lower volatility then their benchmarks. It is commonly assumed in finance there is a trade off with lower volatility comes lower returns or with higher risk higher returns are achieved; however, the low volatility anomaly demonstrated that it is possible to achieve excess returns with lower volatility than its benchmark.



Source: Bloomberg L.P., as of March 31, 2019. ***Performance is at NAV (Net Asset Value). Performance data quoted represents past performance and does not guarantee future results; current performance may be higher or lower than performance quoted. Investment returns and principal value will fluctuate and shares, when redeemed, may be worth more or less than their original cost.*** *See invesco.com to find the most recent month-end performance numbers. Market returns are based on the midpoint of the bid/ask spread at 4 p.m. ET and do not represent the returns an investor would receive if shares were traded at other times. Fund performance reflects fee waivers, absent which performance data quoted would have been lower. An investment cannot be made directly into an index. Index returns do not represent fund returns.*

1 A common assumption in finance is that increasing a portfolio's risk exposure should generate a higher return. In contrast, the low volatility anomaly refers to the observation that, historically, portfolios of lower-volatility stocks produced higher risk-adjusted returns than portfolios with high-volatility stocks.
2 Source: Bloomberg L.P., as of March 31, 2019.

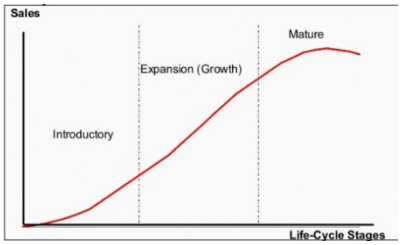


2Source Morningstar and ETF providers data through March 31, 2019. Past performance does not guarantee future results. Performance variance may be different in future drawdowns.

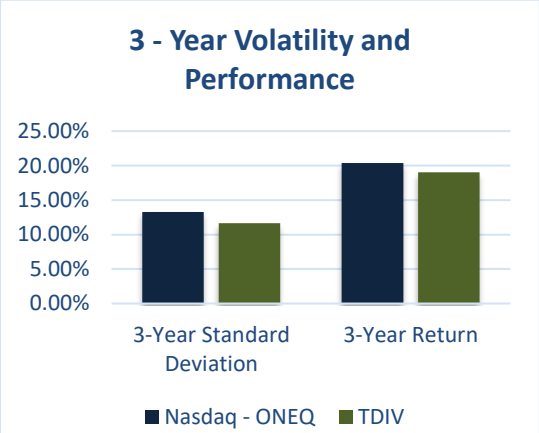
In addition, investing in a Small Cap 600 index ETF has shown extreme monthly and quarterly drawdowns. The lowest monthly return over the last ten years was -12.19% for the month ending December 2018, while the lowest quarterly return was -20.18%, which was from the 4th quarter 2018. For those same periods the low volatility ETF performed substantially better as losses were not as steep, -9.35% and -12.65% respectfully.

The Nasdaq Composite is a market cap weighted index that is heavily weighted by the ten largest companies, which are primarily technology companies. Currently, the top holdings make up almost half the composite. The Nasdaq composite has grown at a torrid pace over the past few decades. Young technology companies have grown to be mega cap market leaders in their respective industry. Our process to minimze risk that is correlated to the Nasdaq composite is to screen for a technology ETF that focuses on large mature technology companies that pay a dividend.

These technology companies have mature products or businesses that have been in business for a considerable period when considering the infancy of the technology sector. They are profitable when you analyze their financials over a period of time, they pay a dividend due to the profitability of their businesses and usually have a moat with high barriers to entry which make it difficult for competitors to take market share away. Companies, such as Apple, Microsoft, and Intel are examples of technology companies that meet these criteria. Investing in technology businesses that have mature businesses and pay a regular dividend has shown to minimize volatility.



The technology lead Nasdaq composite, as measured by the ETF ONEQ has a 3-year standard deviation of 13.27%, which is higher than the S&P 500 and the Dow Jones Industrial Average. The current ETF in the AlphaSolutions Low Volatility that represents the Nasdaq composite is, TDIV. TDIV has a lower 3-year standard deviation than ONEQ, 11.65% compared to 13.27%. The returns are comparable with TDIV having a 3-year annualized return of 19.05% compared to 20.39% for ONEQ. Additionally, the 30-day SEC Yield is considerably greater for TDIV, 2.72% compared to 1.04.% for ONEQ.



3Morningstar and ETF providers data through April 30, 2019. Past performance does not guarantee future results. Future standard deviation and performance may vary from current.

Risk Control Measures

Although our goal is to remain invested in order to capture market gains and dividends during rising market trends, there are periods when the market has a moderate to large drawdown. Those periods are generally short in duration, but steep in the magnitude of their declines. In order to minimize drawdowns, the AlphaSolutions Low Volatility Strategy utilizes two methods to minimize risk. The first method is that it utilizes low volatility ETFs that may mitigate downside risk and minimize large drawdowns relative to the broad market indices. These low volatility strategies have provided meaningful protection during past large drawdown periods and may do so in future large drawdown periods. The low volatile holdings are identified by ETFs that screen major domestic indices for positions that have been identified for their low volatility characteristics. These holdings are dynamic and will change when the ETF is scheduled to rebalance or reconstitute on their pre-determined schedule.

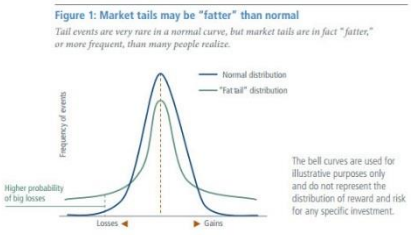
We utilize a combination of technical indicators to minimize market risk associated with severe bear markets. The technical indicators that are utilized with the Low Volatility model are longer term. The indicator will not initiate a signal change due to short term market volatility, but instead will attempt to signal and track secular bull and bear markets. When the market indicator is trended in, the model is fully invested in the low volatility ETF's. When our technical indicators trends out, a risk off allocation is warranted, therefore, we liquidate half the positions and invest in short term fixed income ETFs waiting for markets to improve and for the indicators to trend back in.

Trended-In	Trended-out
Fully invested in Low Volatility ETF's	Liquidate 50% of Equity Low Volatility ETF's
	Invest proceeds in short term fixed income

We utilize three primary indicators to arrive at our downside risk indicator.

The first indicator that we employ to identify the market trend is with the use of a moving average. A moving average is a technical indicator that helps smooth out price variability by smoothing out short term "noise" from price fluctuations, making it easier to view the direction of the market trend.

- A trend system seeks to capture large price moves caused by fundamental factors that include economic trends derived from central banks or government policies, such as, interest rate policy, currency exchange rates, tax policy or the business cycle. Additionally, investor expectations of future economic and market conditions will affect equity prices, as well as basic supply and demand principals.
- Prices and investment returns are not normally distributed on a bell curve, but they do exhibit fat tails. There are numerous price or equity returns that vary greater than the mean would suggest had the returns been randomly distributed.
- Money flows support market trends and as the accumulation phase accelerates, market trends become more pronounced therefore the investing public invests more of their assets, increasing market volume and broadening market gains.



The second indicator that we utilize is a market breathe indicator. Market breadth measures the number of stocks that are advancing or declining relative to the total market.

- Generally, a higher percentage of advancing stocks adds confidence and confirms the upward price movement and suggests that the bulls are in control, while a higher percentage of declining stocks confirms declining stock prices and suggests a bearish trend.
- Example of technical analysis based upon market breadth.

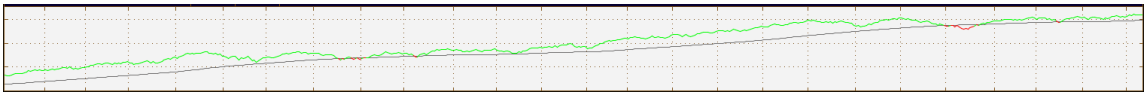


Figure 2: Example of Market Breadth with a moving average

The third indicator that we utilize is a volume indicator. Volume has been tied to price movement in the past and helps to confirm the trend or may indicate weakness.

- Volume is considered in combination with price movement and an interpretation implies that volume confirms price direction.

Volume	Price	Interpretation
Rising	Rising	Volume confirms price rise
Rising	Falling	Volume confirms price drop
Falling	Rising	Volume indicates weak rally
Falling	Falling	Volume indicates weak pullback

- Example of technical analysis based upon volume indicator.

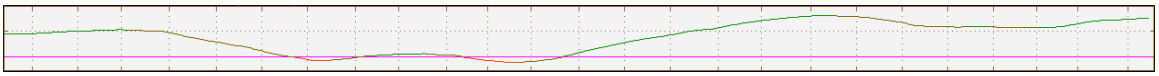


Figure 3: Example of Market Volume Oscillator with a signal

The three indicators work together to provide us with long term market trend as well as to provide us with risk-on/risk-off market signals that allows us to Harvest Gains and Limit Losses.

The key reasons to follow a technical analysis system is that when prices trend to the upside as in a bull market they generally do so for an extended period with significant price appreciation. Conversely, during the distribution phase of a bear market, markets decline for a shorter period, but the decline is more severe, therefore having downside risk controls and attempting to avoid large declines is imperative to Harvesting Gains and Limiting Losses.

Past performance is no guarantee of future results. Information provided in this report is for educational and illustrative purposes only and should not be construed as individualized investment advice. The investment or strategy discussed is not suitable for all investors. All investments involve risk, including loss of principal. In addition to the normal risk associated with equity investing, investments in technology, small and mid-cap companies are narrowly focused investments that exhibit higher volatility and are less readily marketable then investments in larger companies. Also, international investments involve special risk consideration, which includes currency fluctuations, lower liquidity, economic and political risk. Principal values and investments returns are neither guaranteed nor issued by, guaranteed by, or obligations of a bank, savings and loan, or credit union; and are not insured or guaranteed by the FDIC, SIPC, NCUSIF or any other agency. Current holdings are subject to change at any time without notice

The S&P 500, MidCap 400 and SmallCap 600 indexes are an unmanaged group of securities considered to be representative of their market cap weighted asset class stock. Their performance is not reflective of the performance of any specific investment. Investments cannot be made directly into an index.

Definition: Mean: Arithmetic average. Standard Deviation is a measure of how much an investment's returns can vary from its average return. It is a measure of volatility and in turn, risk. Alpha is an indication of how much an investment outperforms or underperforms on a risk-adjusted basis relative to its benchmark. Beta is a measure of price variability relative to the market. Sharpe Ratio is a measure of excess reward per unit of volatility.

The average current yield of the portfolio is the weighted average of the distribution and current yields of the securities in the model portfolio at the time of writing. Distribution yield is the anticipated annual distribution as a percentage of the current price of the security. These distributions are not guaranteed and can fluctuate. The average current yield is not the anticipated annual return of the portfolio. The total annual return of the portfolio is a combination of annual distributions and price fluctuation which can be positive or negative over the course of the one year. The average current yield will change over time. There can be no guarantee the portfolio will pay the average yield over and period of time. This yield is gross of all fees. 30-day SEC yield is calculated by dividing the net investment income per share earned during the most recent 30-day period by the maximum offering price per share on the last day of the period

This Model portfolio is being offered through the Advisory Services offered through Harvest Investment Services, LLC, a Registered Investment Advisor.