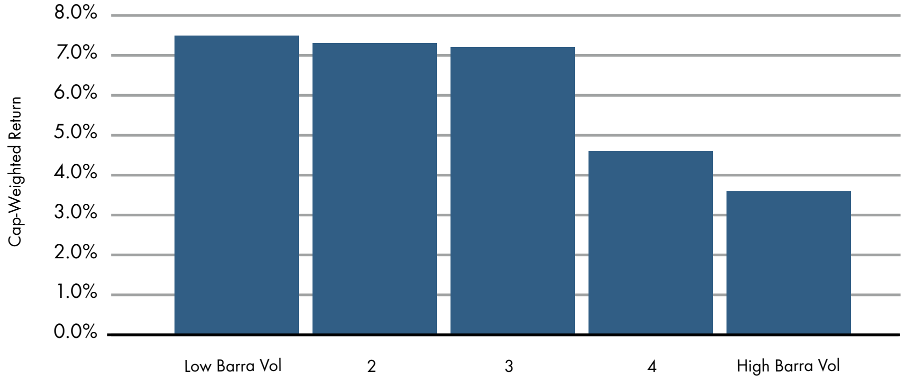
QUALITY LOW VOLATILITY

Delivering a high-quality, lower-volatility portfolio

For investors seeking to mitigate the effects of volatile equity markets while maintaining broad equity exposure for investment or organizational objectives, Northern Trust offers a Quality Low-Volatility (QLV) strategy. Designed to reduce absolute volatility and outperform relative to the market capitalization-weighted benchmark, QLV invests in a high-quality, low-volatility stock portfolio and manages unintended style factor or sector exposures.

EXHIBIT 1: ANNUALIZED RETURNS BY VOLATILITY QUINTILE



Source: Northern Trust Quantitative Research and MSCI Barra (January 1997 – March 2015)

There are many ways an investor can reduce portfolio volatility, but most have unintended risks such as style factor exposures, significant sector concentration or very high turnover.

LOW-VOLATILITY ANOMALY

The idea that return should be positively related to risk is intuitive and the hallmark outcome of Sharpe's capital asset pricing model (CAPM), suggesting that security returns should be a positive linear function of risk. Yet when securities are sorted into volatility quintiles, the lowest volatility quintile of securities significantly outperforms the quintile of the highest-volatility securities over the long term. This so-called "low-volatility anomaly" has persisted for years across various scenarios. For instance, MSCI World securities in the lowest quintiles of Barra volatility significantly outperformed those in the highest volatility quintile from January 1997 through March 2015.

ADVANTAGES OF NORTHERN TRUST'S QLV STRATEGY

QLV is an engineered approach that strives to reduce absolute volatility by taking risk in high-quality, low-volatility securities while minimizing other risks inherent in many passive low-volatility approaches, such as significant sector concentration. Northern Trust's QLV solution seeks to reduce portfolio variance and provides strong risk-adjusted returns by selecting higher quality securities via a proprietary quality screen that

- Enhances portfolio absolute return;
- Further reduces portfolio volatility and drawdown; and
- Stabilizes the covariance matrix for more consistent excess returns.

As a result, the portfolio is designed to

- Reduce absolute volatility by approximately 30% relative to the relevant market capitalization-weighted benchmark;
- Deliver 150 to 250 basis points of excess return per annum over a full market cycle; and
- Reduce exposure to uncompensated risks to produce more consistent returns.

Exhibit 2 details the risk and return metrics for the MSCI World Index, the MSCI World Minimum Volatility Index, and Northern Trust's Quality Low Volatility strategy from January 1997 through December 2014, illustrating the reduction in volatility and drawdown metrics as well as higher annualized return.

EXHIBIT 2: RISK-RETURN METRICS

	MSCI World	MSCI World Min Vol	Northern Trust Quality Low Vol
Annual Return	6.5%	7.8%	8.5%
Annualized Volatility	15.8%	11.4%	10.8%
Return/Risk	0.41	0.69	0.78
Maximum 12-Month Drawdown	–53.7%	–43.0%	–37.0%

Source: Northern Trust Quantitative Research 1/1/1997 to 12/31/2014

Enhanced Returns; Better Volatility Prediction

Analysis shows that quality companies – as defined by Northern Trust's proprietary definition of quality (see sidebar) – outperform the market over time. At Northern Trust, we believe our commitment to quality can lead to stronger investment performance for our investors. Furthermore, quality companies tend to be less volatile and can provide protection in down

DEFINING QUALITY

Research by both academics and index providers demonstrates that portfolios with a core holding of high-quality companies tend to outperform their benchmark and offer some downside protection over a full market cycle.

"Quality" is among the most overused terms in the investment vernacular. Many definitions assess a single factor, such as profitability, in determining whether a company is "quality." Our research shows a multi-dimensional approach to defining quality by incorporating measures including a company's earnings patterns, cash flow, debt level, income stream and management team (by examining capital expenditures and asset turnover rates) is a better predictor of outperformance over time. Companies identified as "quality" under a multi-dimensional approach are better positioned to deliver positive incremental returns than companies with more aggressive management teams that may be overleveraged or rely heavily on external financing.

markets. Much of the volatility and drawdown reduction of the strategy shown in Exhibit 2 can be directly attributed to the fact that higher-quality companies having more stable returns, driving a lower “volatility of volatility” for QLV.

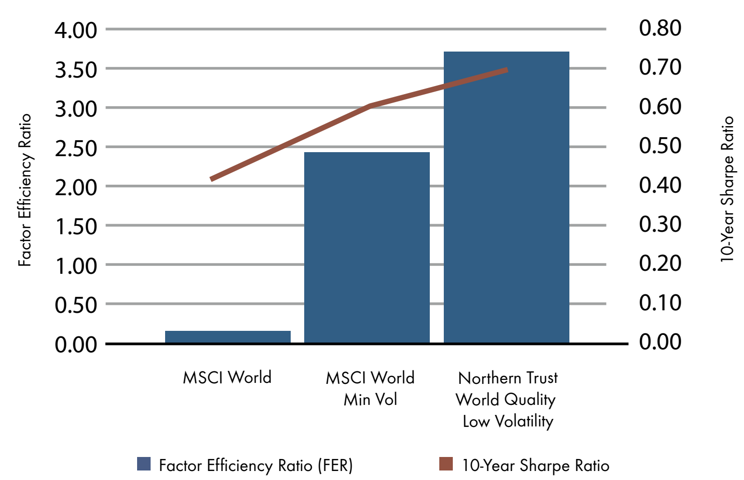
QUALITY LOW VOLATILITY – PORTFOLIO CONSTRUCTION

We construct high-quality stock portfolios with lower absolute risk through a proprietary portfolio construction process. The investable universe begins with a broad market index. Using our proprietary Quality screen the lowest-quality stocks (bottom 20%) in each region and sector are removed. We then apply region, sector and risk-factor constraints, as well as portfolio guidelines and optimize the high-quality universe, targeting a minimum variance portfolio.

HOW WE ACHIEVE LOWER VOLATILITY MATTERS

Other low-volatility strategies may have a similar volatility exposure, but they achieve lower volatility with significant unintended factor exposures. If we look at the Factor Efficiency Ratio (FER), the ratio of intended to unintended style factor exposures and sector concentration, Exhibit 3 shows that the Northern Trust World QLV strategy has the highest intended factor exposure and the lowest unintended exposure (FER). In addition, the QLV strategy achieves the highest absolute and risk-adjusted returns (Sharpe Ratio) as compared to other low-volatility approaches.

EXHIBIT 3: FACTOR EFFICIENCY RATIO AND SHARPE RATIO



Source: Northern Trust Quantitative Research

APPLICATIONS FOR QLV

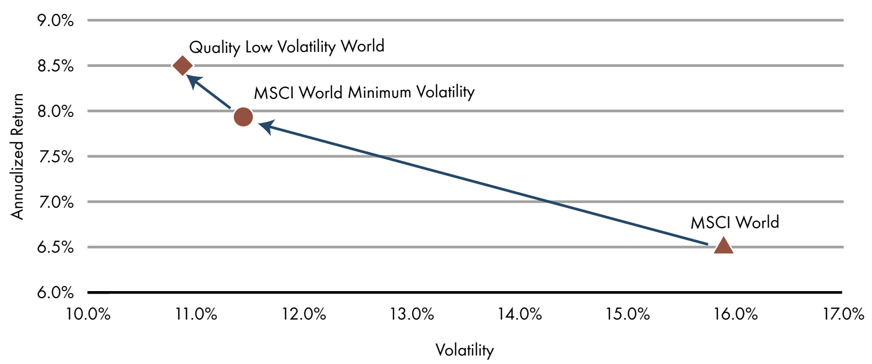
Northern Trust’s QLV strategy can:

- Reduce volatility and achieve downside protection
  - — Manage or reduce volatility, allowing for improved risk budgeting
  - — Provide protection in times of market stress
- Provide a liquid replacement for or complement to alternatives managers
  - — Secure comparable risk-and-return characteristics to hedge funds
  - — Serve as a lower-cost hedge fund replacement or more-liquid complement
- Meet the needs of defined contribution plan participants
  - — Potentially improve outcomes in Target Date or multi-manager solutions
  - — Deliver retirement income and risk management
- De-risking to preserve pension funded status
  - — Low-volatility strategies reduce asset risk and may reduce surplus risk

QUALITY, RISK MANAGEMENT EXPERTISE

At Northern Trust, Engineered Equity[SM] strategies incorporate quality and apply innovative, integrated risk management and research. Our quality low-volatility strategy – built on a solid foundation of more than 40 years of experience in high-quality investing – is designed to lower volatility while generating outperformance by constructing a high-quality, low-volatility stock portfolio and managing uncompensated risks.

EXHIBIT 4: OUR QLV STRATEGY OUTPERFORMS TRADITIONAL APPROACHES ON BOTH RISK-ADJUSTED AND ABSOLUTE TERMS.



Source: Northern Trust Quantitative Research

FOR MORE INFORMATION

To learn more about Northern Trust's Quality Low Volatility Strategy, please contact your relationship manager. Alternatively, email globalequitystrategy@ntrs.com or call +1 877 651 9156.

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Important Information Regarding Hypothetical Returns – Where hypothetical portfolio data is presented, the portfolio analysis assumes the hypothetical portfolio maintained a consistent asset allocation (rebalanced monthly) for the entire time period shown. Hypothetical portfolio data is based on publicly available index information. Hypothetical portfolio data contained herein does not represent the results of an actual investment portfolio but reflects the historical index performance of the strategy described which were selected with the benefit of hindsight. Components of the hypothetical portfolio were selected primarily utilizing actual historic market risk and return data. If the hypothetical portfolio would have been actively managed, it would have been subject to market conditions that could have materially impacted performance and possibly resulted in a significant decline in portfolio value.

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