NORTHERN TRUST
ASSET MANAGEMENT

CASE STUDY

LOWERING EQUITY VOLATILITY IN A PENSION PORTFOLIO

"How can our pension plan stay allocated to equities while reducing volatility and improving our funded status over time?"

The Client

A diversified global manufacturer with a $500 million fully funded defined benefit (DB) plan.

The Challenge

Reduce equity portfolio volatility.

Our Approach

We recommended that allocating more assets to fixed income or investing in passive equities would be insufficient.

Managing DB plan risk

Risk management is paramount in pension portfolios, particularly in fully funded plans. Our client has a conservative asset mix, with almost two thirds (64%) of the plan allocated to fixed income. Of the balance, 31% was allocated to equities, and 5% to real estate. The global equity portfolio included active and passive allocations to U.S. and international equities.

Seeking to dampen volatility yet maintain returns

After the pandemic initially sparked significant falls in equity markets, many DB pension plans became painfully aware of their vulnerability to volatility. The manufacturer was conservative by nature and had a specific goal: to maintain its equity allocation, yet dampen potential volatility.

With an eye to the future, the plan wanted to suppress the volatility of its portfolio in order to safeguard its 100% funded status, yet also have the flexibility to maintain or even raise the equity allocation in order to fuel future capital growth. Finding the balance between risk and return was critical for the manufacturer.

A low-volatility equity strategy

Our team was tasked with maintaining the outlook for returns, yet reducing the volatility, or risk. Turning to a traditional solution would not suffice.

While passive equity strategies should deliver future capital growth, for instance, they would also expose the plan to 100% of the market's downside during any future correction or bear market. Such declines are often sudden and pronounced, resulting in material pension fund costs. Alternatively, simply de-risking the portfolio by raising the fixed income allocation would result in lower expected future returns, triggering higher pension costs.

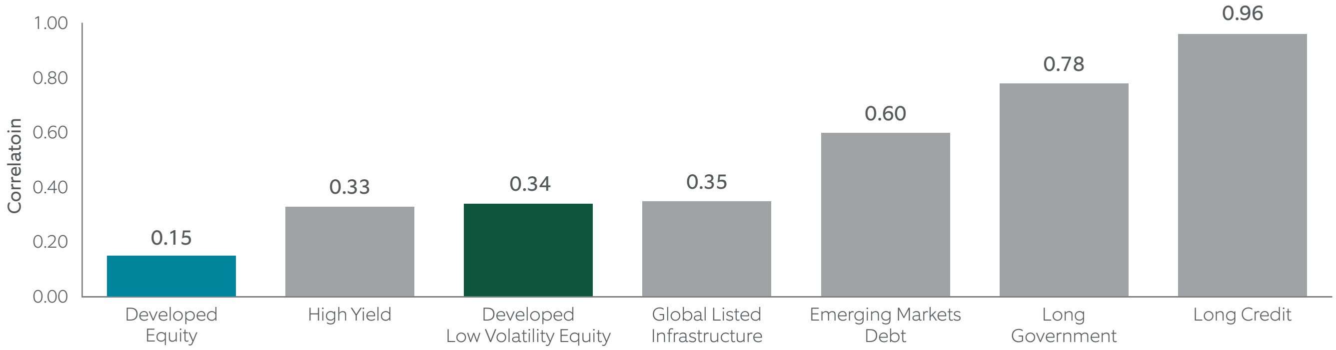
Against this background, we explored the likely risk reduction benefits from using a low-volatility equity strategy. Using risk estimates from our 2017 Capital Markets Assumptions, the team calculated forward estimates of absolute risk (measured by standard deviation) for global equities and global low-volatility equities to model allocation scenarios. This analysis estimated that a systematic global equity low-volatility strategy would be over 30% less volatile.

What's more, low volatility equities have an additional potential benefit for corporate pension plans. Research shows that they have had a higher correlation to pension liabilities than traditional equities, and have outperformed in falling yield environments.

Simply put, when interest rates are declining, low volatility equities tend to outperform: this can offset the lower yields/income on the fixed income allocation within the total portfolio.

Low volatility equities have a higher correlation with pension liabilities

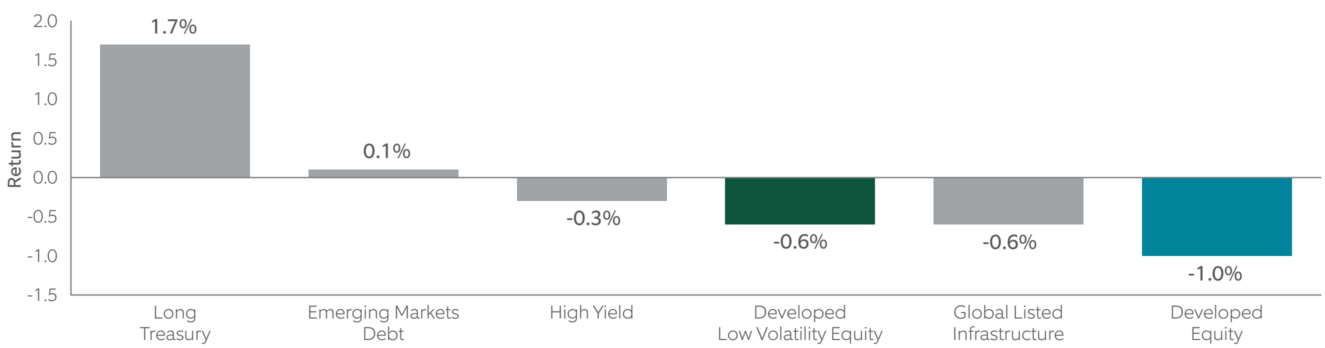
CORRELATION ASSUMPTION TO AVERAGE PENSION LIABILITY



Source: Northern Trust Asset Management using 2017 Capital Market Assumptions.

STRESS TEST — 10 BPS DECREASE IN U.S. TREASURY YIELDS

Low volatility equity can provide downside mitigation.



Source: Northern Trust Asset Management using 2017 Capital Market Assumptions. The Portfolio Construction Desk within Multi-Manager Investments supplies the stress test results. Stress Testing is a risk management process of applying historical or Northern Trust defined scenarios to a current portfolio to determine how the portfolio might react if the stress event were to happen today. In stress testing, the following are defined: the relevant risk factors; the historical stress period or scenario; and the return of the risk factors in the historical stress period or scenario. Next, a portfolio's current exposure to those risk factors is determined, then shocked based on the exposure to the risk factor multiplied by the return of the risk factor in the scenario. The results are compiled using FactSet and Northern Trust's proprietary methodology.

Our Solution

Allocate 25% of the equity portion of the portfolio to our Quality Low Volatility World Strategy.

Near-market returns with less risk

We recommended that 25% of the equity portion of the portfolio be allocated to our Quality Low Volatility World Strategy to achieve the manufacturer's goal of lowering volatility without compromising returns. Historically, this strategy has delivered near-market returns with less risk. Since inception May 2015, the strategy has offered about a 20% reduction in risk while keeping pace with the MSCI World Index benchmark total returns (as of June 2022).

The manufacturer accepted our advice, funding the 25% allocation proportionately from the mix of active and passive equity strategies that existed at the time.

The Benefits

Reduced portfolio volatility while maintaining market returns.

Down-market mitigation.

Safeguarding the funding status

The solution has reduced portfolio volatility, as intended, while maintaining market returns. It has the additional potential benefit of cushioning losses in falling markets, and outperforming in falling yield environments. Additionally, the investment process integrated the proprietary Northern Trust Quality factor, which is complementary to low volatility, further enhancing portfolio variance characteristics and driving excess returns.

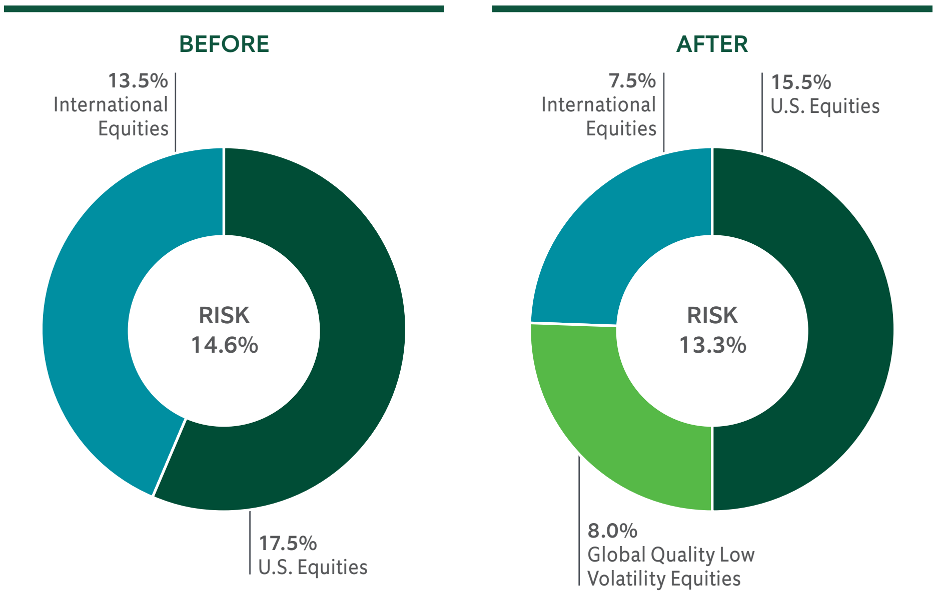
A marked reduction in equity volatility

The 25% allocation to the high-quality, low-volatility equity strategy is estimated to reduce overall equity volatility by 9%.

The Result

Adding a global low volatility equity strategy is **estimated to reduce risk by 9%** while still providing equity market exposure.

Reducing equity risk while maintaining exposure



Source: Northern Trust Asset Management. For illustrative purposes only.

Investing in the high-quality, low-volatility equity strategy looks set to achieve the goal of lowering volatility while maintaining returns. In fact, it may even allow the pension plan to raise the portfolio's equity allocation. This switch in strategy has the potential to protect the pension plan's 100% funded status.

ABOUT NORTHERN TRUST ASSET MANAGEMENT

Northern Trust Asset Management is a global investment manager that helps investors navigate changing market environments, so they can confidently realize their long-term objectives.

Entrusted with $1.0 trillion in assets,* we understand that investing ultimately serves a greater purpose. We believe investors should be compensated for the risks they take — in all market environments and any investment strategy. That's why we combine robust capital markets research, expert portfolio construction and comprehensive risk management to craft innovative and efficient solutions that deliver targeted investment outcomes.

As engaged contributors to our communities, we consider it a great privilege to serve our investors and our communities with integrity, respect and transparency.

*AUM as of June 30, 2022. Article published as of June 30, 2022. For more recent AUM, please visit northerntrust.com.

How helpful was this?

northerntrust.com

IMPORTANT INFORMATION

For Use with Institutional Investors Only. Not For Retail Use. The case studies presented are intended to illustrate products and services available at Northern Trust. They do not necessarily represent experiences of other clients nor do they indicate future performance. Individual results may vary.

This material is directed to professional and eligible counterparties only and should not be relied upon by retail investors. For Asia-Pacific markets, it is directed to expert, institutional, professional and wholesale investors only and should not be relied upon by retail clients or investors. The information contained herein is intended for use with current or prospective clients of Northern Trust Asset Management. The information is not intended for distribution or use by any person in any jurisdiction where such distribution would be contrary to local law or regulation. Northern Trust and its affiliates may have positions in and may effect transactions in the markets, contracts and related investments different than described in this information. This information is obtained from sources believed to be reliable, and its accuracy and completeness are not guaranteed. Information does not constitute a recommendation of any investment strategy, is not intended as investment advice and does not take into account all the circumstances of each investor.

This report is provided for informational purposes only and is not intended to be, and should not be construed as, an offer, solicitation or recommendation with respect to any transaction and should not be treated as legal advice, investment advice or tax advice. Recipients should not rely upon this information as a substitute for obtaining specific legal or tax advice from their own professional legal or tax advisors. References to specific securities and their issuers are for illustrative purposes only and are not intended and should not be interpreted as recommendations to purchase or sell such securities. Indices and trademarks are the property of their respective owners. Information is subject to change based on market or other conditions.

Investing involves risk- no investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment.

All securities investing and trading activities risk the loss of capital. Each portfolio is subject to substantial risks including market risks, strategy risks, adviser risk and risks with respect to its investment in other structures. There can be no assurance that any portfolio investment objectives will be achieved, or that any investment will achieve profits or avoid incurring substantial losses. No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. Risk controls and models do not promise any level of performance or guarantee against loss of principal. Any discussion of risk management is intended to describe Northern Trust's efforts to monitor and manage risk but does not imply low risk.

Simulated and actual past performance is not a reliable indicator of future results and should not be the sole factor of consideration when selecting an investment product or strategy.

Past performance is no guarantee of future results. Performance returns and the principal value of an investment will fluctuate. Performance returns contained herein are subject to revision by Northern Trust. Comparative indices shown are provided as an indication of the performance of a particular segment of the capital markets and/or alternative strategies in general. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. Net performance returns are reduced by investment management fees and other expenses relating to the management of the account. Gross performance returns contained herein include reinvestment of dividends and other earnings, transaction costs, and all fees and expenses other than investment management fees, unless indicated otherwise. For additional information on fees, please refer to Part 2a of the Form ADV or consult a Northern Trust representative.

Forward-looking statements and assumptions are Northern Trust's current estimates or expectations of future events or future results based upon proprietary research and should not be construed as an estimate or promise of results that a portfolio may achieve. Actual results could differ materially from the results indicated by this information.

If presented, hypothetical portfolio information provided does not represent results of an actual investment portfolio but reflects representative historical performance of the strategies, funds or accounts listed herein, which were selected with the benefit of hindsight. Hypothetical performance results do not reflect actual trading. No representation is being made that any portfolio will achieve a performance record similar to that shown. A hypothetical investment does not necessarily take into account the fees, risks, economic or market factors/conditions an investor might experience in actual trading.

Hypothetical results may have under- or over-compensation for the impact, if any, of certain market factors such as lack ofliquidity, economic or market factors/conditions. The investment returns of other clients may differ materially from the portfolio portrayed. There are numerous other factors related to the markets in general or to the implementation of any specific program that cannot be fully accounted for in the preparation of hypothetical performance results. The information is confidential and may not be duplicated in any form or disseminated without the prior consent of Northern Trust.

This information is intended for purposes of Northern Trust marketing of itself as a provider of the products and services described herein and not to provide any fiduciary investment advice within the meaning of Section 3(21) of the Employee Retirement Income Security Act of 1974, as amended ("ERISA"). Northern Trust is not undertaking to provide impartial investment advice or give advice in a fiduciary capacity to the recipient of these materials, which are for marketing purposes and are not intended to serve as a primary basis for investment decisions. Northern Trust and its affiliates receive fees and other compensation in connection with the products and services described herein as well as for custody, fund administration, transfer agent, investment operations outsourcing and other services rendered to various proprietary and third party investment products and firms that may be the subject of or become associated with the services described herein.

Products and services provided by subsidiaries of Northern Trust Corporation may vary in different markets and are offered in accordance with local regulation. For more information, read our legal and regulatory information about individual market offices (available at northerntrust.com/disclosures).

Northern Trust Asset Management is composed of Northern Trust Investments, Inc. Northern Trust Global Investments Limited, Northern Trust Fund Managers (Ireland) Limited, Northern Trust Global Investments Japan, K.K, NT Global Advisors, Inc., 50 South Capital Advisors, LLC, Belvedere Advisors LLC, Northern Trust Asset Management Australia Pty Ltd, and investment personnel of The Northern Trust Company of Hong Kong Limited and The Northern Trust Company.

Issued in the United Kingdom by Northern Trust Global Investments Limited. Issued in the EEA by Northern Trust Fund Managers (Ireland) Limited.

I-093022-2227043-093023