PORTFOLIO STRATEGY COMMENTARY

THE POWER OF PROCESS
A ROBUST ASSET ALLOCATION METHODOLOGY

January 25, 2023

Foundational to all Northern Trust multi-asset strategies is our well-established asset allocation process. Our strategic and tactical asset allocation horizons combine to provide a differentiated "forward-looking, historically aware" perspective.

Northern Trust has an established asset allocation process, incorporating both strategic and tactical investment horizons. Supporting this process, Northern Trust's investment expertise is leveraged from around the globe, across all asset classes. Far from being an academic exercise, all participants are actively "in the markets" on a daily basis.

We recognize it is not enough to merely analyze historical relationships among asset classes and what drives asset class returns; we must also identify how and why those relationships may change in the future. For instance, valuations have historically provided great insight into global equity returns – when valuations are high, returns are generally low (and vice versa). But recent global equity returns have defied historical relationships; and asset allocation decisions driven purely by historical data would have missed the mark.

We incorporate asset classes from the global opportunity set that provide access to compensated risk factors and serve a specific purpose in the portfolio. Our strategic process engages in long-term risk factor optimization – foundational for our tactical process, which seeks to identify periods when specific risks will be rewarded with excess returns.

Our approach to asset allocation has added value over the past 10-plus years. Our global policy model has generated higher returns with lower risk versus a 60/40 portfolio at the tactical asset allocation (TAA) level and favorable risk-adjusted returns at the strategic asset allocation (SAA) level (see Exhibit 1). Our process is fully transparent and flexible, applicable to investors of all levels of sophistication and all types of investment goals and risk tolerances.

Northern Trust
Global Asset Allocation

Michael DeJuan, CIM®, CAIA
Director, Portfolio Strategy
mld2@ntrs.com

Laura DiPoce, CFA, CAIA
Senior Investment Strategist
lad11@ntrs.com

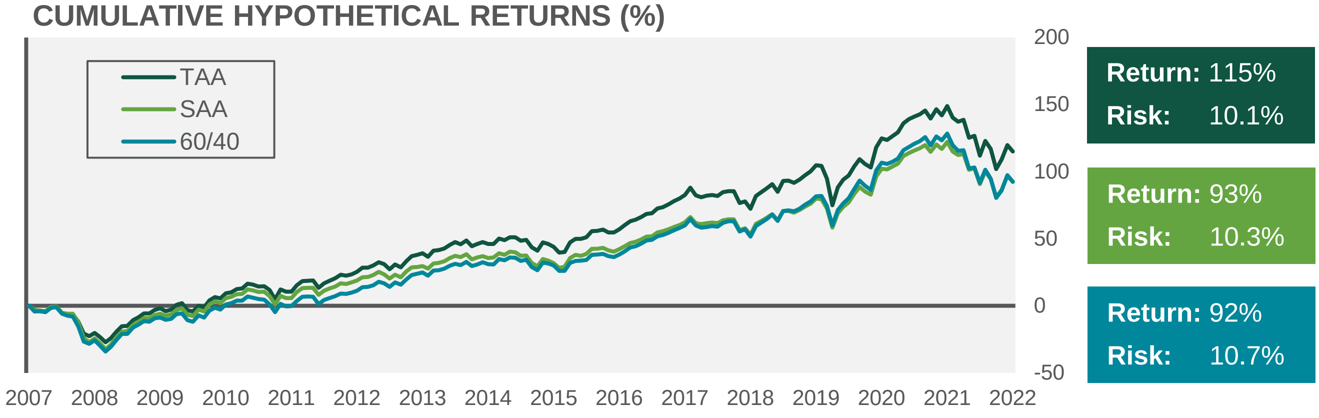
Dan Phillips, CFA
Director, Asset Allocation Strategy
dp61@ntrs.com

Daniel Ballantine, CFA, CPA
Investment Strategist
dbb3@ntrs.com

EXHIBIT 1: HIGHER RETURN, LOWER RISK

Our tactical global policy model has provided higher returns – and lower risk – than a 60/40 portfolio.

CUMULATIVE HYPOTHETICAL RETURNS (%)



Source: Northern Trust Asset Management, Bloomberg. Data from 12/31/2007 – 12/31/2022. Past hypothetical performance is not indicative or a guarantee of future results. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. See last page for disclosures[1].

STRATEGIC ASSET ALLOCATION (SAA): SETTING THE FOUNDATION

SAA is foundational to all Northern Trust multi-asset class mandates. Our risk asset/risk-control approach can establish the appropriate baseline portfolio, based on investor risk tolerance.

Annually, Northern Trust's senior investment professionals meet to refresh our capital market assumptions (CMA). In this "forward-looking, historically aware" approach, historically-based predictive models are subjected to Northern Trust's forward-looking themes. The resulting return forecasts – published in our annual CMA whitepapers – are combined with risk and correlation assumptions in a contemporary portfolio optimization process to produce an efficient frontier of possible portfolios.

Northern Trust is a pioneer in the application of factor-based asset allocation within the framework of modern portfolio theory. Factors explain the return and risk of conventional asset classes, with term (interest rate risk) and market (equity risk) representing the most important risk factors in multi-asset class portfolios. Secondary risk factors, such as credit (default risk), also help explain returns at the margin, but are highly correlated to the market risk factor.

Given these findings, we engage in a two-step optimization process. First, we optimize two portfolios:

- Risk Asset Portfolio (market factor exposure): high yield bonds, global equities and real assets
- Risk-Control Portfolio (term factor exposure): cash, investment-grade and inflation-linked bonds

We then combine these two portfolios through an optimization process to maximize return subject to investor risk constraints. Since our primary risk factors – term and market – are uncorrelated, we can maintain robust diversification through this risk-control/risk asset construct. High yield bonds help illustrate the benefit of our two-step approach to asset allocation. High yield is an asset class with an attractive long-term risk/reward profile. But its diversification benefits are not constant, often times behaving like an equity investment during times of severe stress. The SAA process allows us to benefit from high yield's unique characteristics, without depending on it for robust and persistent diversification.

TACTICAL ASSET ALLOCATION (TAA): CAPITALIZING ON OPPORTUNITIES

TAA seeks to add value by exploiting near-term financial market opportunities. Risk management techniques are incorporated to ensure TAA deviation from SAA conforms to investor expectations.

A subset of the team that develops the CMAs and constructs the SAA also meets monthly to review the global economic environment and identify opportunities and risks over the tactical (12-month) horizon. This structured approach to TAA decision-making allows a comprehensive review of key tactical inputs – including top-down, global macroeconomic views (specifically growth, inflation and monetary and fiscal policy) and bottom-up asset class return forecasts. Any changes in TAA are communicated to investors directly after the investment policy meeting, alongside base case and risk case scenarios.

At each meeting, the team ultimately makes two decisions:

- Risk Positioning: allocation to Risk Asset Portfolio (RA)/Risk-Control Portfolio (RC)
- Relative Value Positioning: allocations to individual asset classes within RA/RC

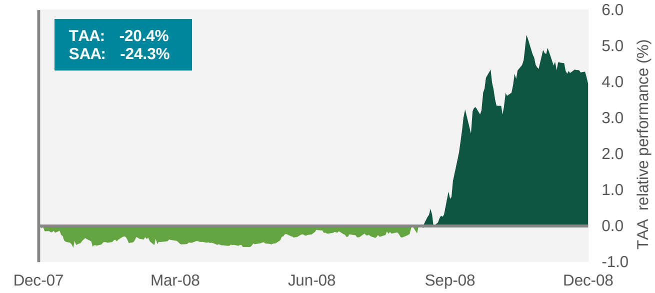
All tactical asset allocation decisions are made in the context of an active risk budget, controlling the degree of relative performance. TAA generally targets a 2% active risk, but can raise or lower that depending on market opportunities and risks. The TAA decisions and SAA starting-point positioning combine to provide the necessary "levers" to more precisely target desired investment outcomes.

The global financial crisis period provides a good example of TAA's ability to add value in a volatile environment. As economic conditions were deteriorating and market stresses were building, TAA reduced risk broadly. TAA then engaged in re-risking as financial markets bottomed. While the portfolio lagged as TAA redeployed risk, the positioning ultimately led to 3.9% outperformance in 2008-2009. The tactical portfolio then outperformed the strategic portfolio in 10 of the next 12 years in a number of market backdrops – with 2020 the only notable year of underperformance (given the sharp pandemic equity market drawdown). Highlights included pivoting towards U.S. assets in 2014-2015, maintaining risk in early 2016 after seeing no fundamental reason for market weakness and shifting to neutral in 2018 on Fed hiking worries. Annual recaps of tactical versus strategic portfolio performance are below.

Calendar Year 2008

The risk profile of the tactical portfolio was reduced in mid-2008 based on global growth concerns and further reduced following the Lehman Brothers collapse due to market liquidity concerns. This led to an overall underweight in risk assets, including a large overweight in cash. Risk assets were reduced broadly across developed ex-U.S. equities, U.S. equities, high yield fixed income and global real estate. The defensive positioning led to significant outperformance during the worst part of the equity market sell-off in the global financial crisis.

12/31/2007 – 12/31/2008

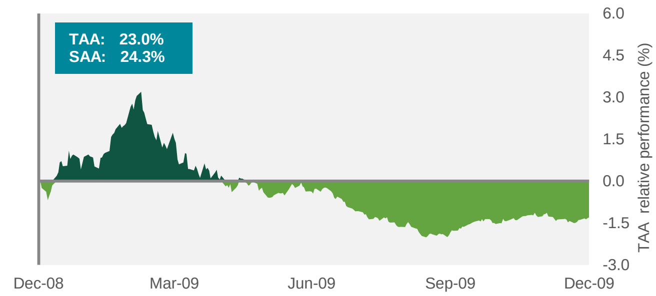


Source: Northern Trust Asset Management, Bloomberg. See below[2].

Calendar Year 2009

As financial markets stabilized, the tactical portfolio was adjusted to begin re-risking the portfolio. Allocations to primarily non-U.S. equities and high yield fixed income were increased, funded by decreases in cash and investment grade (IG) fixed income. The tactical portfolio returned to an overweight position in risk assets overall by September 2009. Despite underperformance in the market recovery period in 2009, the tactical portfolio outperformed overall in the years around the crisis benefitting from the downside protection during the main drawdown period.

12/31/2008 – 12/31/2009

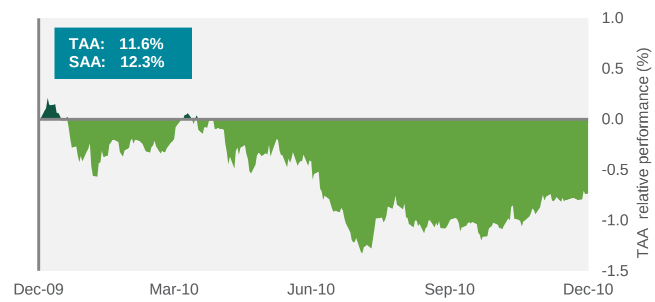


Source: Northern Trust Asset Management, Bloomberg. See below[2].

Calendar Year 2010

After initially increasing risk due to the ongoing economic recovery, the tactical portfolio reduced risk mid-year based on Greece debt concerns before again increasing risk in late 2010 given more U.S. quantitative easing and a better growth outlook. The portfolio pivoted to overweight cash before returning to underweight by year-end while also shifting towards U.S. equities instead of non-U.S. equities. The tactical portfolio underperformed as benefits from the gold overweight were outweighed by drag from the cash overweight and developed market equity positioning.

12/31/2009 – 12/31/2010

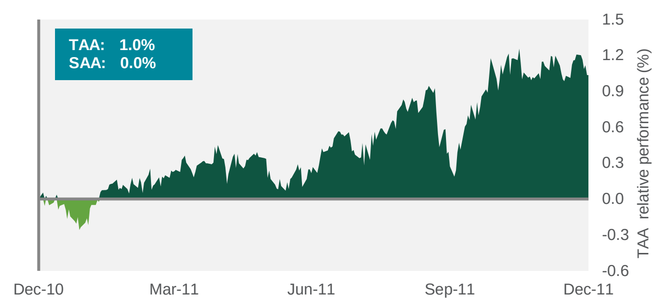


Source: Northern Trust Asset Management, Bloomberg. See below[2].

Calendar Year 2011

The tactical portfolio shifted back towards neutral at the end of 2011 following concerns on the Greece debt situation and its implications for the future of the Eurozone. A preference for U.S. equities and high yield fixed income was largely maintained throughout the year as non-U.S. equity allocations were decreased given emerging market (EM) growth concerns earlier in the year and Europe debt concerns later in the year. Overweight positioning in gold and underweight positioning in non-U.S. developed market equities helped lead to tactical portfolio outperformance.

12/31/2010 – 12/31/2011



Source: Northern Trust Asset Management, Bloomberg. See below[2].

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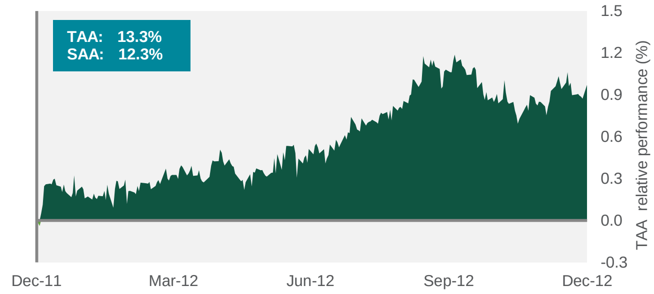
Calendar Year 2012

The tactical portfolio increased risk in 2012 with optimism centered around a constructive-but-modest global growth outlook and ongoing easy monetary policy. In addition to paring back large overweights to U.S. equities and high yield fixed income, TAA increased EM equities given the more favorable growth backdrop – largely funded by reductions in IG fixed income. The overweight risk positioning helped performance for the year, with support from the underweight to IG fixed income and overweights to high yield fixed income and U.S. equities.

12/31/2011 – 12/31/2012

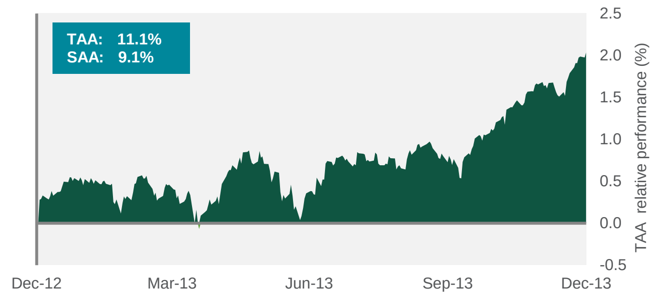


Source: Northern Trust Asset Management, Bloomberg. See below[3].

Calendar Year 2013

Risk positioning was largely maintained throughout 2013. Within asset classes, the gold position was reallocated into TIPS – driven by the aim of increased inflation protection with less of a need for gold in a more stable financial market environment. The overweight to EM equities was fully pared back with the proceeds allocated mostly to non-U.S. developed markets given the better growth and monetary policy outlook in Europe and Japan. The U.S. equities overweight and the IG fixed income underweight were the largest contributors to relative performance.

12/31/2012 – 12/31/2013

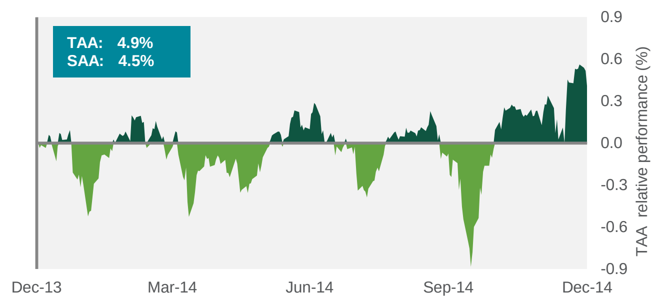


Source: Northern Trust Asset Management, Bloomberg. See below[3].

Calendar Year 2014

The tactical portfolio was overweight risk assets for most of 2014 before reducing risk somewhat late in the year and re-orienting positioning towards U.S.-based asset classes instead of non-U.S. equities. These changes were primarily driven by concerns on growth in China as well as the effectiveness of the European Central Bank's response to a softer Europe growth outlook in addition to its exposure to geopolitical tensions. Overall, the overweight to U.S. equities was the top contributor to tactical outperformance, despite some drag from the IG fixed income underweight.

12/31/2013 – 12/31/2014

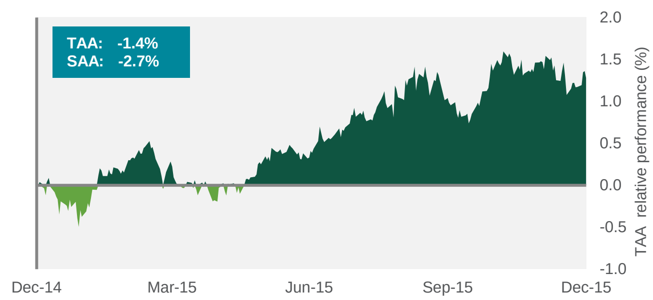


Source: Northern Trust Asset Management, Bloomberg. See below[3].

Calendar Year 2015

A moderate overweight to risk assets was largely upheld in 2015, with significant overweights to U.S. equities and high yield fixed income funded by non-U.S. equities, natural resources and IG fixed income underweights. 2015 tactical changes included an increase to high yield based on a view it should fare well in a better-than-feared growth backdrop and a modest reduction in the developed ex-U.S. equities underweight given Europe's monetary policy-supported growth outlook. Tactical positioning aided performance with help from the U.S. equities overweight and underweights to EM equities and natural resources.

12/31/2014 – 12/31/2015



Source: Northern Trust Asset Management, Bloomberg. See below[3].

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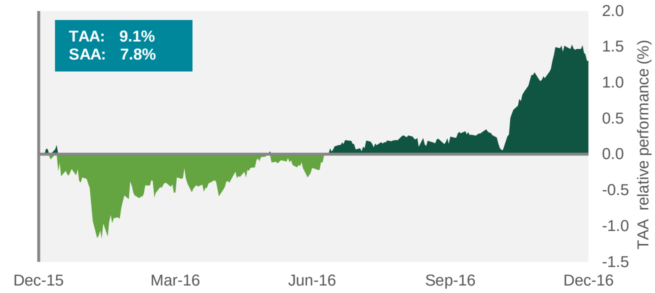
Calendar Year 2016

Despite financial market weakness and concerns of a China hard landing in early 2016, risk positioning was upheld on a view that markets were too heavily discounting a U.S. recession. Tactical positioning included high yield fixed income and U.S. equities overweights and an IG fixed income underweight. Later in 2016, the large high yield overweight was partially pared back after a period of strong returns. While relative performance lagged in early 2016, the decision to hold risk positioning helped performance after risk assets began to recover in mid-February 2016.

12/31/2015 – 12/31/2016

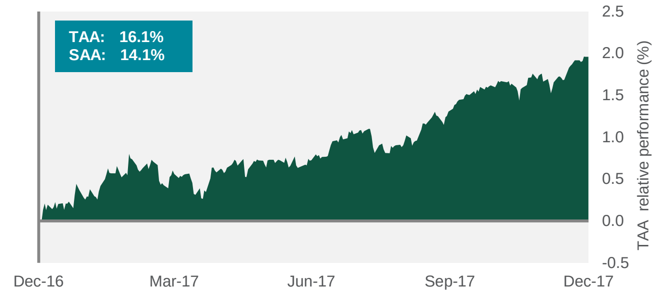


Source: Northern Trust Asset Management, Bloomberg. See below[4].

Calendar Year 2017

Allocations to non-U.S. equities were increased throughout the year, primarily driven by the improving global growth outlook and more attractive valuations compared to U.S. equities. These increases to non-U.S. equities were generally funded by reductions across high yield fixed income, U.S. equities and natural resources. Tactical positioning helped relative performance with key drivers being the material underweight to IG fixed income in addition to overweight positioning across each major global equity region.

12/31/2016 – 12/31/2017

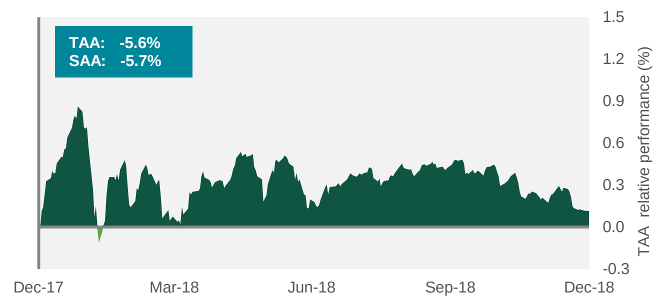


Source: Northern Trust Asset Management, Bloomberg. See below[4].

Calendar Year 2018

After starting 2018 significantly overweight risk assets, the tactical portfolio's risk profile was reduced to neutral by October. Overweight global equity positioning was removed due to the moderating growth outlook and worries that the Fed was raising rates too quickly. Also, the tactical portfolio increased its high yield fixed income overweight throughout 2018 based on a view the asset class would perform well in an environment of moderating-but-positive growth and contained inflation. The tactical portfolio finished slightly ahead of the strategic portfolio for 2018.

12/31/2017 – 12/31/2018

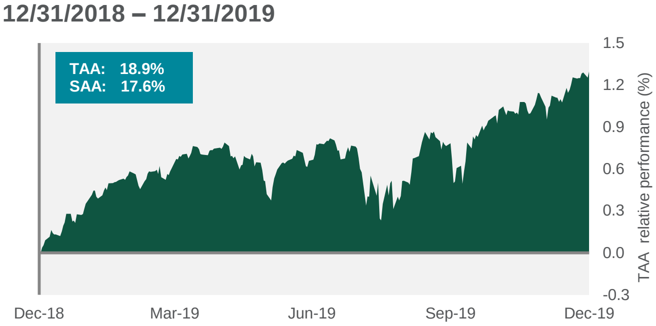


Source: Northern Trust Asset Management, Bloomberg. See below[4].

Calendar Year 2019

The tactical portfolio returned to an overweight risk stance in early 2019 based on a view that markets were too heavily discounting the odds of a recession and was further adjusted later in the year to reflect expectations for slow growth, accommodative monetary policy and low interest rates. The re-positioning was primarily carried out by increasing U.S. equities, global listed infrastructure and global real estate – funded by reductions in IG fixed income. Tactical positioning helped performance primarily due to underweights across risk-control assets including cash, IG fixed income and TIPS.

12/31/2018 – 12/31/2019



Source: Northern Trust Asset Management, Bloomberg. See below[4].

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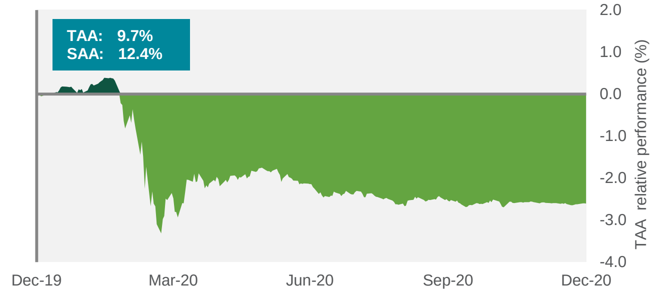
Calendar Year 2020

Moderately overweight risk tactical positioning heading into the sharp equity market drawdown in late February/March 2020 (Covid-19 pandemic) in addition to moderately underweight risk positioning throughout the subsequent equity market recovery led to considerable drag on the relative performance of the tactical portfolio. The tactical portfolio eventually returned to a moderately overweight risk stance in late 2020, which helped performance somewhat, but not enough to offset the considerable headwinds from earlier in the year.

12/31/2019 – 12/31/2020

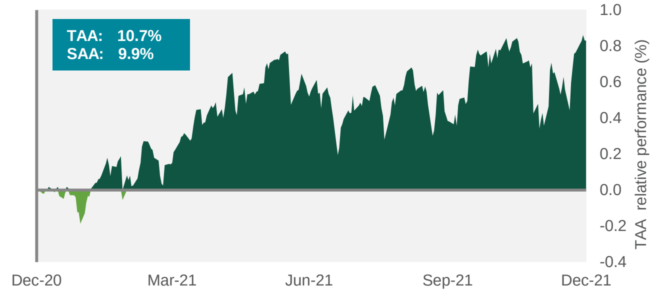


Source: Northern Trust Asset Management, Bloomberg. See below[5].

Calendar Year 2021

The tactical portfolio was moderately overweight risk heading into 2021 before increasing risk somewhat throughout the year in a broad-based way with overweights mainly in high yield fixed income, natural resources and developed market equities – funded by underweights to risk control assets. The rationale to add risk was largely driven by a preference to increase exposure to the cyclical Covid-19 recovery while adding some inflation protection. This positioning helped performance as risk asset returns were much stronger versus risk control assets in 2021.

12/31/2020 – 12/31/2021

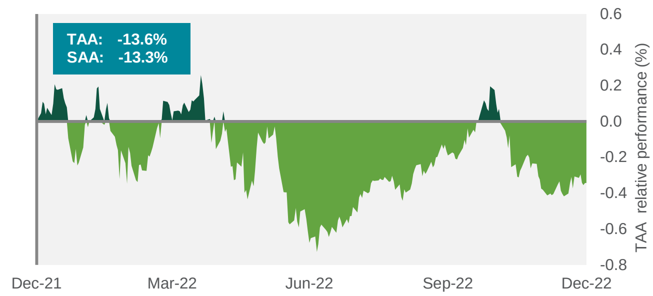


Source: Northern Trust Asset Management, Bloomberg. See below[5].

Calendar Year 2022

After starting 2022 overweight risk, non-U.S. equities were reduced to underweight after the Ukraine war onset – while U.S.-based risk assets and TIPS were increased on a view that the U.S. was less exposed to war-driven growth drag and added inflationary pressures would be global in nature. Along with holding a preference for high yield over IG fixed income in 2022, further changes led to a neutral risk stance via a reduction in global equities in favor of risk control assets. Overall, tactical positioning was a modest performance drag in a tough year for financial markets.

12/31/2021 – 12/31/2022



Source: Northern Trust Asset Management, Bloomberg. See below[5].

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[1] This information is provided for educational purposes only and is not specific investment advice. Start date is based on the inception of the hypothetical model portfolio, 12/31/2007. The Tactical model portfolio asset class hypothetical expected returns are developed annually by Northern Trust's Capital Market Assumptions Working Group. Tactical Portfolio (TAA) and Strategic Portfolio (SAA) are hypothetical model portfolios based on Investment Policy Committee asset allocation decisions and asset class index proxies, which cannot be directly invested in and may change over time; return figures exclude any potential transaction costs or expenses. The 60/40 portfolio comprises the MSCI ACWI total return and Bloomberg U.S. Aggregate indices, respectively. All volatility figures are annualized and use monthly data. Past performance is not indicative or a guarantee of future results. Index performance returns do not reflect any management fees, transaction costs or expenses. It is not possible to invest directly in any index. There are risks involved in investing including possible loss of principal. There is no guarantee that the investment objectives of any fund or strategy will be met. Risk controls and models do not promise any level of performance or guarantee against loss of principal.

Calendar year performance exhibits follow same convention and calculation methodology as the hypothetical model portfolios described – Tactical Portfolio (TAA) and Strategic Portfolio (SAA) – with the main exception of the figures using daily returns (instead of monthly).

Please note the following abbreviations may be used throughout the report: investment grade (IG) fixed income, emerging markets (EM) equities, inflation-linked fixed income (TIPS), Federal Reserve (Fed).

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