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Featured Strategy

Risk Management 2.0: Looking Beyond Asset Allocation

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INTRODUCTION

Over the past 20 years, investors have seen the risk management afforded by asset allocation techniques (such as the 60/40 equity/bond portfolio) challenged numerous times. This paper explains how asset allocation is dependent on the persistence of historical return, risk and correlation levels, and how the approach can fail when conditions depart from the norm. The paper presents a complementary, forward-looking approach that is not contingent on historical observations repeating in the future.

This paper is presented in two parts, which can be read separately or together.

Part I examines potential deficiencies in asset allocation that led to significant losses in 2001, 2008, 2020 and 2022 and introduces the concept of Target Outcome Investing and the Buffer Protect Strategy. Practitioners reading Part I should understand:

1. How and why a new class of investments, Target OutcomeInvestments (TOIs), can offer a complementary "risk management 2.0" approach to asset allocation.
2. How the Buffer Protect Strategy works to manage risk to target time horizons, and how it can be a novel tool in portfolio construction and financial planning.

Part II provides a quantitative risk/return framework to evaluate the Buffer Protect Strategy in the context of equity/bond portfolios and a unique interest rate environment. Practitioners reading Part II should understand:

1. How to evaluate the Buffer Protect Strategy in the context of equity/bond portfolios, including the 60/40 portfolio, from a risk/return perspective.
2. Which Buffer Protect Strategy portfolios can be purchased to complement specific equity/bond portfolios, with comparable risk.

PART I

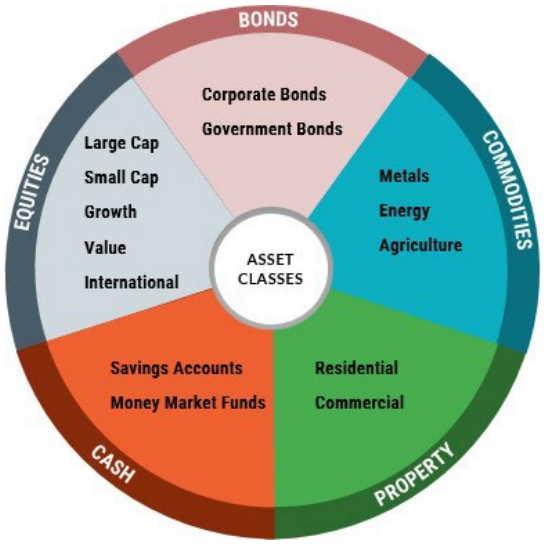
BACKGROUND

Modern portfolio theory, introduced in 1952 by Harry Markowitz, gives practitioners the means to construct a portfolio of multiple assets that are not perfectly positively correlated. While multi-asset portfolios can include asset classes as varying as commodities, property and cash (Figure 1), nothing epitomizes the multi-asset diversified portfolio as well as the 60% equity/40% fixed-income portfolio.

In theory, equities and bonds are expected to have negative correlation. This theoretical negative correlation holds the promise of reducing the overall risk experienced by the portfolio, making the overall ride "smooth."

However, the market turmoil over the last two decades caused multi-asset portfolios to struggle at certain times when markets were stressed, revealing the extent to which conventional risk management strategies have failed investors. The bear markets encompassing the 2000 technology bubble, the 2008 credit crisis, the 2020 pandemic-induced economic contractions, and the hyper-inflationary environment demonstrated that the theoretical negative correlation is not an absolute. This paper explains why risk management failed in these instances.

FIGURE 1: ASSET CLASSES IN A MULTI-ASSET INVESTMENT PORTFOLIO



While modern portfolio theory represented a significant innovation in 1952 when investors' choices were essentially single stocks, bonds and short-term government debt, the new investment choices and technology advancements in the intervening 70+ years provide the means and the need for enhancement. This paper argues that there is a complementary approach to risk management—risk management 2.0—the cornerstone of which is a new class of investments we call Target Outcome Investments.

TARGET OUTCOME INVESTMENTS: A NEW PERSPECTIVE

Introducing Target Outcome Investments

TOIs seek to deliver a specific outcome at a specific point of time in the future, with a specific level of risk. They employ strategies that maximize the probability of meeting the targeted outcome to increase the likelihood of desired investment returns.

TOIs have three key defining features. They:

1. **Target Specific Returns**
   In Target Outcome Investing, return is defined as the degree of upside capture, or participation in the positive returns, of a reference asset. Most TOIs can articulate the participation in the upside from the asset and the maximum growth opportunity.

2. **Target Specific Risks**
   Risk in Target Outcome Investing is defined as loss of capital. While volatility (or standard deviation) of returns is a key theoretical measurethat allows academic study of investments, the risk of losing money is the true and absolute risk.Most TOIs are designed to have a specific degreeof participation in the downside from the asset. Therefore, investors can anticipate the maximum loss potential.

3. **Have a Specific Investment Time Horizon**
   Most TOIs target specific points in time in the future at which they measure upside return and downside risk.

Target Outcome Investing differs from assetallocation solutions by the means used to achieve desired outcomes. While asset allocation relies on historical correlations, TOIs, in contrast, utilize the forward-looking contractual risk mitigation that is possible through options.

Options: The Building Blocks of Target Outcome Investments

Options are contracts through which a seller gives a buyer the right, but not the obligation, to buy or sell a security or other financial asset (reference asset) at a predetermined price (strike price) on or before a specific date in the future (exercise date). The payment for options is dependent on the performance of the reference asset being above or below the strike price at the exercise date. Options trade in liquid exchange markets and are supported by the guarantee of an options clearing corporation.

Options have similar features to insurance contracts, as they make a payment on a future date that is contingent on an event taking place. Insurance contracts bring a level of security or certainty, for which individuals are willing to pay a premium. Like insurance contracts that transfer event risk from the insurance buyer to the insurance seller, options are the capital markets' solution for redistributing a range of returns from investors who are prepared to sell those returns ("insurance sellers") to investors who wish to purchase them ("insurance buyers").

The contractual certainty available through options contracts makes it possible to build TOI solutions that have levels of predictability at specific time horizons. This cannot be achieved through approaches that rely on the persistence of historical statistical relationships between assets.

A key component in a Target Outcome Investing framework is the probability distribution of expected returns (return profile). This shows the frequency of returns in an interval (e.g., 0%-5%) and provides more complete information about the potential pattern of those returns beyond mean and standard deviation statistics. Target Outcome Investing strategies seek to shift return profiles across time and alter their shapes to be more consistent with investor needs and preferences. Using options, TOIs can modify the return profile of an asset class to reduce the chance of participating in the downside or to enhance participation in the upside. This approach can use asset classes as diverse as equities, commodities and bonds, and can be implemented on broad market index measures, such as the S&P 500 Index for U.S. large-capitalization stocks and the Bloomberg US Aggregate Bond Index for U.S. bonds.

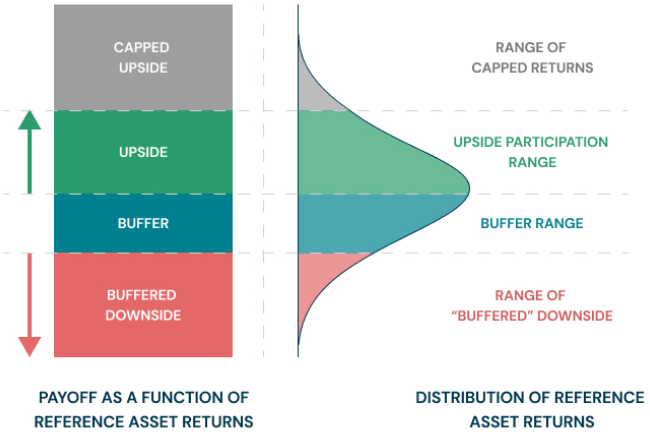
In the multi-asset solution framework, risk is managed by simply bringing low-correlated investments into the choice set and adjusting their weights. In Target Outcome Investing, the possibility of buying and selling options expands the range of return profiles, allowing investors to structure portfolios with different likelihoods of participating in the upside and/or downside around the desired return level.

> Options are the capital markets' solution for redistributing a range of returns from investors who are prepared to sell those returns ("insurance sellers") to investors who wish to purchase them ("insurance buyers").

Buffer Strategies

To understand how Target Outcome Investing works in practice, we examine our flagship Target Outcome Strategy: The Buffer Protect Strategy ("buffer strategy"). The buffer strategy is currently (as of August 2023) the most popular investment strategy in the Target Outcome Investing space and is available to investors in various investment vehicles, including mutual funds, exchange-traded funds, unit investment trusts and managed accounts. The buffer strategy seeks to protect against a range of downside losses for a reference asset, such as the S&P 500 Index, while still participating in potential upside growth to a cap for a specific period.

FIGURE 2: THE BUFFER STRATEGY PROTECTS AGAINST LOSSES AND RESHAPES RETURN DISTRIBUTION PATTERNS



The buffer strategy allows equity investors to experience less downside participation in a benchmark's returns by setting a return range or "buffer" of downside protection over a period of time, such as one year. The cost of the buffer protection can be financed by accepting a cap on upside returns.

The buffer strategy will appeal to investors who do not wish to participate in the most probable downside losses over a period of one year, and who desire to capture as much of the most probable upside gains that the strategy will afford them.

Figure 2 demonstrates how this strategy reshapes the return distribution patterns. In this illustration, the blue (buffer protection) area denotes the range of protection where the losses in S&P 500 returns are buffered (i.e., the investor does not suffer any loss within that range). The green (upside) area denotes the range of upside participation, above which the upside is capped (i.e., the investor will forego gains if the S&P 500's returns are above that range).

As an illustration of the return potential for this strategy, a 12-month 10% downside buffer strategy would have delivered a 17.72% cap on June 19, 2020 (the third Friday of the month). If an investor had invested in such a strategy on June 19, 2020 and held the investment to its target outcome period (June 18, 2021), the investor would have participated in all the price returns of the S&P 500 Index to a maximum gain of 17.72%. However, if the S&P 500 Index experienced negative price returns, the strategy would have protected the investor for the first 10% of those negative returns. Today, there is a wide spectrum of investment products that offer different degrees of downside buffer protection, extending from shallower levels of protection (e.g., 0% to -10%), to moderate (e.g., 0% to -20%), and even deeper levels of protection (e.g., -5% to -30%). Products are also available for different time horizons, ranging from one year (available for each month of the year) to three years. And there are products that contain a blend of buffer strategies, each with a different target outcome period.

Having introduced TOIs, next we examine how the traditional asset allocation approach of managing risks compares with them.

ASSET ALLOCATION: TIME FOR AN UPDATE

Investors have long been told that the ideal portfolio should carry 60% of its holdings in equities and 40% in fixed income, a mix that provides greater exposure to historically superior equity returns, while also conferring the diversification benefits and lower risk of fixed-income investments. Based on the principles of modern portfolio theory, the 60/40 portfolio represents the benchmark portfolio for asset allocation-based risk management. However, considering practical realities in specific situations, 60/40 portfolios leave investors exposed. We explain why this is the case, and how Target Outcome Investing can address the potential gaps and offer complementary risk reduction.

Risk ≠ Volatility

In its pursuit of optimizing risk, modern portfolio theory measures risk as volatility, or the standard deviation of returns. Volatility is a statistical measure of the dispersion of returns for a given security or market index. Dispersion is the difference between the actual value and the average value: the larger this dispersion or variability, the higher the volatility. The choice of volatility as a measure of risk is motivated by the academic study of investments—a measure that provides the convenience of mathematical modeling that underpins the theory. Unfortunately, this theoretical measure of risk may not be aligned with the real, absolute risk that investors face when they need to liquidate an investment to meet a financial obligation. While the two measures are related, the traditional approach assumes them to be one and the same.

In contrast, risk in Target Outcome Investing is expressed as magnitude of loss (negative return) or downside return participation—rather than volatility of returns or underperformance to a benchmark or other statistical measure. Loss of capital impedes investors from reaching their objectives; this is the truest measure of risk for most.

Unstable Backward-Looking Measures

It is not surprising then that techniques devised to reduce volatility may fail to reduce absolute risk. The volatility-reducing power of diversification, once hailed as the "Holy Grail of investing," failed spectacularly four times in the last two decades—in 2001, 2008, 2020 and 2022. In those instances, numerous asset classes collapsed all at once. That's because the extent to which asset classes move together is both dynamic and unpredictable.

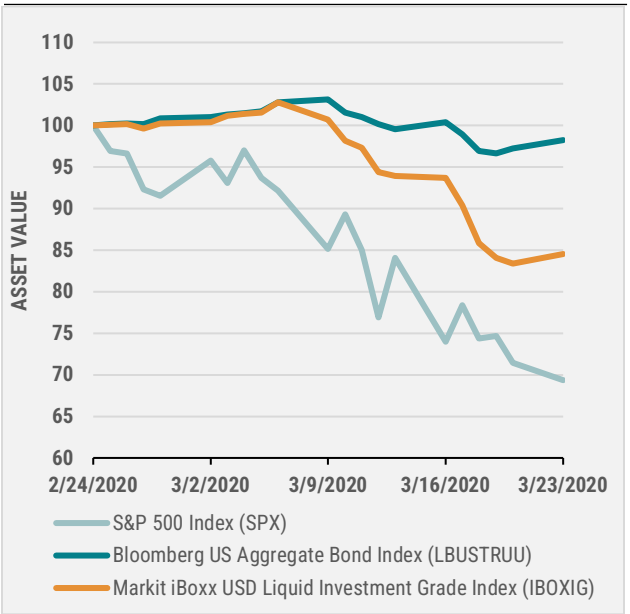
Consider the acute changes in prices of equities and bonds in March 2020 (Figure 3):

- On March 23, 2020, the S&P 500 Index (SPX), a broad measure for U.S. large-capitalization equities, was down 30.64% from its level just a month prior on February 24, 2020.
- The Bloomberg US Aggregate Bond Index (LBUSTRUU), which represents the aggregate universe of bonds in the U.S., was down 1.74% during the same period.
- The Markit iBoxx USD Liquid Investment Grade Index (IBOXIG) was down 15.44% during the same period.

Contrary to expectations, the correlation between large-cap equities and the aggregate bond universe remained quite high (Figure 4). The weekly correlation between the S&P 500 Index and the Bloomberg US Aggregate Bond Index over this difficult time frame was 84.3%! A positive correlation of over 80% implies that the two assets are highly correlated. Most investors expect them to be negatively correlated.

March 2020 demonstrated that equity/bond allocation strategies failed to mitigate risk as anticipated. And yet, the sudden high correlation among many of the world's major asset classes in such times was likely not a rare event, but rather the inherent reaction of evermore-connected dynamics across multiple markets. Even investors with diversified, supposedly noncorrelated investments can experience short-term negative returns more often than expected. If negative returns occur when liquidity is needed (e.g., for retirement, college tuition or a down payment on a home), the results can be disastrous.

FIGURE 3: EQUITY AND BOND PERFORMANCE
FEBRUARY 24 – MARCH 23, 2020



SECURITY	PRICE CHANGE	TOTAL RETURN
S&P 500 INDEX (SPX)	-30.64%	-30.52%
BLOOMBERG US AGGREGATE BOND INDEX (LBUSTRUU)	-1.74%	-1.74%
MARKIT IBOXX USD LIQUID INVESTMENT GRADE INDEX (IBOXIG)	-15.44%	-15.44%

Source: Bloomberg.
Past performance is not indicative of future results. It is not possible to invest directly in an index.

FIGURE 4: EQUITY/BOND CORRELATION*
FEBRUARY 24 – MARCH 23, 2020

	SPX	LBUSTRUU	IBOXIG
SPX	100%	84.3%	97.4%
LBUSTRUU	84.3%	100%	94.2%
IBOXIG	97.4%	94.2%	100%

SPX = S&P 500 Index
LBUSTRUU = Bloomberg US Aggregate Bond Index
IBOXIG = Markit iBoxx USD Liquid Investment Grade Index
*Correlation between weekly equity and bond returns.
Source: Bloomberg.

First Half of 2022: The New Era

Following the tumultuous drawdown in March 2020, the markets recovered spectacularly from the bottom on March 23. Through 2020 and 2021, the S&P 500 Index staged a 55.50% annualized total return. The Markit iBoxx USD Liquid Investment Grade Index staged a 13.40% annualized return. Finally, the Bloomberg US Aggregate Bond Index returned 2.66% annualized. The COVID-19 crisis seemed to be in the rearview mirror as the economy trended towards normalcy.

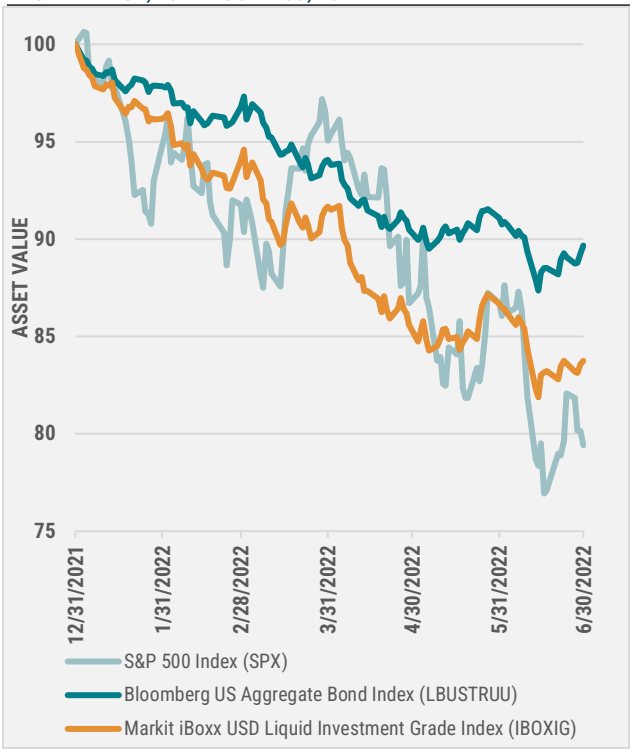
However, the start to 2022 did not continue down this path, as inflation became red-hot, geopolitical events in Europe and Asia caused disruption to the flow of commodities, and expectations of near-zero rates were coming to an end. The Fed raised rates three times for a total of 150 basis points by the halfway point of 2022. The Consumer Price Index (released on July 12, 2022) was 9.1%, and recession fears mounted.

On June 30, 2022, year to date, the S&P 500 Index was down 20.58%, the Bloomberg US Aggregate Bond Index was down 10.35%, and the Markit iBoxx USD Liquid Investment Grade Index was down 16.24% (Figure 5). Investors who depended on the power of diversification came to realize that there was nowhere to hide in this environment, and that correlations between stocks and bonds were elevated, yet again (Figure 6).

The first half of 2022 became another datapoint indicating that fixed income—once a ballast for a portfolio—may not necessarily be counted on to support a portfolio in a down market. Moreover, 2022 revealed to investors the need to consider other ways to limit their equity risk, or "diversify their diversification methods," since the historical relationships of asset classes had shown again to be unreliable in predicting their relationships tomorrow.

Fortunately, there may be another way. The forward-looking nature of options, in contrast, provides TOIs the potential to deliver outcomes that are not contingent upon history repeating itself.

FIGURE 5: EQUITY AND BOND PERFORMANCE DECEMBER 31, 2021 – JUNE 30, 2022



SECURITY	PRICE CHANGE	TOTAL RETURN
S&P 500 INDEX (SPX)	-20.58%	-19.96%
BLOOMBERG US AGGREGATE BOND INDEX (LBUSTRUU)	-10.35%	-10.35%
MARKIT IBOXX USD LIQUID INVESTMENT GRADE INDEX (IBOXIG)	-16.24%	-16.24%

Source: Bloomberg.
Past performance is not indicative of future results. It is not possible to invest directly in an index.

FIGURE 6: EQUITY/BOND CORRELATION* DECEMBER 31, 2021 – JUNE 30, 2022

	SPX	LBUSTRUU	IBOXIG
SPX	100%	25.1%	44.4%
LBUSTRUU	25.1%	100%	92.0%
IBOXIG	44.4%	92.0%	100%

SPX = S&P 500 Index
LBUSTRUU = Bloomberg US Aggregate Bond Index
IBOXIG = Markit iBoxx USD Liquid Investment Grade Index
*Correlation between weekly equity and bond returns.
Source: Bloomberg.

Duration and Interest Rates

Fixed income is a meaningful allocation in most asset allocation strategies, and 40% of the 60/40 benchmark. This exposes such strategies to risks that are specific to bonds—particularly risks of changes in interest rates and the effects such changes have on the prices of bonds. The sensitivity of bond prices to interest rates is measured by duration: the higher the sensitivity to interest rates, the higher the duration.

Asset allocation strategies are motivated to select longer-duration bonds. This makes bonds more responsive to the changes in market conditions and helps produce the diversification desired in a multi-asset portfolio. Another motivation for practitioners is that longer-duration bonds generally hold the promise of higher returns by virtue of having higher yields.

The bias toward longer-duration bonds in multi-asset portfolios has historically worked well for such portfolios over the recent decades. That is because the long-term trend has been a slow and steady decline in the level of interest rates since the mid-1980s, when the 10-year Treasury rate was over 15% (Figure 7). As of July 1, 2020, the Federal Reserve had extended the security purchase programs that it started in 2008, to the extent that both short-term interest rates (one-month rate = 0.12%) and long-term interest rates (10-year rate = 0.69%) were close to historically low levels. However, it seems we may be at the end of this run, unless interest rates go negative.This poses a double jeopardy for bond holders. Not only are they locking in yields that are below inflation, but they are also taking the risk of duration hurting them if interest rates go higher. Looking at the trade-off between the risk and returns, some commentators compare the situation to "collecting pennies in front of a steam roller."

The downside protection in TOIs comes from options. While options have sensitivity to interest rates that can create volatility prior to the end of the target outcome period, the degree of sensitivity is relatively low and decreases to zero as the investment strategy approaches the end of the target outcome period. Further, TOIs can be constructed to target levels of income that are higher than the inflation rate, providing potential solutions for income-seeking investors.

FIGURE 7: 10-YEAR TREASURY CONSTANT MATURITY RATE JANUARY 5, 1962 – JUNE 30, 2022

Source: Board of Governors of the Federal Reserve.

FIGURE 8: AT A GLANCE: 60/40 PORTFOLIOS VS. TOIs

	60/40 PORTFOLIOS	TOIs
OBJECTIVE	Market-driven	Investor-driven
RETURN FOCUS	Expected return	Target return
INVESTMENT STRATEGY	Multiple asset classes with historically low correlation	Options that provide contractual certainty, independent of historical behavior
RISK MEASURE	Volatility (standard deviation)	Loss potential
INVESTMENT TIME HORIZON	Uncertain / ongoing	Specific
DURATION RISK	High for bond allocation	Negligible
RETURN POTENTIAL	Low for bonds when interest rates are low	Dependent on equity performance

Some of the key differences between 60/40 portfolios and Target Outcome Investments are summarized above in Figure 8. In the next section, we provide a quantitative framework to guide practitioners in constructing a portfolio of Target Outcome buffer strategies as a complement to 60/40 portfolios.

PART II

BUFFER STRATEGIES IN A PORTFOLIO: A QUANTITATIVE FRAMEWORK

We seek to perform a simulation analysis that compares the risk-adjusted returns of a portfolio of Target Outcome buffer strategies versus a 60/40 portfolio in an environment that may be particularly challenging for bonds.

Asset Allocation Portfolios

For this analysis, we construct a hypothetical 60/40 benchmark portfolio that uses three indices in proportions that are used by some of the largest 60/40 target allocation funds:

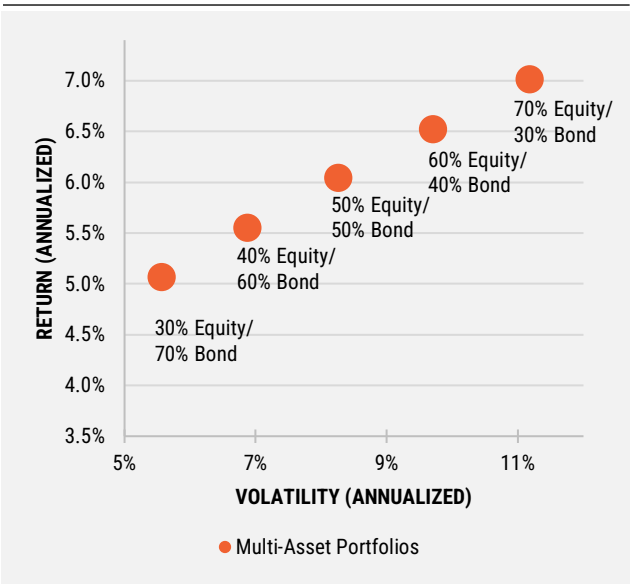
1. **42% MSCI ACWI Index (ACWI)**
   The MSCI All Country World Index (ACWI) is a market-capitalization-weighted index designed to provide a broad measure of equity market performance throughout the world. It is composed of stocks from 23 developed countries and 24 emerging markets. Approximately 60% of the companies in the MSCI ACWI are based in the U.S., meaning the benchmark's overall exposure to the U.S. in this sleeve is 25.2%.
2. **18% MSCI USA Index (MXUS)**
   The MSCI USA Index is designed to measure the performance of the large- and mid-cap segments of the U.S. market. With 627 constituents, the index covers approximately 85% of the free float-adjusted market capitalization in the U.S. The 18% MSCI USA Index weighting combined with the 25.2% U.S. market exposure from the MSCI ACWI Index equates to 72% of the total equity sleeve; therefore, 43.2% of the overall benchmark comprises U.S. equities.
3. **40% Bloomberg US Aggregate Bond Index (LBUSTRUU)**
   The Bloomberg US Aggregate Bond Index is an index composed of U.S.-dollar-denominated bonds that are rated either investment grade or high yield.

In addition to the benchmark 60/40 portfolio, we also construct other equity and bond portfolios, including 70% equities/30% bonds, 50% equities/50% bonds, 40% equities/60% bonds, and 30% equities/70% bonds.

To simulate the returns and risk for equities, we use historical monthly returns of the MSCI ACWI Index and the MSCI USA Index from January 2006 through June 2022. To simulate the risk of bonds, we use the historical monthly returns of the Bloomberg US Aggregate Bond Index from January 2006 through June 2022. Recognizing that bonds are unlikely to replicate their historical returns, instead of using return data for the Bloomberg US Aggregate Bond Index, we use forward-looking projections for bonds at 3.60%,[ii] as estimated by Morningstar in its third-quarter 2022 edition of the widely followed "Morningstar Markets Observer."

Based on the simulated returns, the asset allocation portfolio gives a distribution of returns and risk as shown in Figure 9. The annual return expectations vary between 7.01% annualized returns for the 70/30 portfolio to 5.06% for the 30/70 portfolio. These returns come with expected annualized volatility of 11.19% for the 70/30 portfolio and 5.58% for the 30/70 portfolio.

FIGURE 9: RISK AND RETURN EXPECTATIONS FOR MULTI-ASSET PORTFOLIOS
JANUARY 2006 THROUGH JUNE 2022



PORTFOLIO	VOLATILITY, ANNUALIZED	RETURN, ANNUALIZED
70% EQUITIES/30% BONDS	11.19%	7.01%
60% EQUITIES/40% BONDS	9.71%	6.52%
50% EQUITIES/50% BONDS	8.27%	6.04%
40% EQUITIES/60% BONDS	6.88%	5.55%
30% EQUITIES/70% BONDS	5.58%	5.06%

Past performance is not indicative of future results. It is not possible to invest directly in an index.

Target Outcome Buffer Strategy Portfolios

Having established the risk and return profile for equity/bond portfolios, we turn next to the portfolios of Target Outcome buffer strategies. To construct these portfolios, we select two buffer strategies as building blocks:

1. Equally Weighted Cboe S&P 500 10% Buffer Protect Index Series—February, May, August and November (SPRO02, SPRO05, SPRO08, and SPRO11)

The Cboe S&P 500 Buffer Protect Index Series[iii] is composed of 12 indexes—one for each month. Each series in the index is designed to track the returns of a hypothetical investment that, over a period of approximately one year, seeks to "buffer protect" against the first 10% of losses due to a decline in the S&P 500 Index, while providing participation up to a capped level. The capped level is determined on each annual roll date such that there is no premium or discount to enter the hypothetical investment compared to an investment in the index. For the purpose of our analysis, we simulated the monthly returns for a hypothetical 10% buffer strategy ("10-Buffer") that equally weights on a quarterly basis four monthly indexes that are part of the series—February, May, August and November—over a time period from January 2006 through June 2022.

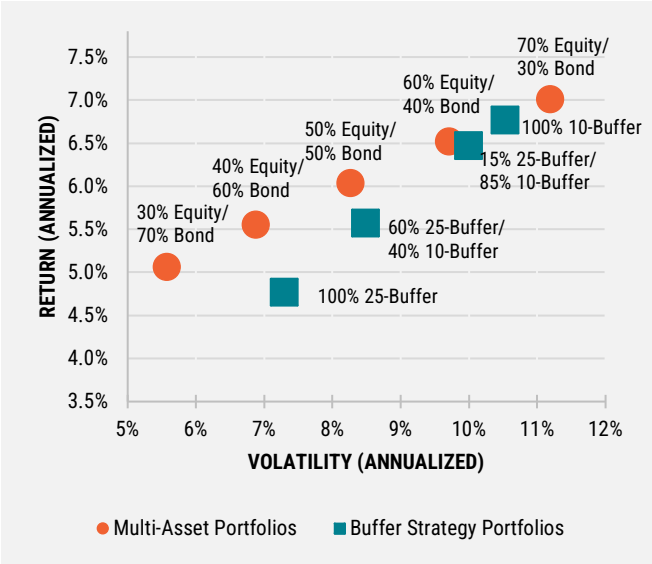
2. Equally Weighted MerQube US Large Cap Deep Buffer Protect Index Series—February, May, August and November (MQUSDB02, MQUSDB05, MQUSDB08, and MQUSDB11)

The MerQube US Large Cap Deep Buffer Index Series is composed of four indexes—one each for the months of February, May, August and November. Each series in the index is designed to track the returns of a hypothetical investment that, over a period of approximately one year, seeks to "buffer protect" against losses between - 5% and -30% due to a decline in the SPDR S&P 500 ETF (SPY), while providing participation up to a capped level. The capped level is determined on each annual roll date such that there is no premium or discount to enter the hypothetical investment compared to an investment in the index. For the purpose of our analysis, we simulated the monthly returns for a hypothetical -5% to -30% buffer strategy ("25-Buffer") that equally weights on a quarterly basis the four monthly indexes that are part of the series over a time period from January 2006 through June 2022.

The 10-Buffer strategy seeks to reduce downside loss risks to a moderate level and consequently provides more room for upside capture. In contrast, the 25-Buffer strategy seeks to be more conservative and mitigate higher levels of risk, and as a result will have lower caps. This barbell positioning of the strategies allows us to construct portfolios of the two buffer strategies to desired levels of risks and returns.

To examine the expected returns and risks of possible combinations, we construct hypothetical portfolios of 100% 25-Buffer, 60% 25-Buffer/40% 10-Buffer, 15% 25-Buffer/85% 10-Buffer and 100% 10-Buffer. Based on the simulated returns, the buffer strategy portfolios experience a distribution of returns and risks as shown in Figure 10, compared with the returns and risks expected for the asset allocation portfolios.

FIGURE 10: RISK AND RETURN EXPECTATIONS FOR MULTI-ASSET AND BUFFER STRATEGY PORTFOLIOS JANUARY 2006 THROUGH JUNE 2022



PORTFOLIO	VOLATILITY, ANNUALIZED	RETURN, ANNUALIZED
70% EQUITIES/30% BONDS	11.19%	7.01%
100% 10-BUFFER	10.53%	6.77%
60% EQUITIES/40% BONDS	9.71%	6.52%
15% 25-BUFFER/85% 10-BUFFER	10.00%	6.47%
50% EQUITIES/50% BONDS	8.27%	6.04%
60% 25-BUFFER/40% 10-BUFFER	8.49%	5.57%
100% 25-BUFFER	7.30%	4.77%
40% EQUITIES/60% BONDS	6.88%	5.55%
30% EQUITIES/70% BONDS	5.58%	5.06%

Past performance is not indicative of future results. It is not possible to invest directly in an index. IMPORTANT: Performance depicted herein includes performance prior to the launch of the MerQube and SPRO indexes. Hypothetical back-tested performance does not guarantee future results and is for illustrative purposes only. The actual performance of investment vehicles that seek to deliver the performance of the indexes may vary significantly. For more information on the construction of the indexes and additional disclosures, please see the Disclaimer section.

Practical Guidance: Implementing Buffer Strategies in Multi-Asset Portfolios

The return and risk features of the buffer strategy portfolios, when juxtaposed against the asset allocation portfolios, provide interesting insights for practitioners who may be looking to complement specific asset allocation portfolios with buffer strategy portfolios of comparable risk to diversify their risk management strategies. Additionally, in a future that may suggest low returns for bonds, investors may also be motivated by the return potential in buffer strategies possibly exceeding the return potential in asset allocation portfolios.

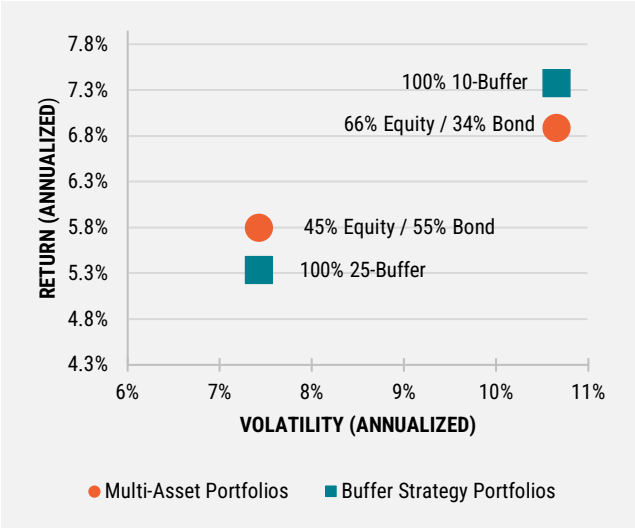
For example, investors whose allocations are close to the 60% equity/40% bond portfolio may consider the 15% 25-Buffer/85% 10-Buffer portfolio. Their risks are comparable, with the 60/40 asset allocation portfolio experiencing an annualized volatility of 9.71%, compared to the annualized volatility of the 15%/85% buffer strategy portfolio at 10.00%. However, the annualized returns of the 60/40 asset allocation portfolio are expected to be 6.52% compared to 6.47% for the 15%/85% buffer strategy portfolio.

Similarly, investors whose allocations are close to the 50% equity/50% bond portfolio may consider the 60% 25-Buffer/40% 10-Buffer portfolio. The portfolios' risks are comparable, with the 50/50 asset allocation portfolio experiencing an annualized volatility of 8.27%, compared to 8.49% annualized volatility for the 60%/40% buffer strategy portfolio. However, the annualized returns of the 50/50 asset allocation portfolio are expected to be 6.04% compared to 5.57% for the 60%/40% buffer strategy portfolio.

> Investors whose allocations are close to the 60% equity/40% bond portfolio may consider the 15% 25-Buffer/85% 10-Buffer portfolio. Similarly, investors whose allocations are close to the 50% equity/50% bond portfolio may consider the 60% 25-Buffer/40% 10-Buffer portfolio.

For practitioners looking to make an allocation to specific buffer strategies and seeking to understand how the risk compares to an asset allocation portfolio, we conducted analyses to find the exact allocation between equities and bonds that produces comparable risk to the 100% 10-Buffer and 100% 25-Buffer strategies. As illustrated in Figure 11, a 10-Buffer strategy has the same risk as a 66% equity/34% bond portfolio, and the 25-Buffer strategy has the same risk as the 45% equity/55% bond portfolio.

FIGURE 11: BUFFER STRATEGY EQUITY/BOND RISK EQUIVALENTS



PORTFOLIO	VOLATILITY, ANNUALIZED	RETURN, ANNUALIZED
100% 10-BUFFER	10.66%	7.33%
66% EQUITIES/34% BONDS	10.66%	6.84%
100% 25-BUFFER	7.43%	5.29%
45% EQUITIES/55% BONDS	7.43%	5.75%

Past performance is not indicative of future results. It is not possible to invest directly in an index. IMPORTANT: Performance depicted herein includes performance prior to the launch of the MerQube and SPRO indexes. Hypothetical back-tested performance does not guarantee future results and is for illustrative purposes only. The actual performance of investment vehicles that seek to deliver the performance of the indexes may vary significantly. For more information on the construction of the indexes and additional disclosures, please see the Disclaimer Section.

Investors motivated to invest in the 10-Buffer strategy could consider liquidating equities and bonds in a ratio of 66 to 34 to raise money and maintain the same risk profile, while complementing their asset allocation portfolios with the buffer strategies. Similarly, investors motivated to invest in the 25-Buffer strategy could consider liquidating equities and bonds in a ratio of 45 to 55 to raise money, while maintaining the same risk profile.

CONCLUSION

The role of investment advisors is to understand their clients' objectives and design solutions that have a high likelihood of meeting them. Investors usually have a responsibility to fulfill future financial obligations, critical financial needs or long-term wealth goals, whether it is retirement income or college tuition for private investors, or meeting defined withdrawal liabilities for institutional investors. These are their objectives.

Outcomes should be defined by investors' needs and objectives—not by what the market happens to deliver against a changing economic backdrop. This calls for a shift from the prevalent thinking that focuses on risk/return features over standard time frames toward outcome-driven thinking based on investors' financial needs and goals and the associated investment horizons.

Target Outcome buffer strategies offer unique and timely solutions for this dilemma. These solutions are not at odds with multi-asset allocation strategies, nor should they be considered an either/or proposition. Diversification still plays a critical role in investors' portfolios. However, incorporating buffer strategies in a complementary manner optimizes portfolios for higher certainty, not for cost and returns, giving investors more control over portfolio outcomes. The quantitative analyses provided herein offer a practical framework for practitioners to incorporate buffer strategies into equity/fixed-income portfolios.

STANDARDIZED PERFORMANCE

Performance data quoted represents past performance. Past performance is not indicative of future results.

The average annual total returns for the indices and blends used herein as of September 30, 2023 are as follows:

	1-Year	5-Year	10-Year
MerQube US Large Cap February Deep Buffer Index (MQUSDB02)	7.79%	4.47%	4.95%
MerQube US Large Cap May Deep Buffer Index (MQUSDB05)	13.78%	3.33%	4.86%
MerQube US Large Cap August Deep Buffer Index (MQUSDB08)	11.28%	2.81%	4.79%
MerQube US Large Cap November Deep Buffer Index (MQUSDB11)	9.45%	5.74%	5.80%
Cboe S&P 500 10% Buffer Protect Index Series—February (SPRO02)	18.11%	8.33%	8.26%
Cboe S&P 500 10% Buffer Protect Index Series—May (SPRO05)	15.31%	5.60%	7.28%
Cboe S&P 500 10% Buffer Protect Index Series—August (SPRO08)	14.41%	5.84%	7.19%
Cboe S&P 500 10% Buffer Protect Index Series—November (SPRO11)	18.70%	7.84%	7.35%
MSCI ACWI Index (MXWD)	21.48%	7.00%	8.14%
MSCI USA Index (MXUS)	21.68%	9.86%	11.80%
Bloomberg US Aggregate Bond Index (LBUSTRUU)	0.65%	0.10%	1.13%
S&P 500 Index (SPX)	21.66%	9.89%	11.90%
Markit USD Liquid Investment Grade Index (IBOXIG)	3.71%	0.89%	2.37%

IMPORTANT: Performance depicted above for the 10-year performance of the SPRO Series from September 30, 2013 through March 30, 2016 is prior to the launch of each series. Performance depicted above for the five-year and 10-year performance of the MerQube Series from September 30, 2013 through April 24, 2020 is prior to the launch of each series. These back-tested calculations are published by the index provider and are based on the same methodology that was in effect when the index officially launched. However, back-tested data may reflect the application of the index methodology with the benefit of hindsight, and historical calculations may change based on revisions to the economic data used in the calculation of the index. Hypothetical back-tested performance does not guarantee future results and is for illustrative purposes only. The actual performance of investment vehicles that seek to deliver the performance of the indexes may vary significantly. For more information on the construction of the indexes and additional disclosures, please see the "Disclaimer" section.

DISCLAIMER

The views, opinions, and content presented are for informational purposes only and reflect the current opinion of the writers as of September 30, 2023. Opinions and forward-looking statements expressed are subject to change without notice. They are not intended to reflect a current or past recommendation; investment, legal, tax, or accounting advice of any kind; or a solicitation of an offer to buy or sell any securities or investment services. Nothing presented should be considered to be an offer to provide any Vest product or service in any jurisdiction that would be unlawful under the securities laws of that jurisdiction. The charts and/or graphs contained herein are for educational purposes only and should not be used to predict security prices or market levels. Information is based on data gathered from what we believe are reliable sources. It is not guaranteed as to accuracy, does not purport to be complete and is not intended to be used as a primary basis for investment decisions. It should also not be construed as advice meeting the particular investment needs of any investor.

This material represents an assessment of the market and economic environment at a specific point in time and is not intended to be a forecast of future events, or a guarantee of future results. Forward-looking statements are subject to certain risks and uncertainties. Actual results, performance or achievements may differ materially from those expressed or implied. Neither asset allocation nor diversification guarantee a profit or protect against a loss in a declining market. They are methods used to help manage investment risk.

The strategies discussed in this document are sophisticated investments and involve the use of options. Some of the risks of new options products and strategies do not become apparent until there has been significant experience in trading and using them. Accordingly, you should be aware that there is a risk in newness, particularly if the new option or strategy is complicated or complex, that cannot always be identified or described.

You should also be aware that not all options strategies will be suitable for your investment purposes, and that certain strategies may expose you to significant potential losses. As with any investment strategy, there is the risk of loss of some or all of your investment. Any performance return discussed herein is for reference only and has not been achieved through actual trading.

For more information and to better understand the features and risks of the strategies discussed herein, you should always contact your investment professional.

BACK-TESTED PERFORMANCE

IMPORTANT: Historical Simulated Index and Back-Tested Returns. Past performance is not indicative of future results.

For Use with Institutions Only - Not for Use with Retail Investors

The back-tested performance was derived from the retroactive application of a model developed with the benefit of hindsight. There are inherent limitations of data derived from the retroactive application of a model developed with the benefit of hindsight. This includes historical data on price and returns that may be incorrectly reported or stored. The actual results may differ due to transaction costs, bid-offer spreads, taxation and composition of strategies that may be different from those in the back-tested performance.

Back-tested performance information is purely hypothetical and is provided solely for informational purposes. Back-tested performance does not represent actual performance and should not be interpreted as an indication of actual performance. **It is not possible to invest directly in an index.** The trading strategies retroactively applied were not available during the periods presented.

The actual performance in select accounts, such as those in exchange-traded funds (ETFs) and mutual funds that seek to deliver the performance of the strategy / index, has been materially less than the hypothetical results for the same period.

There are significant limitations inherent in hypothetical back-tested model results, particularly that model returns do not reflect actual trading and may not reflect the effect that material economic and market factors may have on the adviser's decision-making when using the performance to actually manage client funds. Such factors could include a different economic cycle, volatility regime, levels of inflation, geopolitical conditions, and the level and rate of change of short-term and long-term interest rates.

The results shown of the indexes do not include transaction costs, bid-offer spreads and taxation, and do not include the deduction for any fees or expenses. The actual performance of investment vehicles such as ETFs, mutual funds or managed accounts can have significant differences from the performance of the indexes. Additionally, the performance does not take into account transaction costs and the skill of the portfolio management team of Vest ("the Adviser") in replicating any index, or of any tax consequences. The actual performance of any fund during the period shown could be significantly different from the historical back-tested performance provided.

The actual performance of investment vehicles such as ETFs or mutual funds (collectively "Funds") or managed accounts can have significant differences from the performance of the strategy / index. Investors looking to invest in the strategy / index should discuss possible timing and liquidity issues. The performance does not take into account significant factors such as transaction costs and taxes. Transaction costs and taxes for strategies could be significantly higher than transaction costs for a passive strategy of buying-and-holding stocks. Advisors should consult tax experts as to how taxes affect the outcome of contemplated transactions. Past performance does not guarantee future results.

The MerQube US Deep Buffer Laddered Index (MQUSDBLR) and the individual monthly series of MQUSDBLR used herein—MQUSDB02, MQUSDB05, MQUSDB08 and MQUSDB11 (collectively the "MerQube Indices")—is hypothetical. The Cboe S&P 500 Buffer Protect Index Balanced Series ("SPRO") and the individual monthly series of SPRO used herein—SPRO02, SPRO05, SPRO08, and SPRO11 (collectively the "SPRO Indices" and referred to herein with the MerQube Indices as the "Indexes")—are hypothetical.

The pre-inception index performance (PIP) of the Indexes is based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected their performance and cannot account for all financial risk that may affect the actual performance. The actual performance of a fund may vary significantly from the PIP data.

The Indexes and the historically back-tested performance of the Indexes are designed to represent a hypothetical options strategy. The actual performance of investment vehicles such as ETFs, mutual funds or managed accounts can have significant differences from the performance of the Indexes and the historically back-tested performance of the Indexes. Investors attempting to replicate the Indexes should discuss with their advisors possible timing and liquidity issues. Like many passive benchmarks, the Indexes do not take into account significant factors such as transaction costs and taxes. Transaction costs and taxes for strategies such as the Indexes could be significantly higher than transaction costs for a passive strategy of buying-and-holding stocks. Investors should consult their tax advisors as to how taxes affect the outcome of contemplated options transactions.

The SPRO Indices and the methodology used to calculate the SPRO Indices, including the historically back-tested performance of the SPRO Indices, are the property of Cboe Global Markets ("Cboe"). Among other things, the methodology involves the S&P 500 Index. S&P® is a registered trademark of Standard & Poor's Financial Services LLC ("S&P"); Cboe® is a registered trademark of Cboe. SPRO and Cboe trademarks have been licensed for use by the Adviser.

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Complete MQUSDBLR and SPRO Index methodology can be obtained by calling 855-979-6060 or by visiting:

https://merqube.com/index/MQUSDBLR

https://www.cboe.com/us/indices/dashboard/spro/

INDEX OVERVIEW

- MerQube US Large Cap February Deep Buffer Index (MQUSDB02) Launch Date: 4/24/2020
- MerQube US Large Cap May Deep Buffer Index (MQUSDB05) Index Launch Date: 4/24/2020
- MerQube US Large Cap August Deep Buffer Index (MQUSDB08) Launch Date: 4/24/2020
- MerQube US Large Cap November Deep Buffer Index (MQUSDB11) Launch Date: 4/24/2020
- Cboe S&P 500 10% Buffer Protect Index Series—February (SPRO02) Launch Date: 3/30/2016
- Cboe S&P 500 10% Buffer Protect Index Series—May (SPRO05) Launch Date: 3/30/2016
- Cboe S&P 500 10% Buffer Protect Index Series—August (SPRO08) Launch Date: 3/30/2016
- Cboe S&P 500 10% Buffer Protect Index Series—November (SPRO11) Launch Date: 3/30/2016
- MSCI ACWI Index (MXWD) Launch Date: 1/1/2001
- MSCI USA Index (MXUS) Launch Date: 3/31/1986
- Bloomberg US Aggregate Bond Index (LBUSTRUU) Launch Date: 1/1/1986
- S&P 500 Index (SPX) Launch Date: 3/4/1957
- Markit USD Liquid Investment Grade Index (IBOXIG) Launch Date: 11/1/2006

The strategy is subject to investment risks, including possible loss of the principal amount invested. The investment is not insured by the Federal Deposit Insurance Corporation. This investment is not a deposit or other obligation of, or guaranteed by, the bank. The strategy is subject to investment risks, including possible loss of the principal amount invested.

The performance portrayed for the MSCI ACWI Index (ACWI), MSCI USA Index (MXUS), Bloomberg US Aggregate Bond Index (LBUSTRUU), S&P 500 Index (SPX) and Markit USD Liquid Investment Grade Index (IBOXIG) may not reflect historical performance results since the inception of the indexes.

ABOUT THE INVESTMENT ADVISOR

Vest Financial LLC is a wholly owned subsidiary of Vest Group Inc. Vest offers institutional-quality Target Outcome Investments® built on the backbone of its unique investment philosophy—that strive to buffer losses, amplify gains or provide consistent income—to a diverse spectrum of investors.

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[i] Source: https://www.treasury.gov/; retrieved on 9/19/2020.
[ii] https://www.morningstar.com/lp/markets-observer
[iii] http://www.cboe.com/products/strategy-benchmark-indexes/target-outcome-indexes/cboe-s-p-500-buffer-protect-index-series

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