EQUITABLE

Improving financial outcomes for household portfolios

The role of structured annuities

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Introduction

Traditional investment assets provide returns from a distribution resembling a bell curve. The broad range of potential investment outcomes presents a challenge to household investors, especially as they approach retirement, who may seek asset growth but may not be willing to accept the consequences of a significant loss.

Downside risks are present in both stocks and bonds. The United States has experienced a low interest rate environment in recent years, leading to lower returns for fixed income assets. This creates unique challenges for those approaching retirement as the practical impact of low interest rates is an increased cost to funding retirement goals. Near-retirees who are depending on bond funds to maintain the value of their assets may be vulnerable to having their financial plan steered off course by a rise in interest rates. This concept shifted from abstraction to reality in 2022 when stock and bond markets both experienced double-digit losses, which on the bond side were driven by rising interest rates, reducing the value of existing bonds.

Investing in stocks and bonds creates limitations because the only mechanism an investor can use to adjust the distribution of potential returns is the allocation of their savings between the asset classes. Recent innovations with structured annuities offer an alternative distribution of returns through guarantees that offer both the opportunity for growth and protection against loss. Structured annuities use financial derivatives to create a structured return that changes the shape of the distribution and the relationship between downside risk and upside potential. When added to a portfolio, they may provide an opportunity for household investors to improve their financial outcomes by offering a beneficial trade-off between upside and downside risk.

To explore this point, we will analyze and graphically illustrate the distribution of future return outcomes using a variable annuity with allocations to segments providing structured investment outcomes. These include Standard Segments, Dual Direction Segments, and Dual Step Up Segments, which will be explained. Readers will understand how these annuity segments work to provide a different return experience. We will compare the investment outcomes with traditional investments and with structured annuity designs to illustrate the distribution of potential gains and losses using traditional investment performance metrics. These include the average arithmetic return, annualized return, standard deviation, Sharpe ratio, upside capture, and downside capture. Then we will illustrate how structured returns impact the efficient frontier for household portfolios, enhancing the risk-adjusted returns for the overall portfolio relative to holding just stocks and bonds.

A new category of structured annuity products provides an alternative for households to manage market risks as they approach retirement. These annuities allow an investor to design their own distribution of investment outcomes to better manage downside risks, while still providing participation in the market upside. The ability to better manage downside risks can lay a foundation for either needing less savings to successfully retire, or to enjoy a higher standard of living from a given asset base.

Investment and annuity options

The trade-offs between traditional investments and annuities providing structured returns through different segment options can be analyzed through Monte Carlo simulations to illustrate the risks households accept using various traditional and structured strategies. Our objective is to demonstrate to households and their financial professionals how to select an efficient approach that better matches the highest possible expected returns to the risks they are willing to accept.

To better understand how structured products work, it is important to be aware of a few terms that may be unfamiliar to consumers and financial professionals, and the mechanisms that underlie how the products impact downside and upside performance relative to an unstructured investment portfolio.

The paper will then compare the performance of different structured annuities against stocks and bonds. We will analyze performance using current annuity parameters inspired by actual products as well as capital market expectations linked to the current market environment.

The investment choices include

- Large capitalization U.S. stocks (S&P 500)
- U.S. aggregate bonds

The annuity choices include a variable annuity with underlying segment options, including

- Standard Segments (10%, 15%, 20%, and 40% Segment Buffers)
- Dual Direction Segments (10% and 15% Segment Buffers)
- Dual Step Up Segments (10% and 15% Segment Buffers)

A variable annuity offering more structured returns can function as an asset class within an accumulation portfolio to better manage downside risks while still providing participation in the market upside. The ability to better manage downside risks can either reduce the amount of wealth needed to successfully retire or increase the amount a retiree can feel comfortable spending from their nest egg.

Our discussion of options for the household portfolio includes stock and bond indices as asset classes, as well as annuities whose performance is linked to the stock market index. As an alternative to investing for retirement in traditional asset classes, annuities offer the ability to provide tax deferral for gains and more structure on returns. Though every annuity, by definition, must include a means to convert into a guaranteed income stream, this is not the priority for our analysis in this paper. We focus on evaluating different approaches to growing assets. We return to the topic of protected lifetime income in the next paper of this two-part series.

Stock and bond capital market assumptions provide the starting point for the analysis. Return expectations impact the range of investment outcomes, as well as the annuity options that link their credited interest to a market index or otherwise include investments within their subaccounts. This analysis uses 100,000 Monte Carlo simulations for stock and bond returns differentiated between income and price returns. Simulations are based on two asset classes: a large-capitalization U.S. stock index (S&P 500) and an aggregate U.S. bond index. Returns and standard deviations for these asset classes are taken from BlackRock's capital market expectations last updated in February 2023. We assume the asset classes are not correlated, which is consistent with historical U.S. data. The capital market expectations reflect the lower interest rate environment facing current investors. Exhibit 1 provides these expectations.

Exhibit 1

Capital market expectations

	Arithmetic means	Compounded returns	Standard deviations
U.S. Large Cap Equity	9.3%	7.8%	17.3%
U.S. Aggregate Bonds	3.8%	3.7%	5.1%

Source: BlackRock Investment Institute, February 2023. Data as of December 31, 2022. Return expectations over 30 years for gross total nominal returns.

To differentiate price returns, we assume a fixed dividend yield of 1.7% for stocks, consistent with the current yield on the S&P 500 in early 2023. We use BlackRock's capital market assumptions for 30 years in anticipation of the next paper's focus on long-term retirement simulations, but this article is focused on return and risk dynamics over 1-year holding periods.

Strategies are simulated with annual return data. We also use two further assumptions that will strengthen the case for traditional investments relative to the annuities so that when the annuities make positive contributions there will not be doubt about the reasons. First, we do not deduct any investment or advisory fees for stocks and bonds, despite such fees existing in practice, and even though the annuity segment parameters are defined as net of internal costs. We also assume that investments are held in a tax-deferred account, so the full total returns are allowed to accumulate for the entire period without any tax drag that is created by the ongoing taxation in a taxable account. Annuities provide tax deferral when held in nonqualified accounts, which would give them a performance edge when compared to taxable assets, but we focus on the case when tax deferral is available for both investments and annuities.

We investigate eight different sets of parameters for a variable annuity with structured segments. These include different options within Standard Segment, Dual Direction Segment, and Dual Step Up Segment designs for the variable annuity. We focus on parameters designed for use with the S&P 500, though in practice owners will have options to include other leading indices as well. We also focus on 1-year segments for the annuities, though 3-year and 6-year segments are also available. Exhibit 2 outlines the annuity parameters we consider, which will be described in the following sections.

Exhibit 2

Structured strategies for a variable annuity with 1-year segments

	Segment Buffer	Effective Cap Rate
Standard Segments	10% 15% 20% 40%	18% 15% 12.5% 10%
Dual Direction Segments	10% 15%	15% 11%
Dual Step Up Segments	10% 15%	10% 8.5%

Variable annuity with Standard Segments

First, variable annuities using Standard Segments work much like an annuity that goes by many names, including a buffered annuity, a variable index annuity, or a registered index-linked annuity (RILA). These annuities credit interest through a 1-year point-to-point crediting design with a Segment Buffer, an effective cap rate, and an annual reset.

At the end of each year, on the anniversary date of the contract, the interest-crediting formula applies a cap to the index gain for that year (the price return for the index over the year). When the price return is positive, 100% of this gain is credited up to the cap. The cap can be changed and is redetermined in advance of each new term.

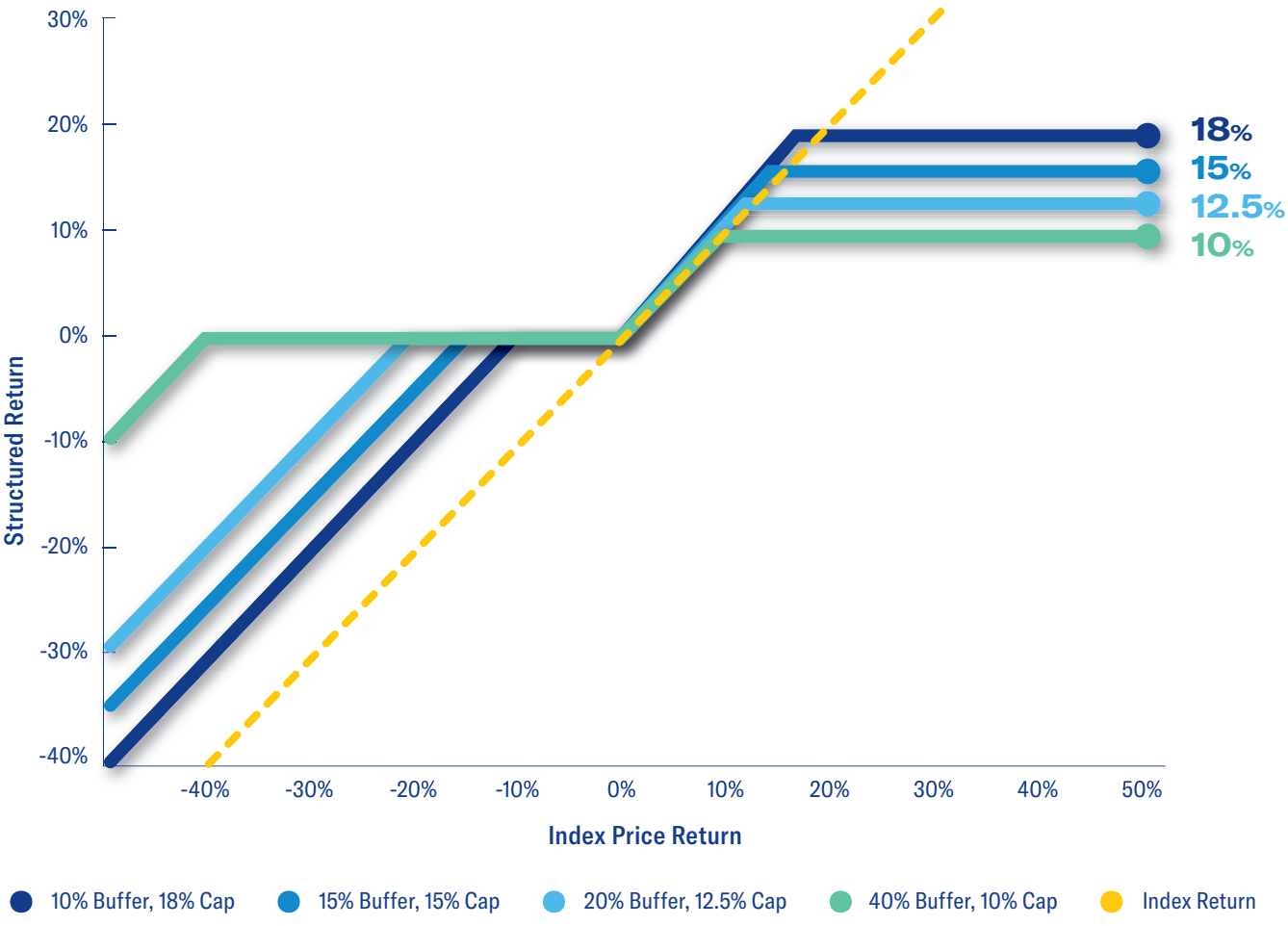
When the price return is negative, the Segment Buffer absorbs annual losses up to the buffer amount. For instance, consider if the price returns for the index were at -8% for the year. A 10% Segment Buffer absorbs this loss and any loss up to 10% and credits 0% for the year. The owner is only exposed to the portion of loss exceeding 10%. If the market index lost 23% in a year, a 10% Segment Buffer would credit a 13% loss for the year. For that same loss, a 20% Segment Buffer would credit a 3% loss, and a 40% Segment Buffer would credit 0%.

For Standard Segments, we consider four different Segment Buffers along with four effective cap rates. In exchange for accepting a greater risk of loss with a smaller Segment Buffer, the annuity offers more upside exposure through the provision of a higher cap. The four options are illustrated in Exhibit 3. The 10% Segment Buffer protects the first 10% of losses, leaving the owner exposed to any losses beyond this. In turn, it provides the most upside potential with an 18% cap on returns. Price returns above the cap cluster at the 18% cap percentage and returns between -10% and 0% cluster at 0%.

Next, a 15% Segment Buffer protects more loss in exchange for a lower cap of 15%, while the 20% Segment Buffer protects the first 20 percentage points of loss in exchange for a 12.5% cap on the growth. Finally, the 40% Segment Buffer leaves the owner exposed to an annual loss only when the market falls by more than 40%. In exchange for this significant downside protection, the owner will benefit from price returns up to a cap of 10% per year.

Exhibit 3 — Standard Segments

Relationship between underlying price returns and annuity returns

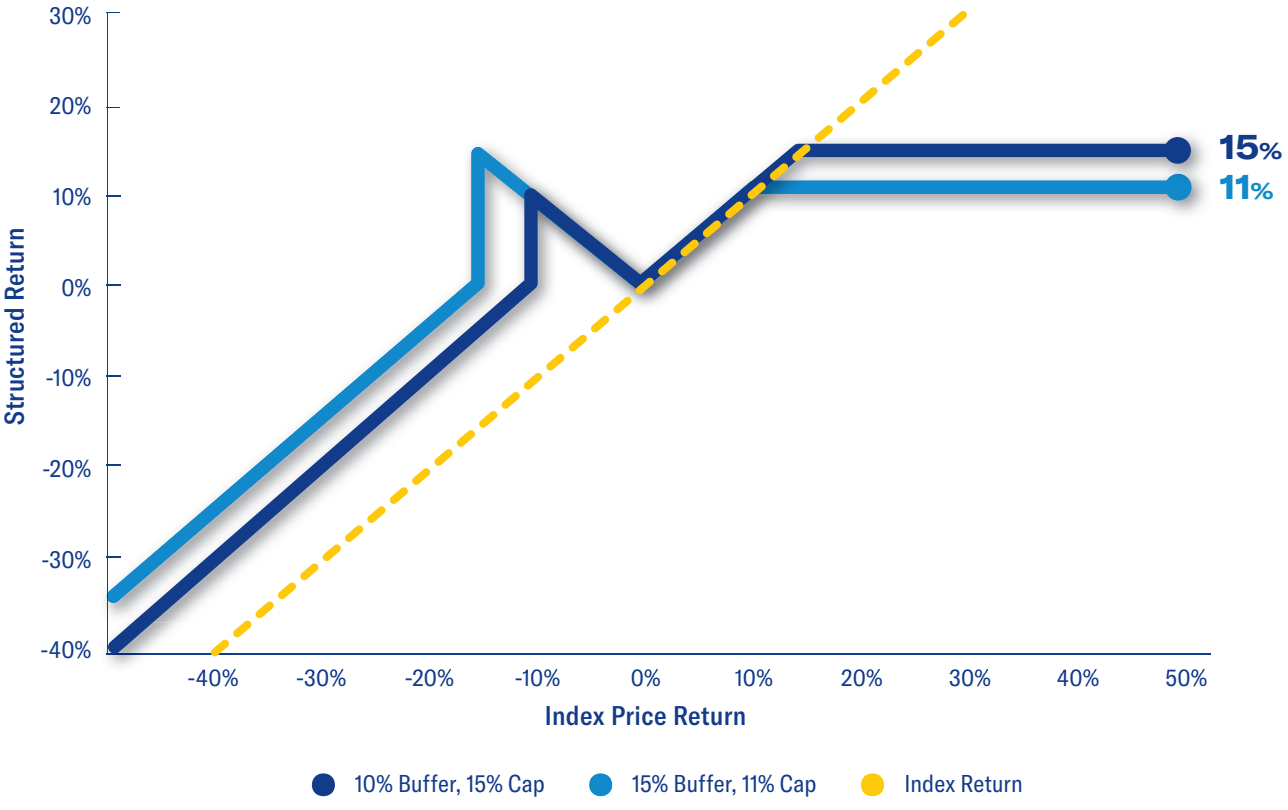


Variable annuity with Dual Direction Segments

The next structured offering we consider for a variable annuity is with Dual Direction Segments. These segments provide a similar experience for positive price returns, with 100% participation in market gains up to the cap, but they offer a different exposure to downside risk. The owner remains exposed to any losses beyond the Segment Buffer. But rather than being credited with 0% when a negative price return occurs at a value less extreme than the buffer, this segment provides a positive price return at the opposite value of the index loss. For instance, if the price return is -5%, then the annuity credits a 5% return, and if the price return is -9%, then the annuity offers a 9% price return. This annuity offers Segment Buffers of 10% and 15%. Since it provides gains for small market losses, less upside potential should be expected with positive market performance. In this case, the cap with a 10% Segment Buffer is 15% (instead of 18% with the Standard Segment), and the cap with a 15% Segment Buffer is 11% (instead of 15% with the Standard Segment). Exhibit 4 illustrates how the structured returns for these Dual Direction Segments are determined relative to the underlying index price return.

Exhibit 4 — Dual Direction Segments

Relationship between underlying price returns and annuity returns

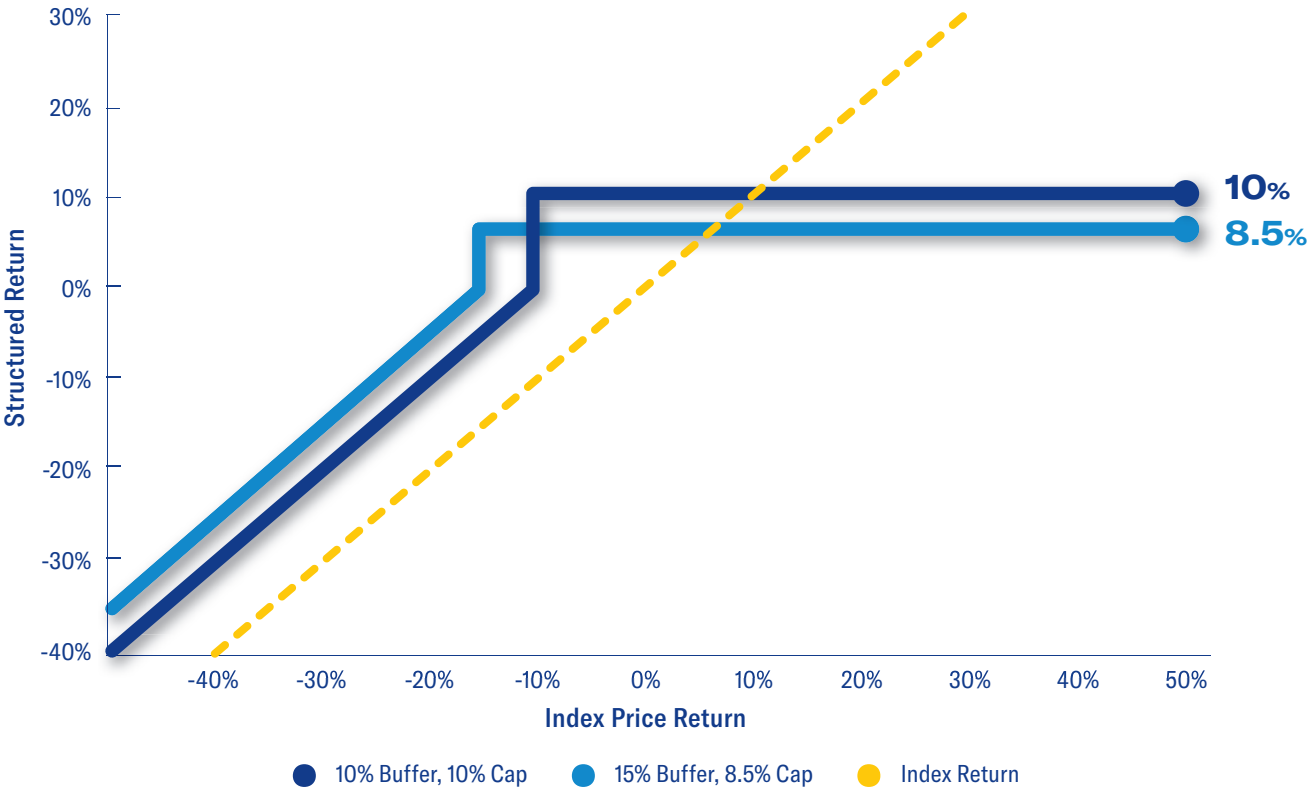


Variable annuity with Dual Step Up Segments

The third type of Segment Buffer we consider is for Dual Step Up Segments. This offering provides a fixed return whenever the price return exceeds the Segment Buffer. It is otherwise exposed to downside risk below the buffer in the same manner as the other options. With the 10% Segment Buffer, the annuity credits a 10% return whenever the index price return exceeds -10%, and with the 15% Segment Buffer, the annuity credits an 8.5% return whenever the index price return exceeds -15%. Exhibit 5 illustrates these options.

Exhibit 5 — Dual Step Up Segments

Relationship between underlying price returns and annuity returns



Investment performance metrics — Traditional investments and structured annuities

Though traditional investment performance metrics tend to assume a bell-curve shaped distribution for the underlying returns, it can still be instructive to compare structured annuities with traditional investment asset classes using metrics such as arithmetic mean, compounded return, standard deviation, the Sharpe ratio, upside capture, and downside capture. In this section, we make these comparisons using the analysis provided in Exhibit 6 as based on 100,000 Monte Carlo simulations. We compare stocks, bonds, and a 60/40 stock and bond allocation, with the eight different structured annuity segments as were just described.

> It is important to note that the stock and bond returns are gross returns. Advisory and investment fees have not been deducted, which gives them an advantage over annuities whose effective cap rates are net of internal costs. If annuities could be provided without cost, the cap rates we described would otherwise be larger.

Exhibit 6

Return statistics for investments and structured annuity segments, 1-year segment duration

	Segment Buffer	Effective Cap Rate	Arithmetic Mean	Compounded Return	Standard Deviation	Sharpe Ratio	Upside Capture	Downside Capture
Stocks	n/a	n/a	9.3%	8.0%	17.3%	0.54	100%	100%
Bonds	n/a	n/a	3.8%	3.7%	5.1%	0.75	21%	-41%
60/40 Portfolio	n/a	n/a	7.1%	6.6%	10.6%	0.67	68%	44%
Standard Segments	10%	18%	6.9%	6.5%	9.2%	0.75	64%	34%
	15%	15%	6.6%	6.4%	7.3%	0.90	58%	15%
	20%	12.5%	6.1%	5.9%	5.9%	1.03	51%	6%
	40%	10%	5.3%	5.2%	4.6%	1.15	43%	0%
Dual Direction Segments	10%	15%	7.0%	6.7%	7.8%	0.90	58%	3%
	15%	11%	7.0%	6.9%	5.4%	1.31	47%	-45%
Dual Step Up Segments	10%	10%	7.5%	7.3%	6.3%	1.19	56%	-22%
	15%	8.5%	7.4%	7.3%	4.1%	1.82	48%	-53%

First, the arithmetic means are calculated by adding up the annual returns from the Monte Carlo simulations and then dividing by the number of simulations. Stocks provide the highest arithmetic mean of 9.3%, while bonds offer the lowest arithmetic mean of 3.8%. These match the underlying parameters used to generate the Monte Carlo simulations. The annuity returns are derived from the price return component of the simulated stock returns. Despite having the lowest caps, the Dual Step Up Segments offer the next highest arithmetic means, 7.5% for the 10% Segment Buffer and 7.4% for the 15% Segment Buffer. In this case, the higher effective cap supported through the smaller buffer contributes to a slightly higher net return despite the additional downside risk exposure. Next, the 60/40 asset allocation to stocks and bonds supports a 7.1% arithmetic mean. This is followed by the Dual Direction Segments with the 15% buffer and the 10% buffer at 7%. The Standard Segments rank next. A smaller Segment Buffer with the higher cap also contributes to higher average returns, with the 10% buffer supporting 6.9%, ranging down to the 40% buffer supporting 5.3%.

While the **arithmetic mean** represents the average growth rate over a single year, it does not reflect the growth rate over a longer period. The average **compounded return** represents the growth rate over multiple years, and it is always less than the arithmetic mean for any volatile asset. Increased asset volatility causes the compounded return to fall more relative to the arithmetic return. For long-term investors, it is the compounded return that matters. To understand this volatility effect on compounded returns, realize that positive and negative returns do not create a symmetric impact on wealth. Negative returns must be followed by even larger positive returns to get back to the initial point. For instance, a 50% drop requires a 100% gain to get back to the starting point. For this reason, wealth will grow at a lower compounded rate than the arithmetic

average. Compounded returns take a larger haircut as the volatility of returns increases. With compounded returns, the ranking is mostly consistent. Stocks provide the largest compounded returns, followed by the Dual Step Up Segments, the Dual Direction Segments, the 60/40 portfolio, the Standard Segments, and then bonds.

Next, the **standard deviation** is a measure of volatility in terms of the degree of fluctuations experienced around the average outcome. For a distribution shaped as a bell curve, approximately two-thirds of the returns fall within the range of one standard deviation from the arithmetic mean. The remaining one-third of returns are more extreme in either direction. This characteristic may not apply for structured returns. For instance, with the Dual Step Up Segments, the majority of returns experienced will be equal to the fixed cap rate value. Nonetheless, volatility reduces the predictability for realized returns. When thinking of risk as volatility, we care most about the risk for losses. But if market returns are symmetric around an average, then using standard deviation will work just as well.

For the standard deviation, the least volatility is experienced by the Dual Step Up Segment with the 15% Segment Buffer. It provides a fixed return except when the index price return falls below -15%, which only happens about 8% of the time with these capital market assumptions. Next is the Standard Segment with the 40% Segment Buffer, followed by bonds. It is important to note that both the Dual Step Up Segment with 15% buffer and the Standard Segment with 40% buffer provide a higher arithmetic mean and a lower standard deviation than bonds. Continuing with the ranking of volatility from least to most is the Dual Direction Segment with 15% buffer, the Standard Segment with 20% buffer, the Dual Step Up Segment with 10% buffer, the Standard Segment with 15% buffer, the Dual Direction Segment with 10% buffer, and the Standard Segment with 10% buffer. The highest standard deviations are experienced with the 60/40 portfolio and with stocks.

The next metric is the **Sharpe ratio,** which provides a return-to-risk ratio. Usually a risk-free rate is introduced for the calculation, but that would not change the ranking of the strategies. We simply define the Sharpe ratio as the arithmetic mean divided by the standard deviation for each option. The larger this number, the higher the reward provided relative to its risk. By far, the Dual Step Up Segment with 15% buffer provides the highest Sharpe ratio of 1.82. Other options with a Sharpe ratio greater than 1 include the 15% Dual Direction Segment, the 10% Dual Step Up Segment, and the 40% and 20% Standard Segments. The Standard Segment with a 10% buffer provides a comparable Sharpe ratio as bonds, but otherwise all the structured annuities provide a higher reward ratio than any of the traditional investments. Stocks offer the lowest Sharpe ratio.

Next is the **upside capture** metric. This metric is calculated by first identifying all the simulations in which the total return for stocks was positive. For these simulations, the returns provided for each investment or annuity are summed and then divided by the sum of total returns for stocks. This identifies the percentage of stock gains that could be supported through each annuity or investment. Naturally, stocks provide an upside capture of 100%. All annuity options provide greater upside capture than bonds, which is the lowest at 21%. For the annuities, the Standard Segment with a 10% buffer provides the highest upside capture of 64%. It offers the largest effective cap rate, allowing it to experience the most upside capture from the price returns component of stock gains. Generally, the cap rates are correlated with the upside capture for these rankings, except the Dual Step Up Segment, which outperforms what is implied by its lower caps. The full cap return is provided to offer a higher return in cases where stocks produce lower returns than the cap rate.

Finally, **downside capture** is calculated by first identifying all the simulations in which the total return for stocks was negative. These are the remainder of the simulations. For these simulations, the returns provided for each investment or annuity are summed and then divided by the sum of total returns for stocks to identify the percentage of stock losses experienced through each annuity or investment. A smaller downside capture provides a better result in terms of less downside risk. The downside capture metric can be negative, which means that the asset or annuity provided a net gain in the years that the stock market experienced losses. The best downside capture performance is provided by the Dual Step Up Segment with a 15% buffer, with a value of -53%. This means that in years that the stock market declined, this annuity provided a positive performance with an average gain reflecting 53% of the market losses. This is possible because the 8.5% cap rate is provided whenever the price return component of stocks did not experience a loss beyond -15%, which is about 92% of the time. Also performing well for this metric with a negative capture ratio is the Dual Direction Segment with 15% buffer, bonds, and the Dual Step Up Segment with 10% buffer. The other annuities also all outperformed the 60/40 portfolio, which experienced 44% of the stock market loss when stocks declined.

The efficient frontier

While these investment metrics help to tell the story about the risk-return trade-offs for different investment and annuity options, how should the underlying allocation between investments and annuities be determined? It is an important question because the asset allocation decision among the available asset classes becomes the most important driver of overall returns and volatility.

In the 1950s, Harry Markowitz created Modern Portfolio Theory (MPT), which has served as the foundation for how wealth managers build investment portfolios for their clients. Harry Markowitz won the Nobel Prize in Economics in 1990 for this work. It provides a framework for choosing an asset allocation under a specific set of assumptions that wealth managers have traditionally accepted as being a reasonable starting point for households.

His fundamental insight was to show why investments should not be treated in isolation, but rather in terms of how they contribute to the risk and return of the overall portfolio. A very volatile individual investment might help to reduce overall portfolio volatility if its price movements tend to be in the opposite direction of the rest of the portfolio. This is diversification.

For the inputs to use this framework, a user decides on the universe of asset classes to consider and then decides on an average arithmetic return and standard deviation for each asset class, as well as the cross correlations for returns between each of the asset classes. While we have discussed arithmetic average returns and standard deviations, correlations have not yet come up. The correlation coefficient between two asset classes measures their degree of co-movements. It ranges from -1 (move precisely in opposite directions) to one (move precisely in the same direction). If the correlation coefficient is zero, the two asset classes move independently from one another. The lower the correlation coefficient, the greater the reduction in the portfolio volatility when the two asset classes are combined. With low correlations, the volatility of the portfolio can be less than the volatility of any of its component asset classes. Though all the cross correlations are included in the analysis, in Exhibit 7 we show the correlations between stocks, bonds, and the different annuity segment options for the simulated returns. Bonds were assumed to not be correlated with stocks, as borne out by the extremely small value (-0.01) from the simulated returns used to make the exhibit. The annuity returns are all based on the stock index, though the precise correlations with stocks vary based on the structured trade-offs between downside and upside provided through each annuity segment. These correlations range from 0.93 for the Standard Segment with 10% buffer to 0.48 for the Dual Step Up Segment with 15% buffer.

Exhibit 7

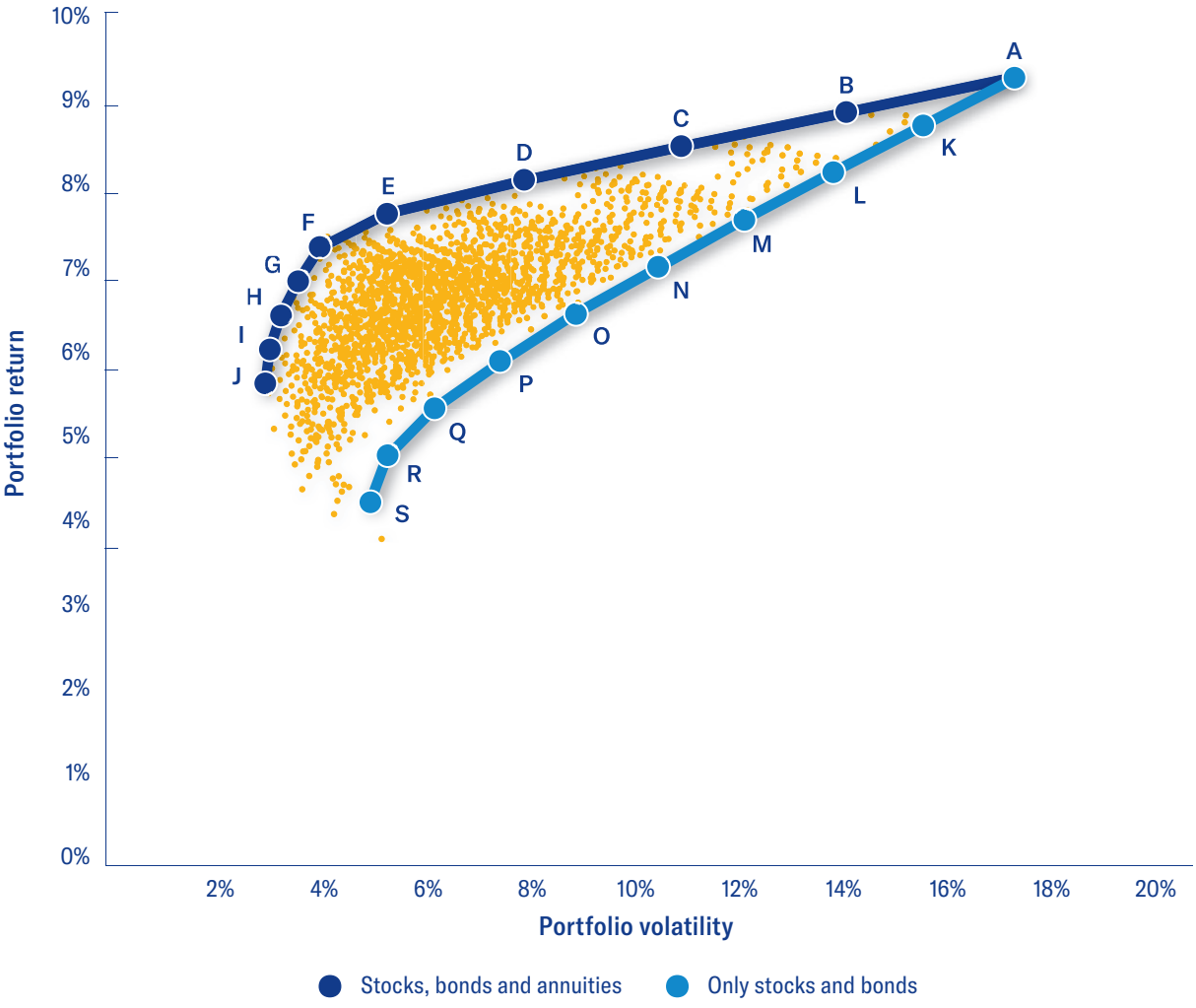
Select simulated inputs for calculating modern portfolio theory's efficient frontier

	Segment Buffer	Effective Cap Rate	Arithmetic Mean	Standard Deviation	Correlation with Stocks
Stocks	n/a	n/a	9.3%	17.3%	1.00
Bonds	n/a	n/a	3.8%	5.1%	-0.01
Standard Segments	10%	18%	6.9%	9.2%	0.93
	15%	15%	6.6%	7.3%	0.90
	20%	12.5%	6.1%	5.9%	0.88
	40%	10%	5.3%	4.6%	0.84
Dual Direction Segments	10%	15%	7.0%	7.8%	0.85
	15%	11%	7.0%	5.4%	0.62
Dual Step Up Segments	10%	10%	7.5%	6.3%	0.60
	15%	8.5%	7.4%	4.1%	0.48

As a next step, Exhibit 8 plots the portfolio returns and volatilities for different combinations of stocks, bonds, and the eight annuity segment types as based on their simulated return, standard deviation, and correlation characteristics. Mean-variance optimizer software uses these inputs to find the efficient frontier of allocations that provide the most return for a given volatility or the least volatility for a given return. The exhibit shows the portfolio arithmetic average return on the vertical axis and the portfolio standard deviation on the horizontal axis. Investors would like to move toward portfolios in the upper left-hand corner, all else being the same, as that direction represents portfolios with higher returns and less volatility. The dots reflect the different combinations for these investments and annuities. The blue curve that envelops them on the upper-left side is the efficient frontier. It is the asset class combinations offering the highest returns for a given volatility, or the least volatility for a given return. Households should consider asset allocation combinations from the many combinations reflecting different risk-return characteristics on the efficient frontier. The cyan-colored curve is the constrained efficient frontier if only stocks and bonds can be used. It is in an inferior position relative to the yellow points, which indicates that the introduction of any annuity into the mix would help to improve outcomes relative to only using stocks and bonds.

Exhibit 8

Modern portfolio theory's efficient frontier



Efficient frontier diagrams do not show the underlying asset allocations of portfolios on the efficient frontier, but this information is also available. Exhibit 9 provides an example of 10 portfolios on the efficient frontier shown in the previous exhibit. These range from the highest return and volatility combinations to the lowest return and volatility combinations. For example, the first portfolio is listed with a 9.3% return and 17.3% volatility. These are the characteristics for allocating 100% of assets to stocks. Then, as we move down the list, we find portfolios with decreasing returns and volatilities that contain decreasing allocations to stocks and a shift toward bonds and other annuities. The two annuity segments that appear in allocations on the frontier are the options with the lowest standard deviations: the Standard Segment with a 40% buffer and the Dual Step Up Segment with the 15% buffer. The last portfolio listed has a return of 5.7% and a standard deviation of 2.9%. This allocation consists of 32% to bonds, 28% to the Standard Segment with 40% buffer, and 40% to the Dual Step Up Segment with 15% buffer.

Exhibit 9

A selection of outcomes from the efficient frontier

Data label	Portfolio return	Portfolio standard deviation	Stocks	Bonds	Standard Segment (40% Buffer)	Dual Step Up Segment (15% Buffer)
A	9.3%	17.3%	100%	0%	0%	0%
B	8.9%	14.1%	79%	0%	0%	21%
C	8.5%	11.0%	58%	0%	0%	42%
D	8.1%	8.0%	37%	0%	0%	63%
E	7.7%	5.3%	16%	0%	0%	84%
F	7.3%	3.9%	0%	0%	4%	95%
G	6.9%	3.5%	0%	8%	10%	82%
H	6.5%	3.2%	0%	16%	16%	68%
I	6.1%	2.9%	0%	24%	22%	54%
J	5.7%	2.9%	0%	32%	28%	40%

As noted, if we constrain the analysis to use only stocks and bonds, we generate inferior outcomes. Exhibit 10 provides a sampling of 10 portfolios from the constrained efficient frontier that only allows for stocks and bonds to be included. As an example of the differences, one portfolio from the previous exhibit provided a 6.5% return with a 3.2% standard deviation. When the portfolio is constrained to stocks and bonds, a 6.5% return is only possible when accepting greater risk with an 8.9% standard deviation. There are four other portfolios in Exhibit 10 that provide a combined lower return and higher standard deviation as well. Including the annuities with structured returns supports the possibility for obtaining better risk and return trade-offs for household savers, which provides strong evidence in favor of including annuities with structured returns as part of household portfolios.

Exhibit 10

A selection of outcomes from the constrained efficient frontier without annuities

Data label	Portfolio return	Portfolio standard deviation	Asset weights	
			Stocks	Bonds
A	9.3%	17.3%	100%	0%
K	8.7%	15.6%	90%	10%
L	8.2%	13.8%	80%	20%
M	7.6%	12.1%	69%	31%
N	7.1%	10.5%	59%	41%
O	6.5%	8.9%	49%	51%
P	5.9%	7.4%	39%	61%
Q	5.4%	6.1%	29%	71%
R	4.8%	5.2%	18%	82%
S	4.3%	4.9%	8%	92%

Conclusions

Traditional stock and bond investments offer a distribution of future investment outcomes that follow a bell curve and may not provide the best potential trade-offs between risk and return. Financial products that use options to create structured returns offer the potential to produce a more attractive range of investment returns and can be treated as asset classes available for the asset allocation decision. This paper reviews the simulated returns from a variable annuity with eight different segments of structured returns to provide greater insight into the upside and downside trade-offs of various strategies.

The inclusion of a structured annuity impacts the range of wealth outcomes both on the downside and upside. These annuities also offer tax deferral, unlike investment assets held in taxable accounts that face ongoing taxes on their growth. With the ability to better manage downside risk, these annuities also offer behavioral benefits to help owners stay the course with their investing strategies. A structured approach to returns provides a tool to secure assets in retirement by managing market volatility in the pivotal years leading to retirement. This can better set the stage for retirement and for creating more lifetime retirement income from a given asset base.

Even though the returns from structured annuities are linked to a stock market index, their performance should not be compared to stock returns. Even the Standard Segment with 10% buffer, which experienced the highest standard deviation of any annuity segments, exhibits return and risk characteristics comparable to a 60/40 portfolio of stocks and bonds, while other annuities experience less risk. Structured annuities can be viewed as an alternative to investing in other fixed income assets (bonds) but with higher potential returns, better Sharpe ratios, and greater upside capture.

Finally, it is important to note that the improved risk and return characteristics supported through structured annuities can justify households to use a higher stock allocation to create more upside potential than they would otherwise prefer in the absence of downside protection. But this is not strictly necessary since the broadening of options allows households to obtain greater potential returns with less overall risk.

July 2023

Important information

This piece is not intended to predict or guarantee any particular outcome or client experience, does not provide a complete description of annuities, and should not be considered annuity or financial advice. Investing involves risk, including loss of principal invested. Individual investor results and tax ramifications will vary. Historical economic and performance data is not indicative of future results.

S&P 500 Price Return Index — Includes 500 leading companies in leading industries of the U.S. economy, capturing approximately 80% coverage of U.S. equities. The S&P 500 Price Return Index does not include dividends declared by any of the companies included in this index. Larger, more established companies may not be able to attain potentially higher growth rates of smaller companies, especially during extended periods of economic expansion. S&P®, Standard & Poor's®, S&P 500® and Standard & Poor's 500® are trademarks of Standard & Poor's Financial Services LLC (Standard & Poor's) and have been licensed for use by the issuing life insurance company. The product is not sponsored, endorsed, sold or promoted by Standard & Poor's, and Standard & Poor's does not make any representation regarding the advisability of investing in the product.

Standard Segment — The Segment Rate of Return is equal to the index performance rate subject to the Performance Cap Rate and Segment Buffer.

Dual Direction Segment — The Segment Rate of Return is equal to the absolute value of the index performance rate for that Segment if the index performance rate is between the Performance Cap Rate and the Segment Buffer, inclusive of both.

Dual Step Up Segment — For Dual Step Up Segments, the Segment Rate of Return is equal to the Performance Cap Rate if the index performance rate for that Segment is greater than or equal to the Segment Buffer, or the Index Performance Rate, subject to the Segment Buffer if the Index Performance Rate is less than the Segment Buffer.

A variable annuity is a long-term financial product designed for retirement purposes. Variable annuities are subject to market risk, including the possible loss of principal invested, and they have mortality and expense charges, account fees, investment management fees, administrative fees, charges for special contract features, and restrictions and limitations. Earnings are taxable as ordinary income when distributed and may be subject to a 10% additional tax if withdrawn before age 59½.

Clients are protected from some downside risk; if the negative return is in excess of the protection level, there is a risk of substantial loss of principal because the client agrees to absorb all losses to the extent they exceed the protection provided.

If clients are purchasing an annuity contract to fund an IRA or employer-sponsored retirement plan, they should understand that such annuities do not provide tax deferral benefits beyond those already provided by the Internal Revenue Code.

Clients should carefully consider their investment objectives and the charges, risks and expenses, as stipulated in the prospectus, before investing. For a prospectus containing this and other information, a financial professional can call the Sales Desk at (888) 517-9900. Please have clients read it carefully before investing or sending money.

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