JACKSON®

Offsetting uncertainty with a guarantee

How the protection options in a registered index-linked annuity (RILA) may eliminate losses in a down market even as the credit caps allow you to capture market gains.

Summary

Sequence of returns risk is an important consideration in managing retirement portfolios around the time of retirement. There is a range of options for offsetting the risk of decline in the stock market, including:

- **Diversifying the equity holdings across markets**
- **Increasing the allocation to dividend stocks to provide an income stream that doesn't require selling**
- **Insuring against the risk by purchasing a guarantee**

In this report, we discuss one way you might insure against the risk—by allocating funds to a simulated registered index-linked annuity (RILA) to obtain downside protection through either a floor or buffer feature.* Our analysis used historical market data on the S&P 500® index and compares the performance of an investment tied to the index and subject to full market growth or decline with the performance of an investment in a simulated RILA, which has a cap on growth and a limit on losses. In general, we did find specific scenarios where allocating funds to a RILA may help achieve an investment goal.

WHAT IS A REGISTERED INDEX-LINKED ANNUITY (RILA)?

A RILA is a long-term, tax-deferred vehicle designed for retirement. It is an insurance contract that is subject to investment risk, its value will fluctuate, and loss of principal is possible. Earnings are taxable as ordinary income when distributed. Individuals may be subject to a 10% additional tax for withdrawals before age 59½ unless an exception to the tax is met.

* A buffer refers to the amount of loss the insurance company absorbs if the index decreases in value. Losses over the buffer reduce the contract value. A floor refers to the maximum contract holder loss; any loss beyond the floor is absorbed by the insurance company.

First, the fundamentals

Key terms

Bear market
A market condition where investors are more risk-averse than risk-seeking, defined by some as when prices have fallen more than 20% from previous highs.

Bull market
A market period in which financial market prices are climbing or are anticipated to go up. The common threshold that marks a bull market is a 20% rise in stock prices.

Buffer
One of the two protection options offered in an index adjustment factor. A buffer is the amount of negative index price change before a negative index adjustment is credited to the index account option value at the end of an index account option term, expressed as a percentage. A buffer protects from loss up to a stated amount. You only incur a loss if the index declines more than the stated buffer percentage during the index account option term (though it is possible to incur a loss in excess of the stated buffer percentage if you make a withdrawal prior to the end of the index account option term).

Floor
One of the two protection options offered and an index adjustment factor. A floor is the maximum negative index adjustment that will be credited to the index account option value at the end of the index account option term, expressed as a percentage. A floor protects from loss after a stated threshold. If the index declines during the index account option term you incur a loss up to the stated floor percentage, and are protected from any further loss beyond the floor during that index account option term.

Cap crediting method
When you elect a cap crediting method as part of an index account option, if the performance of the index you elect is positive at the end of your index account option term, your index account option value will be credited with a positive index adjustment equal to the index return multiplied by the index participation rate, limited by the cap rate. The maximum amount of index adjustment that will be credited to your index account option value when your index return is positive as of the index account option term anniversary will be limited by the elected cap.

Index account option term
The selected duration of an index account option.

Standard deviation
In statistics, the standard deviation is a measure of how dispersed the data is in relation to the mean (average). Low, or small, standard deviation indicates data are clustered tightly around the mean, and high, or large, standard deviation indicates data are more spread out.

Sharpe ratio
A mathematical indication that excess returns over time may be the result of volatility and risk rather than investing skill.

Jackson calculated the information used to substantiate the claims in this report using data from several sources. These include the S&P 500 Total Return Index, the S&P 500 Price Return Index, the monthly average of the Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity (quoted daily on an investment basis), the monthly average of the 30-Year Fixed Rate Mortgage Average in the United States (percent, weekly, not seasonally adjusted), and Moody's Seasoned Aaa Corporate Bond Yield (percent, monthly, not seasonally adjusted).
The analysis covers the period from January 3, 1972, to December 24, 2024. For the period from January 3, 1972, through December 23, 1987, month-end values for the S&P 500 Total Return Index were applied to all trading days within that month. The S&P 500 Total Return Index reflects the sum of the closing prices of stocks in the index, along with any dividends or other distributions to stockholders from stocks within the index on that date. The S&P 500 Price Index reflects only the sum of the closing prices of stocks in the index on that date. The S&P 500 Total Return Index was used to calculate the return of funds invested in the index, such as through a mutual fund or exchange-traded fund. Meanwhile, the S&P 500 Price Index was used to calculate the return of funds invested in an S&P 500 index option within a registered-index-linked annuity. That return would then be adjusted to reflect the impact of either the cap rate or a protection option (e.g., a floor or buffer), if applicable. Taxes and investment fees were not taken into account in this analysis.
Past performance is no indication of future results.

What is sequence of returns risk?

This risk is narrowly defined as having the need to withdraw money from your retirement portfolio during a down market, in the first five years of retirement. More broadly, it also entails foregone gains during the last years before retirement when the absolute value of increases is the greatest due to it being the highest balance in the life of the portfolio and not having time to recover from losses before retirement.

How effective can a RILA be in addressing sequence of returns risk?

In this paper, we report on the results of an analysis where we compare the performance of an investment tied to the S&P 500 to an investment in a simulated[1] registered index-linked annuity (RILA) with a protection option and cap crediting method linked to the S&P 500 price return.

We studied four S&P 500 bear markets[2] that lasted from 17 to 31 months and occurred between 1973 and 2009.

For comparison, we also analyzed a bull market (2011–17), and the period 2018–2024 that includes a mix of up and down markets.

In our analysis, we compared two types of investments:

1. **An investment in the market** measured by the S&P 500 Total Return (TR) Index. This index includes:
   - changes in the price of the underlying securities
   - the impact of stock buy-backs
   - stock splits.[3]
2. **An investment in a simulated RILA** with an S&P 500 index option. For this, we used the S&P 500 Price Return (PR) Index, which only includes changes in the prices of the underlying securities. For the simulated RILA, we considered:
   - index option terms of one-, three- and six-years
   - cap crediting method
   - each of the following protection options: a 10% floor (one-year term only), a 10% buffer, a 20% buffer, and a 100% buffer.

[1] The simulated RILA used an S&P 500 index option with a cap crediting method in all cases. Buffer and floor protection option types (10% floor, 10% buffer, 20% buffer, 100% buffer protection levels) and index term option lengths of 1, 3, and 6 years were all evaluated.

[2] Wayne Duggan, Forbes, "A History Of U.S. Bear Markets, 1957 to 2022," August 21, 2023.

[3] The values we obtained for the S&P 500 Total Return index for January 1972 through December 1987 are monthly. In order to create daily values, we considered two approaches: apply the monthly values to all trading days in that month or apply a dividend yield to the daily closing price of the index. We modeled both approaches and compared results. Across the comparative metrics, the differences in values were small: -1.3% for the oil shock period of 1973-74 and 1.0% for the double-dip period. Thus, we used the Total Return values to be consistent across all market periods analyzed.

The hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested.

For each bear market analyzed, the analysis periods are defined as six-year periods beginning the year before the bear markets occurred. For each year in the analysis period, we calculated performance for each of the first 248 trading days of that year.[4] Because RILA products often offer one-, three- and six-year investment option terms, we calculated returns across these three periods. We then reviewed outcomes on the trading day at the end of the six-year period that was equivalent to the trading day on which the investment was made.

For the bull market, we analyzed the six-year period from 2011 to 2017, which corresponds to the recovery following the financial crisis. For the mixed market, we analyzed the six-year period from 2018 to 2024.

A summary of the analytical approach

Performance in the dot-com bubble bear market period

The analysis period was January 1999 through December 2005, and the associated bear market began in March 2000 and ended in October 2002.

For each of the first 248 trading days in 1999, which included days from January 4 to December 27 of 1999, we assumed investments of $100,000 tied to both the S&P 500 TR (to represent money in the market)[5] and the S&P 500 PR (to represent money in the simulated RILA).

For investments in a one-year term, we calculated the year-over-year difference for each trading day for each of the six ending periods in the analysis. For investments in a three-year term, we calculated the difference across a three-year span for each trading day for each of the two ending periods in the analysis. For investments in a six-year term, we calculated the six-year difference for each trading day for the single ending period in the analysis. Cash returns are compounded daily and credited annually.

Performance in the dot-com bubble bear market analytical period

The derived cap rate for the 100% buffer protection option is 6.37%, and the derived fixed return rate is 3.80%. The allocation of money in the RILA is 10% at the fixed rate and 90% in the index account option. Please note the analysis also includes 10% floor, 10% buffer and 20% buffer protection options for this period. The applicable fixed return rate is the same for all protection options (3.80%) while the applicable cap rates are as follows: 10% floor is 19.25%; 10% buffer is 23.69%; and 20% buffer is 17.28%.

[4] We used the first 248 trading days because that is the minimum number of days the NYSE was open during the years 1972-2024. In doing so, we forego the need for additional model complexity to align differing numbers of trading days each year. The sample of 248 represents between 98% and 100% of all trading days in a year. For both the Total Return and the Price Return, for each year we calculated an average index value for days 244-248 and compared that to the average index value for days 249 through the last trading day of that year (the average is 252 and the maximum is 254). For the Price Return, the difference in the two values is -0.75% and for the Total Return, the difference in the two values is -0.77%—meaning the zero to six days we didn't use were a bit lower in value on average than the last five days we did use. For each return, we calculated the change in value for an equivalent trading day in a subsequent year—which is not necessarily the same date. For example, April 29, 1999, was the 81st trading day of that year. The 81st trading day of 2000 fell on April 27, so that is the comparative trading day and date for that investment.

[5] Jackson calculated the information used to substantiate the claims in this report using data from several sources. These include the S&P 500 Total Return Index, the S&P 500 Price Return Index, the monthly average of the Market Yield on U.S. Treasury Securities at 10-Year Constant Maturity (quoted daily on an investment basis), the monthly average of the 30-Year Fixed Rate Mortgage Average in the United States (percent, weekly, not seasonally adjusted), and Moody's Seasoned AAA Corporate Bond Yield (percent, monthly, not seasonally adjusted). The analysis covers the period from January 3, 1972, to December 24, 2024. For the period from January 3, 1972, through December 23, 1987, month-end values for the S&P 500 Total Return Index were applied to all trading days within that month. The S&P 500 Total Return Index reflects the sum of the closing prices of stocks in the index, along with any dividends or other distributions to stockholders from stocks within the index on that date. The S&P 500 Price Index reflects only the sum of the closing prices of stocks in the index on that date. The S&P 500 Total Return Index was used to calculate the return of funds invested in the index, such as through a mutual fund or exchange-traded fund. Meanwhile, the S&P 500 Price Index was used to calculate the return of funds invested in an S&P 500 index option within a registered-index-linked annuity. That return would then be adjusted to reflect the impact of either the cap rate or a protection option (e.g., a floor or buffer), if applicable. **Taxes and investment fees were not taken into account in this analysis. Past performance is not indicative of future performance.**

We evaluated the performance of the investments across several metrics:

- Loss protection provided (0% for money in the market and up to 100% for money in the RILA)
- Improvement upon market performance—the percentage of trading days when the value in a RILA was higher than the value in the market **at the end of the one-, three- or six-year periods**
- Six-year increase in the value of each investment
- For one-year terms, the standard deviation of returns across the six ending periods
- For one-year terms, the mean Sharpe Ratio for returns across the six ending periods

Simulated investment in the market and simulated investment in available RILA protection options is modeled separately for one-, three- and six-year terms.

An example of the structure of a REGISTERED INDEX-LINKED ANNUITY

Please note: The terms and features of RILA products in the market may differ from what is described below.

The Contract

Funds are deposited
Contract start date

6 YEARS
(independent of term length)

Funds may be withdrawn but may be subject to an interim value adjustment

Funds are deposited in the contract and are subject to contract-level terms. They are then allocated to one or more index account options.

The Index Account Options

Each index account option may consist of a unique combination of these five parameters or others. Some strategies may involve varying only one parameter, such as index or term length, while leaving all other parameters the same.

EXAMPLES OF PARAMETERS

INDEXES:	CREDITING METHODS:	PROTECTION OPTION TYPES:	PROTECTION OPTION LEVELS:	TERM LENGTHS: *(Independent of contract term)*
• S&P 500	• Cap	• Buffer	• 10%	• One year
• Russell 2000	• Performance trigger	• Floor	• 20%	• Three years
• MSCI EAFE			• 100%	• Six years
• Nasdaq-100				
• Etc.				

Performance trigger
A stated rate of return, which may be greater than or less than the actual return of the index, that will be credited to your contract as long as the index return is not negative over the selected term.

Why sequence of returns matters

For retirement investors who are in the crucial decade spanning the five years before and the five years after retirement begins, sequence of returns risk may become a significant factor in their portfolio risk management plans. Accumulation during the last working years is likely to be the most substantial as returns are applied to the largest portfolio values—and downturns can have a correspondingly negative impact without time left before retirement to recover value.

Withdrawals during a down market in the first years of retirement can have an outsized impact on whether the portfolio is depleted while investors are still alive.

What we found

Based on anticipated market type and term length preference

BEAR MARKET

- If a bear market is anticipated and a one-year investment term is preferred, a 20% buffer may be the best option for the combination of downside protection and upside performance. The combination of the applicable cap rate and the 20% downside protection results in the highest ending values for one-year terms in three of the four bear markets studied. (The "ending value" is the value of the investment at the end of the six-year period and is equivalent to the contract value if the money were invested in an annuity.)
- If a bear market is anticipated and either a three- or six-year investment term is preferred, a 100% buffer may be the best option for the combination of downside protection and upside performance. Here, the combination of applicable cap rate and the 100% downside protection results in the highest ending values for three- and six-year terms in three of the four bear markets studied.

BULL MARKET

- If a bull or mixed market is anticipated, for the one-, three-, and six-year investment term, a 10% buffer may be the best option for the combination of downside protection and upside performance. In other words, the combination of applicable cap rate and 10% downside protection achieves the highest ending values for one-, three-, and six-year terms in both bull and mixed markets studied.

BEAR OR BULL MARKET

- If it isn't clear whether a bear or bull market will occur, the 100% buffer may be the best option since it exhibits the smallest variance in ending values at the six-year mark across bear, bull, and mixed markets while providing downside protection.

Based on investment goals

- If the investment goal is purely principal protection, a 100% buffer may be an option to consider because all declines in the underlying index are fully absorbed by the insurance carrier.[6]
- If the investment goal is purely volatility protection, a 100% buffer may be an option to consider because it exhibits the lowest standard deviation values.
- If the investment goal is a mix of principal protection and growth, a 10% or 20% buffer protection option with one-year terms exhibited the highest average six-year ending values—and the highest average Sharpe Ratios.

[6] A 100% buffer—functionally equivalent to a 0% Floor—means that all declines in the underlying index that result in a loss of value are absorbed by the insurance company.

General findings

In general, 1-year terms perform better in bear markets while 6-year terms perform better in the bull and mixed markets. Based on our analysis, we believe these performance differences are due to bear markets tending to have a shorter duration than bull or mixed markets. Please note that protection options, other than those noted above, may offer higher ending values at the conclusion of the six-year period. In one case, the bear market associated with the Global Financial Crisis, the 10% floor protection option yielded the highest ending value likely due to the particular timing and magnitude of changes in the market during that period paired with the applicable cap rate and downside protection. Generally other protection options performed better in bear markets.

Term-specific findings

1 ONE-YEAR INVESTMENT TERM

With a 100% buffer, a result was that 100% of the losses associated with declines in the underlying index, the S&P 500 price index, were eliminated across the six market periods studied

- In three of the bear markets (oil shock, dot-com bubble, and the Global Financial Crisis), an investment in any version of the RILA achieved a higher average return than an investment directly in the market—i.e., the average ending investment value being higher
- The standard deviation for an investment in any version of the RILA was lower in each of the bear markets and in the mixed market analysis period, by an average of 54% across those periods—a significant reduction in volatility
- In one of the bear markets (the Global Financial Crisis), an investment in any version of the RILA achieved a modestly higher Sharpe Ratio (from 0.04 to 0.19) than an investment tied directly to the market

For the other protection options analyzed (10% floor, 10% buffer, and 20% buffer), we saw some loss protection benefits and improvement on market performance as well.

- Because of the nature of the 10% floor, there will always be losses incurred (a floor means the contract owner covers the first part of any loss); however, in the four bear markets, losses were capped for a minimum of 164 and a maximum of 206 of the 248 trading days.
- For the 10% buffer, losses will always be reduced and may sometimes be eliminated (a buffer means the insurance company covers the first part of any loss). In this case, losses across all six of the markets were eliminated at a minimum of 42 and a maximum of 134 of the 248 trading days.
- For the 20% buffer, losses were always reduced, and were eliminated at a minimum of 114 and a maximum of 246 of the 248 trading days.
- These three protection options also resulted in improving on market performance in three of the bear markets (oil shock, dot-com bubble, and the Global Financial Crisis) in a minimum of 146 and a maximum of all of the 248 trading days. There was no improvement on market performance in the other three periods analyzed.

3 THREE-YEAR INVESTMENT TERM

- With a 100% buffer, 100% of the losses associated with declines in the underlying index, the S&P 500 price index, were eliminated in three of the bear markets (oil shock, dot-com bubble, and the Global Financial Crisis) and in the bull market period. In the other bear markets and the mixed market period, no losses occurred on any of the trading days at the end of either of the three-year terms
- In two of the bear markets (dot-com bubble and the Global Financial Crisis), investment in a RILA with a 100% buffer protection option achieved a higher return than an investment directly in the market across all of the 248 trading days—i.e., the ending investment value at each of the three-year ending periods was higher. In one of the bear markets (oil shock), the RILA with a 100% buffer protection option improved on market performance on 179 of the 248 trading days

For the other protection options analyzed (10% buffer, and 20% buffer), we saw some loss protection benefits and improvement on market performance as well.

- For the 10% buffer, losses will always be reduced and may sometimes be eliminated (a buffer means the insurance company covers the first part of any loss). In this case, losses were only eliminated on 4 of the 248 trading days in one of the markets (dot-com bubble).
- For the 20% buffer, losses were eliminated in four of the markets (oil shock, dot-com bubble, the Global Financial Crisis and the Global Financial Crisis Recovery) by a minimum of 10 and a maximum of 97 of the 248 trading days. For the double-dip bear market and the pandemic era mixed market, there were no losses at the three-year mark, so the 20% buffer would not have had any benefit.
- These two protection options also resulted in improving on market performance in two of the bear markets (dot-com bubble and the Global Financial Crisis) in a minimum of 99 and a maximum of 238 of the 248 trading days. There was no improvement on market performance in the other four periods analyzed.

6 SIX-YEAR INVESTMENT TERM

- With a 100% buffer, all of the losses in the S&P 500 price index at the end of the six-year term, were eliminated in two of the bear markets (oil shock and dot-com bubble) and in the bull market period. In the other bear markets and the mixed market period, no losses occurred on any of the trading days at the end of either of the six-year terms. There were no losses at the six-year mark, so the 100% buffer would not have offered any benefit.
- In one of the bear markets (dot-com bubble), investment in a RILA with a 100% buffer achieved a higher return than investment directly in the market a minimum of 129 and a maximum of 193 of the 248 trading days—i.e., the ending investment value at the six-year mark was higher.

For the other protection options analyzed (10% buffer, and 20% buffer), we saw some loss protection benefits and improvement on market performance as well.

- For the 10% buffer, losses will always be reduced and may sometimes be eliminated (a buffer means the insurance company covers the first part of any loss). In this case, losses were only eliminated in a minimum of 57 and a maximum of 99 of the 248 trading days in two of the markets (oil shock and dot-com bubble).
- For the 20% buffer, losses were eliminated in two of the markets (oil shock and dot-com bubble) in all of the 248 trading days. For the double-dip and the Global Financial Crisis bear markets, the Global Financial Crisis bull market, and the pandemic era mixed market, there were no losses at the six-year mark, so the 20% buffer would not have had any benefit.
- These two protection options also resulted in improving on market performance in two of the markets (dot-com bubble bear market and the pandemic era mixed market) in a minimum of 2 and a maximum of 129 of the 248 trading days. There was no improvement on market performance in the other four periods analyzed.

Appendix A

Summary performance graphs and charts

The hypothetical examples that follow are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested.

Hypothetical Performance Comparison: All Protection Options, All Terms, All Market Periods Analyzed

Ending values resulting from an initial investment of $100,000. All values reflect six years of performance.
For 1-year terms, the balance is reinvested six times; for 3-year terms, it is reinvested twice.

Period	$ in Market	RILA Mean	10% Floor	10% Buffer	20% Buffer	100% Buffer
1-Year Term Mean Ending Value						
Oil Shock of 1973-74	$111,747	↑ $127,589	$118,177	$126,392	$137,195	$128,592
Double-Dip	↑ $246,839	$198,919	$195,832	$213,212	$213,768	$172,863
Dot Com Bubble	$99,887	↑ $128,772	$119,808	$125,198	$141,275	$128,807
Global Financial Crisis	$119,833	↑ $129,330	$133,675	$125,675	$132,873	$125,098
Global FC Recovery	↑ $220,211	$147,301	$133,675	$173,520	$156,911	$125,098
Post-Pandemic Period	↑ $218,615	$151,062	$149,964	$171,196	$158,179	$124,907
Average	*$169,522*	---	*$141,855*	*$155,866*	*$156,700*	*$134,228*
3-Year Term Mean Ending Value						
Oil Shock of 1973-74	↑ $111,747	$108,033		$99,379	$108,878	$115,842
Double-Dip	↑ $246,839	$158,891		$181,322	$144,584	$150,769
Dot Com Bubble	$99,887	↑ $110,370		$103,275	$107,708	$120,128
Global Financial Crisis	$119,833	↑ $121,460		$120,196	$115,964	$128,219
Global FC Recovery	↑ $220,211	$169,816		$193,677	$157,919	$157,854
Post-Pandemic Period	↑ $218,615	$170,633		$197,383	$157,591	$156,924
Average	*$169,522*	---		*$149,205*	*$132,107*	*$138,289*
6-Year Term Mean Ending Value						
Oil Shock of 1973-74	↑ $111,747	$93,420		$96,872	$80,000	$103,387
Double-Dip	↑ $246,839	$159,487		$181,283	$133,213	$163,964
Dot Com Bubble	$99,887	↑ $100,580		$99,177	$100,000	$102,563
Global Financial Crisis	↑ $119,833	$105,943		$105,467	$105,467	$106,895
Global FC Recovery	↑ $220,211	$182,609		$193,677	$193,677	$160,474
Post-Pandemic Period	↑ $218,615	$193,127		$209,719	$209,719	$159,942
Average	*$169,522*	---		*$147,699*	*$137,013*	*$132,871*

$XXX,XXX = *The highest value for period among RILA protection options.*

Scenario returns are based on the historical returns of the chosen index. It's important to note that other indices may have different or opposite return characteristics during these same scenario time periods.

These products may not have been available during the time periods illustrated. The investment outcomes of an actual contract could differ due to different beginning and ending dates of an actual contract versus the beginning and ending dates used in this analysis.

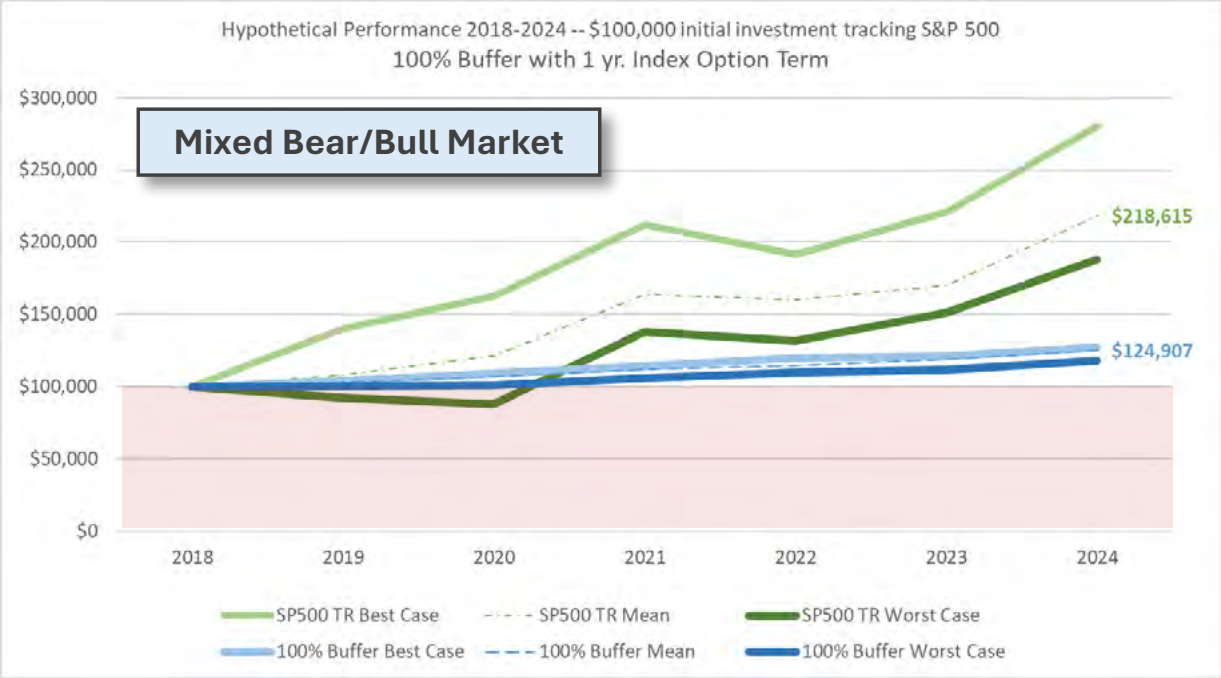
Hypothetical Mean Ending Values: All Buffers, All Index Term Options, All Bear Market Analysis Periods

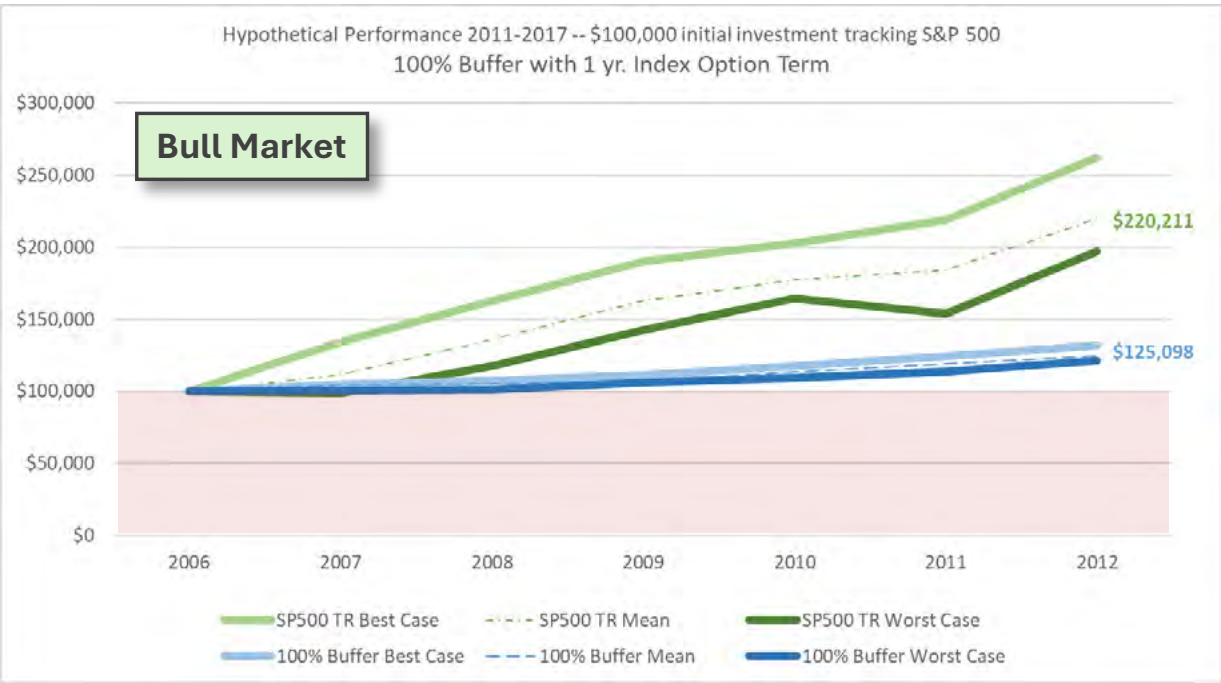
Ending values resulting from an initial investment of $100,000. All values reflect six years of performance.
For 1-year terms, the balance is reinvested six times; for 3-year terms, it is reinvested twice.

Period	$ in Market	1-Year Term	3-Year Term	6-Year Term
		10% Buffer		
Oil Shock of 1973-74	$111,747	$126,392	$99,379	$96,872
Double-Dip	$246,839	$213,212	$181,322	$181,283
Dot Com Bubble	$99,887	$125,198	$103,275	$99,177
Global Financial Crisis	$119,833	$125,675	$120,196	$105,467
Global FC Recovery	$220,211	$173,520	$193,677	$193,677
Post-Pandemic Period	$194,657	$161,254	$175,008	$185,897
Average	*$154,593*	*$150,346*	*$135,836*	*$133,739*
		20% Buffer		
Oil Shock of 1973-74	$111,747	$137,195	$108,878	$80,000
Double-Dip	$246,839	$213,768	$144,584	$133,213
Dot Com Bubble	$99,887	$141,275	$107,708	$100,000
Global Financial Crisis	$119,833	$132,873	$115,964	$105,467
Global FC Recovery	$220,211	$156,911	$157,919	$193,677
Post-Pandemic Period	$194,657	$151,457	$154,628	$185,897
Average	*$154,593*	*$155,314*	*$126,352*	*$120,916*
		100% Buffer		
Oil Shock of 1973-74	$111,747	$128,592	$115,842	$103,387
Double-Dip	$246,839	$172,863	$150,769	$163,964
Dot Com Bubble	$99,887	$128,807	$120,128	$102,563
Global Financial Crisis	$119,833	$125,100	$128,219	$106,895
Global FC Recovery	$220,211	$125,098	$157,854	$160,474
Post-Pandemic Period	$194,657	$122,653	$153,911	$159,780
Average	*$154,593*	*$135,603*	*$133,774*	*$127,318*

$XXX,XXX = *The highest value for period among RILA protection options.*

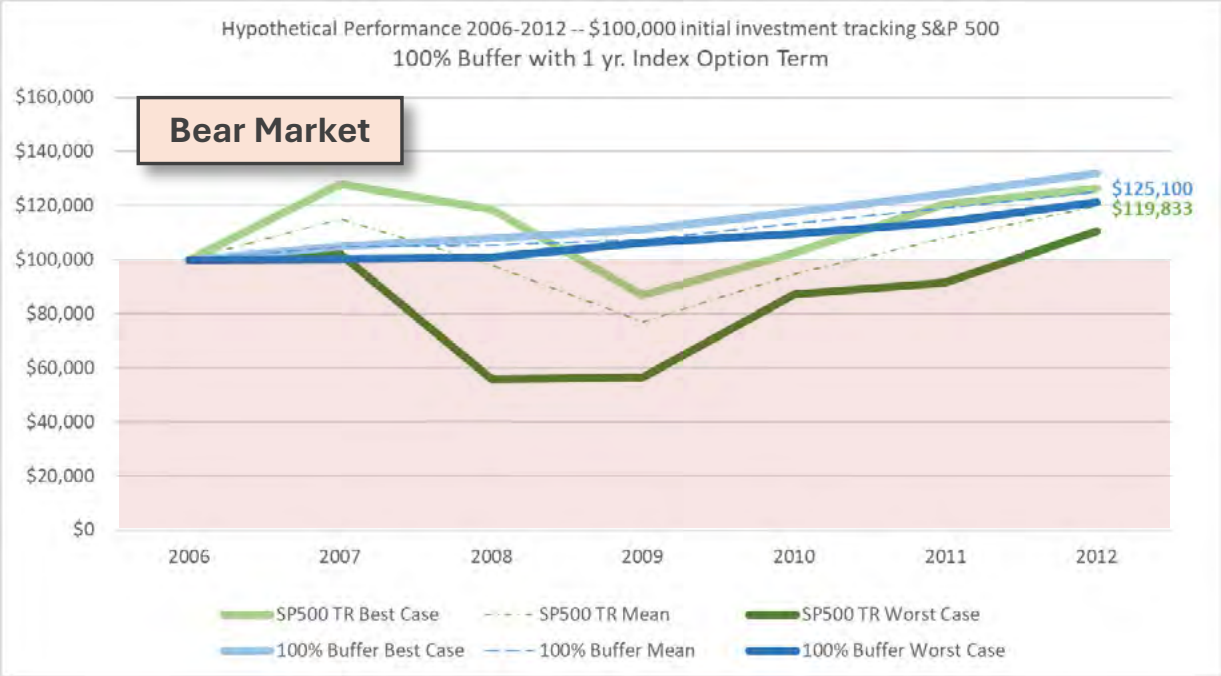
Hypothetical Performance Comparison:
100% Buffer with One-Year Index Term | All Market Analysis Periods

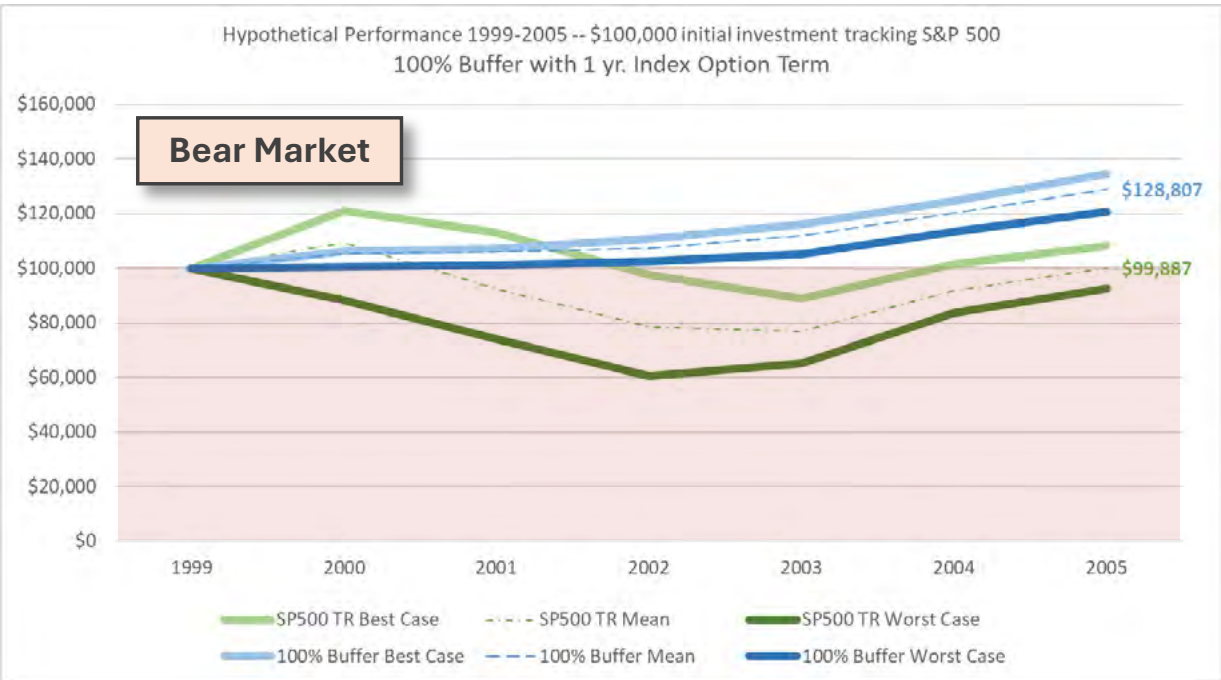




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

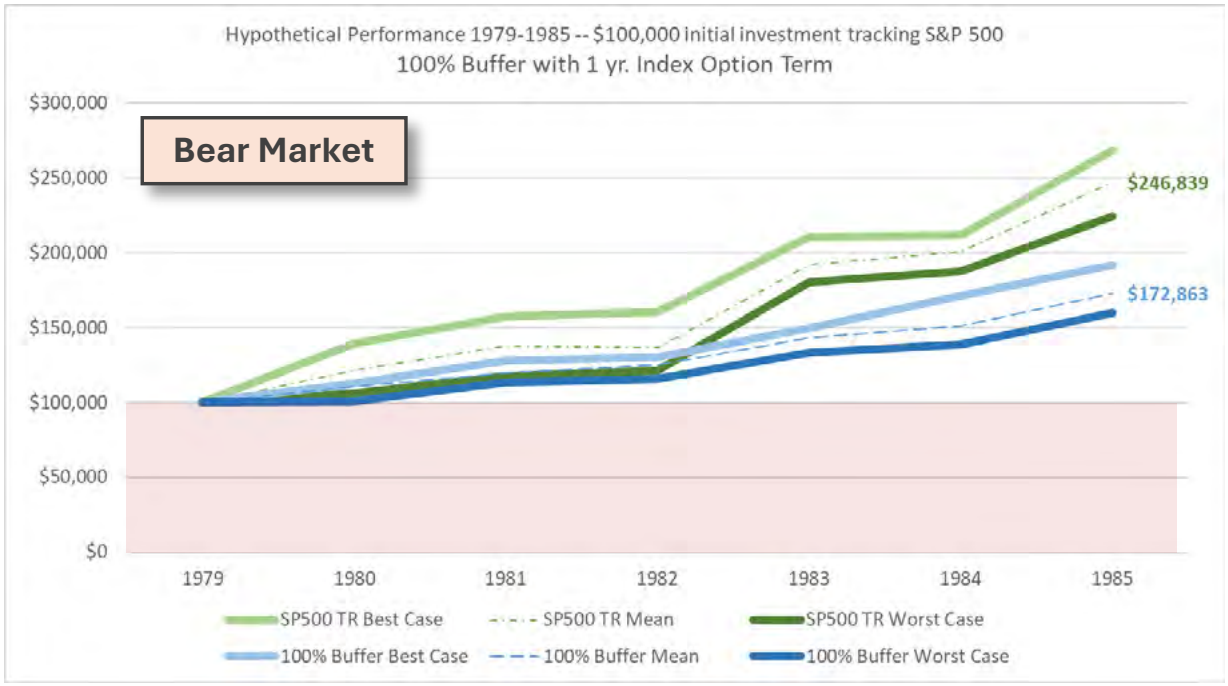
Hypothetical Performance Comparison:
100% Buffer with One-Year Index Term | All Market Analysis Periods (Cont.)

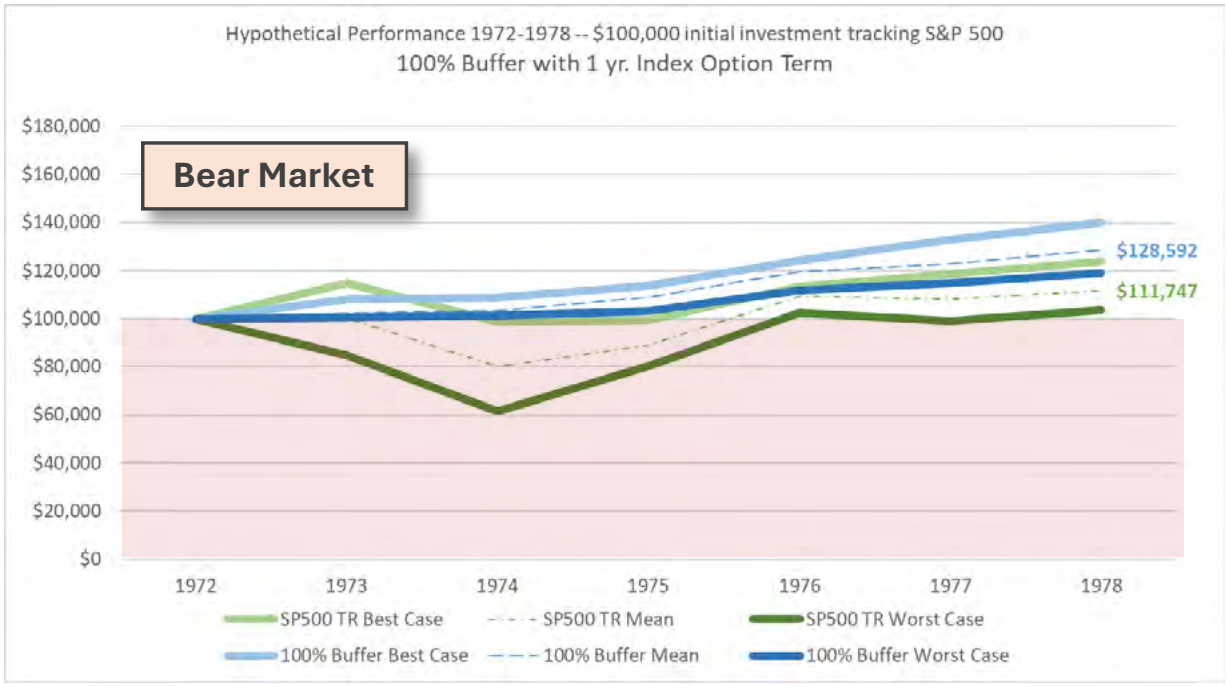




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

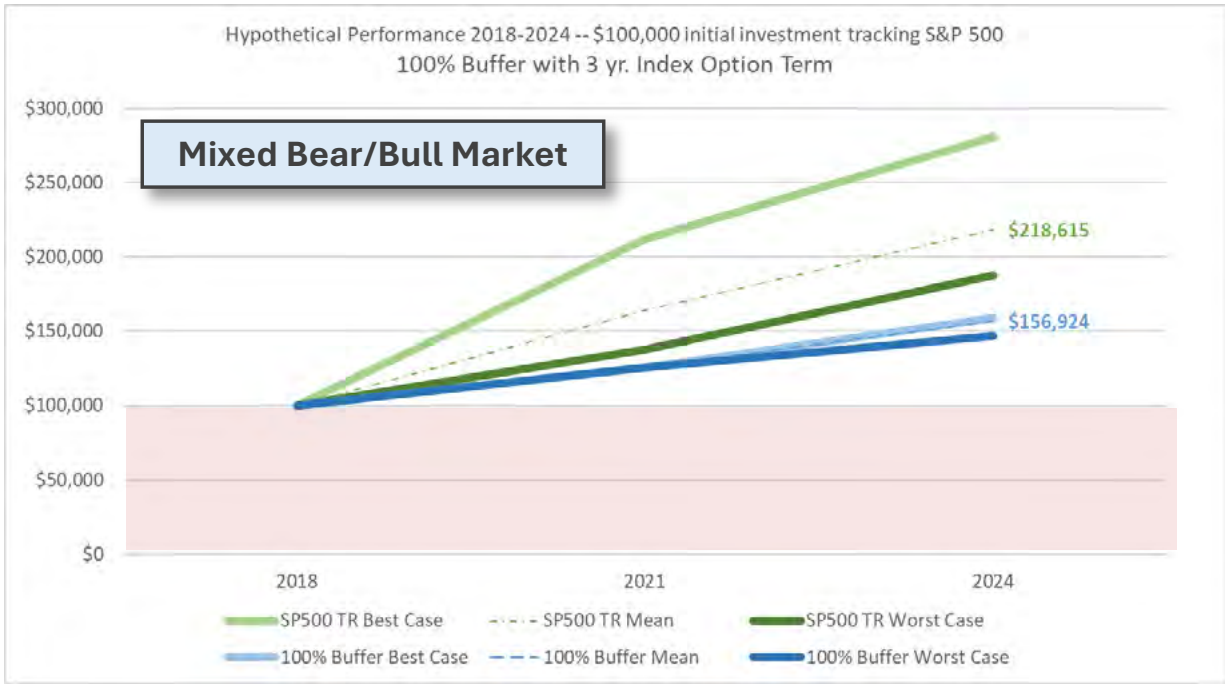
Hypothetical Performance Comparison:
100% Buffer with One-Year Index Term | All Market Analysis Periods (Cont.)

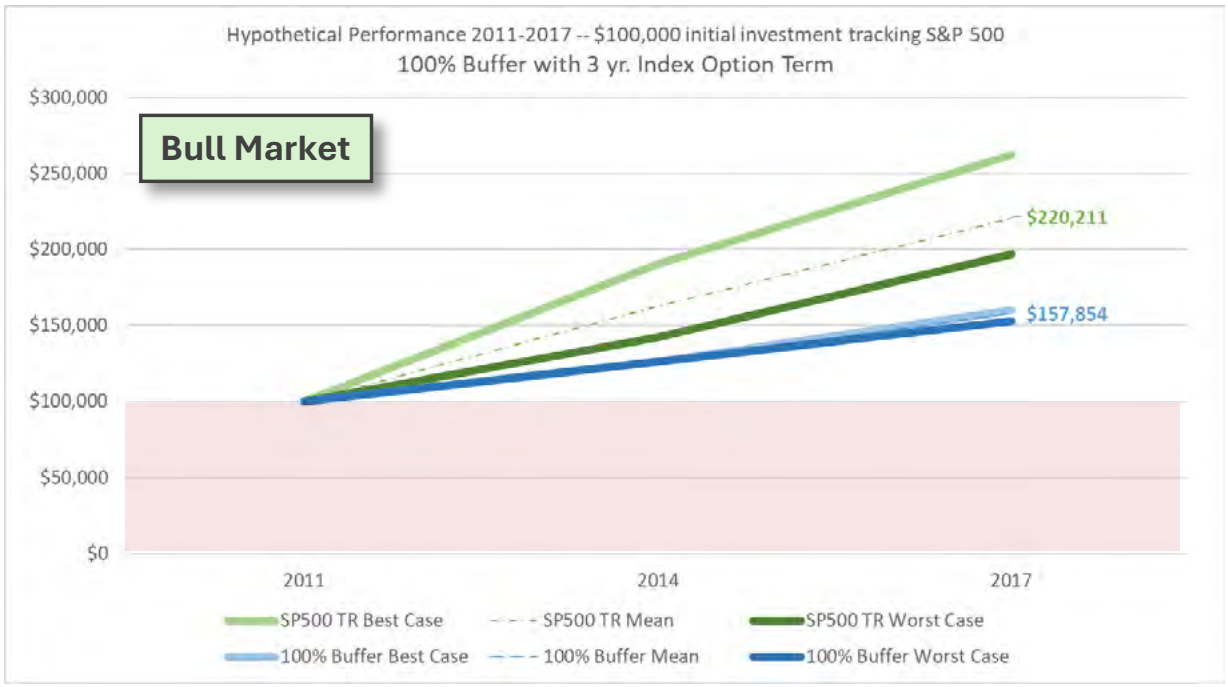




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

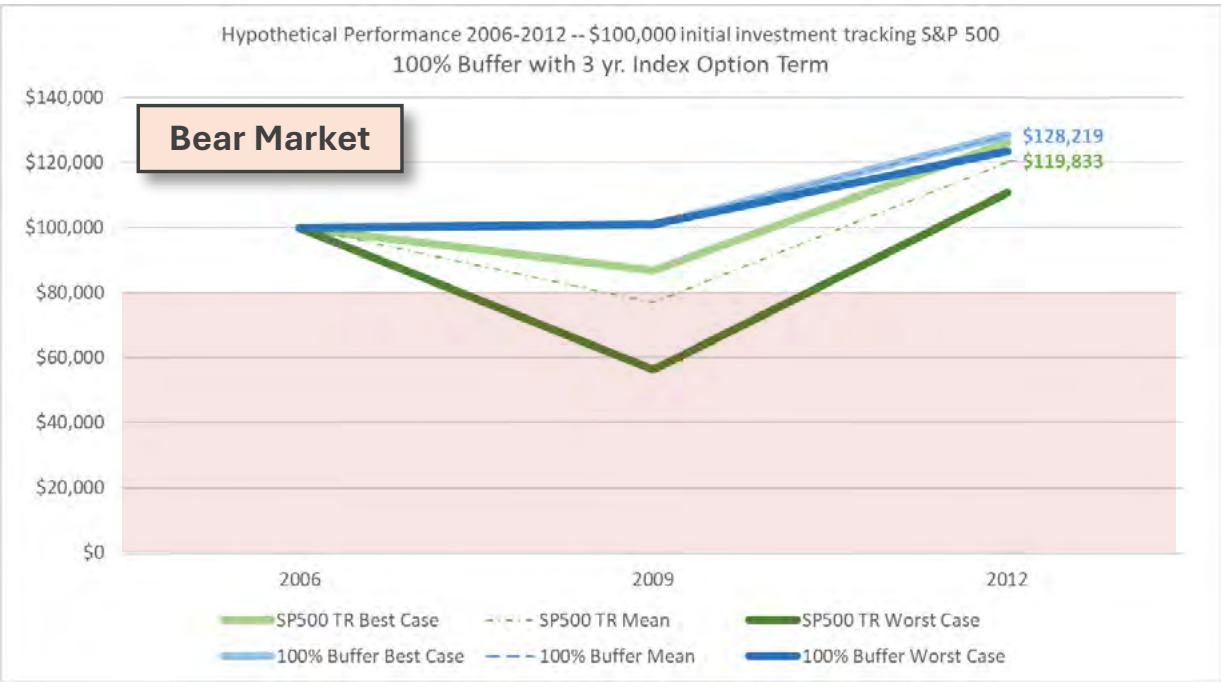
Hypothetical Performance Comparison:
100% Buffer with Three-Year Index Term | All Market Analysis Periods

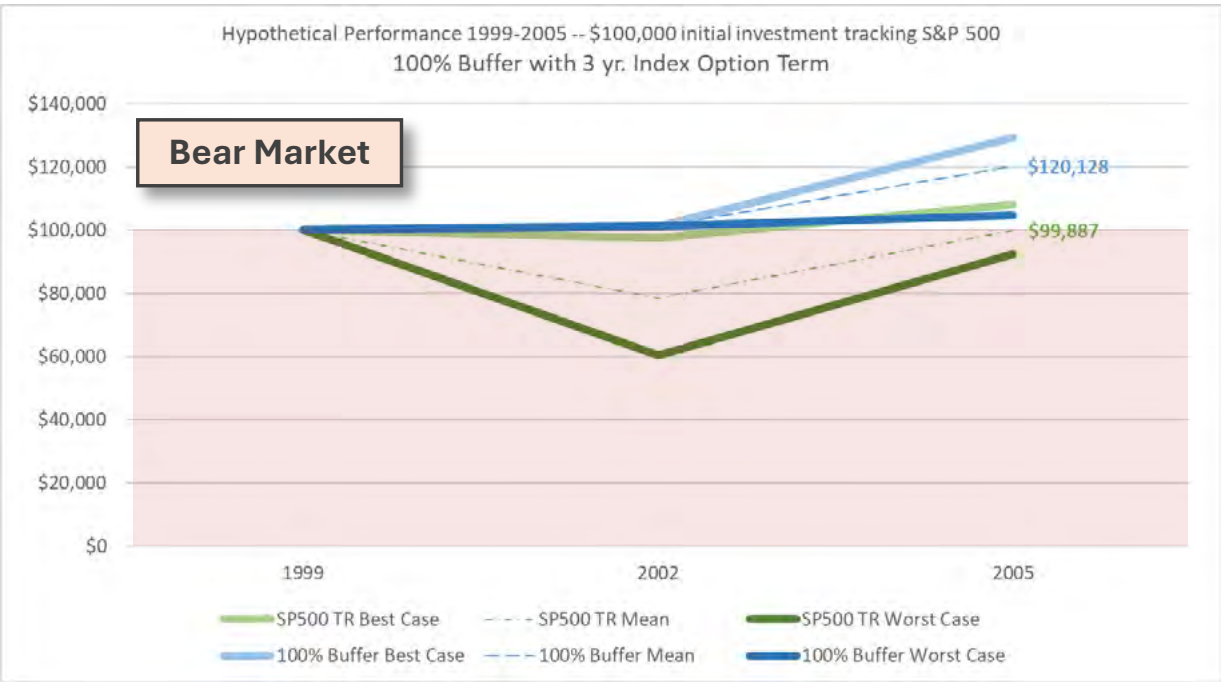




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

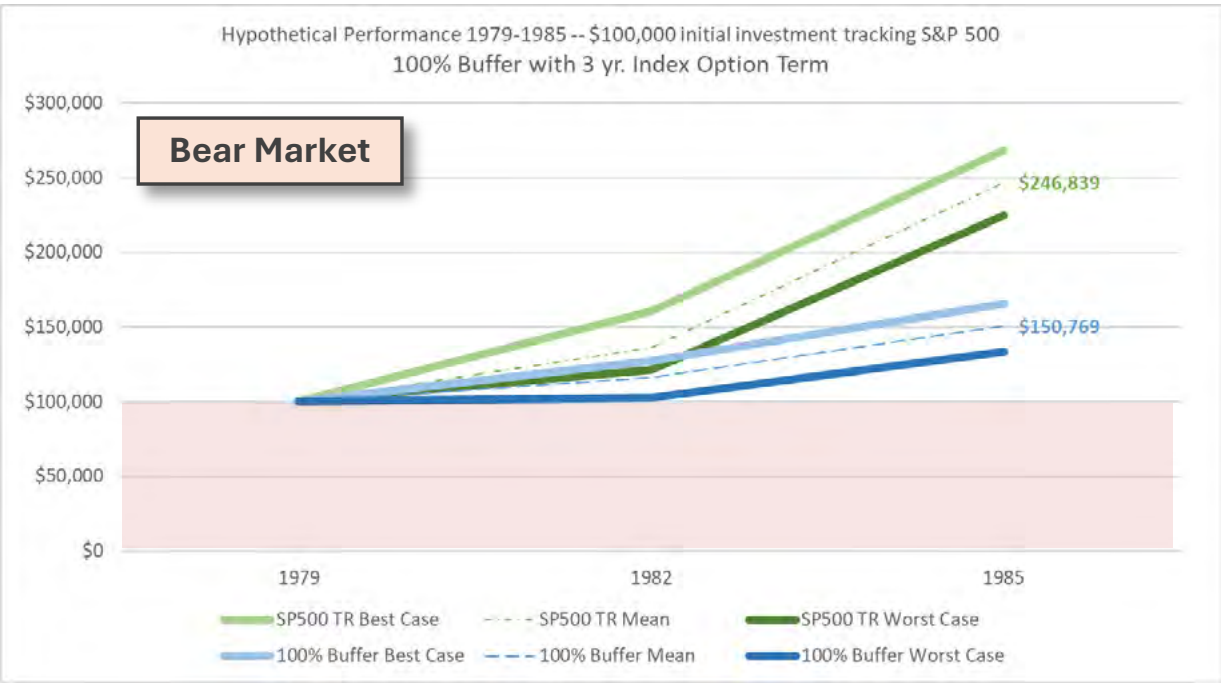
Hypothetical Performance Comparison:
100% Buffer with Three-Year Index Term | All Market Analysis Periods (Cont.)

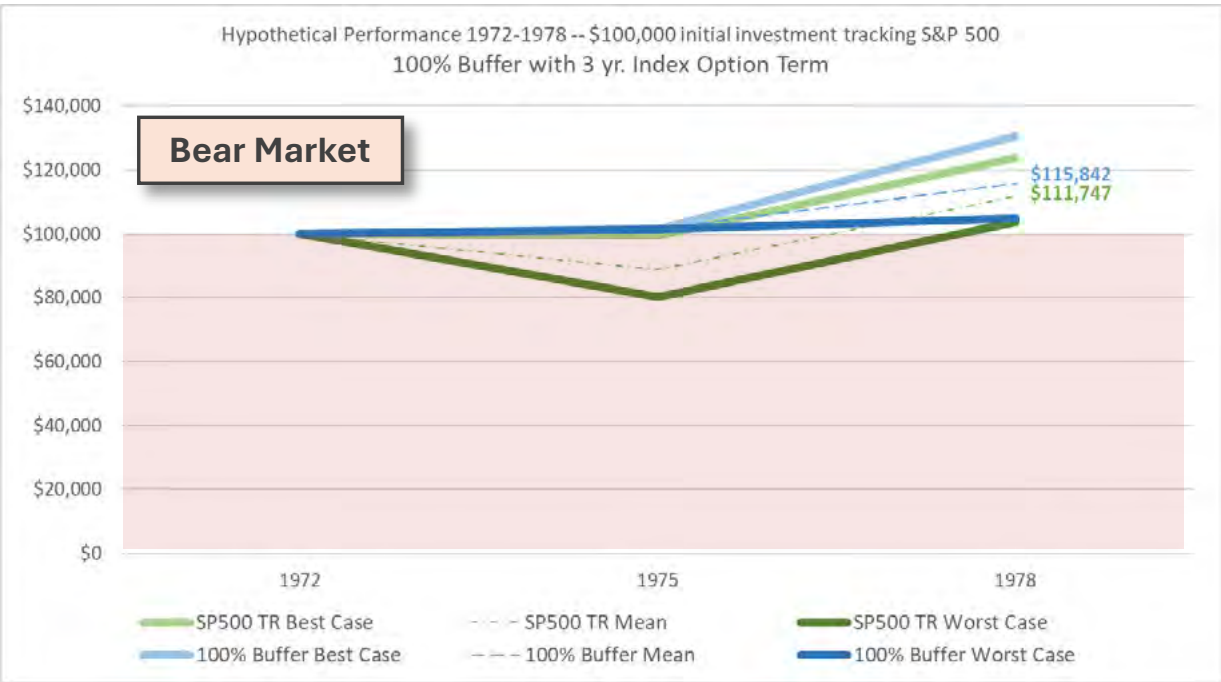




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

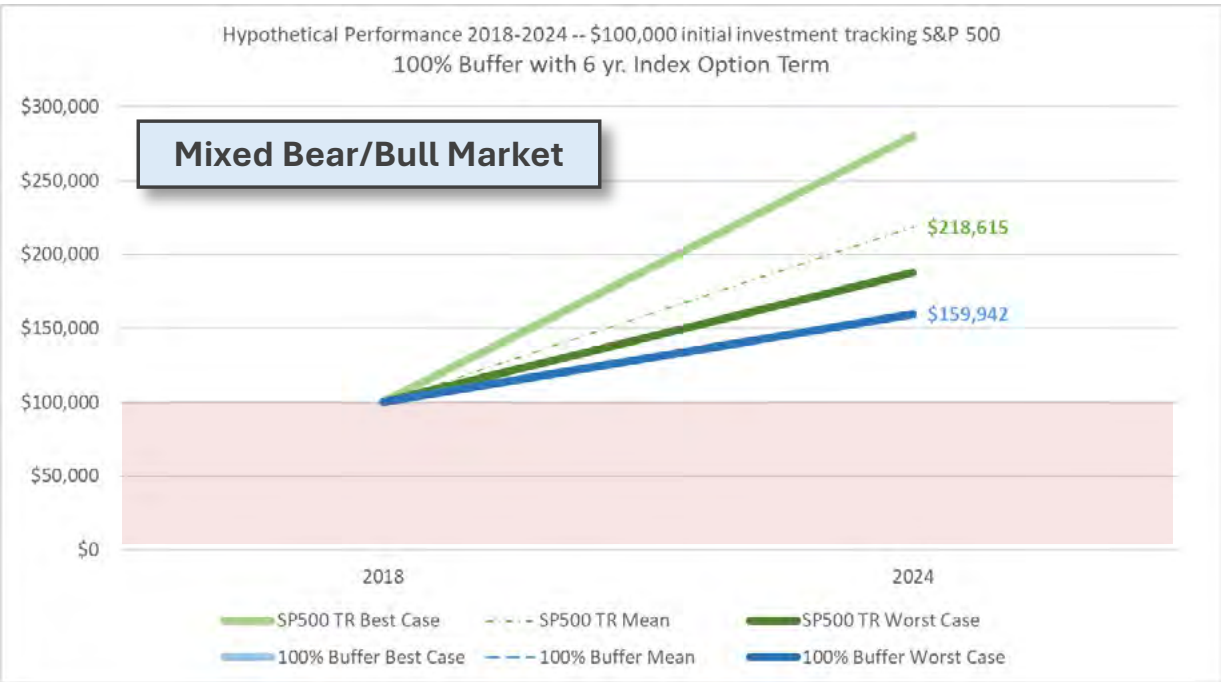
Hypothetical Performance Comparison:
100% Buffer with Three-Year Index Term | All Market Analysis Periods (Cont.)

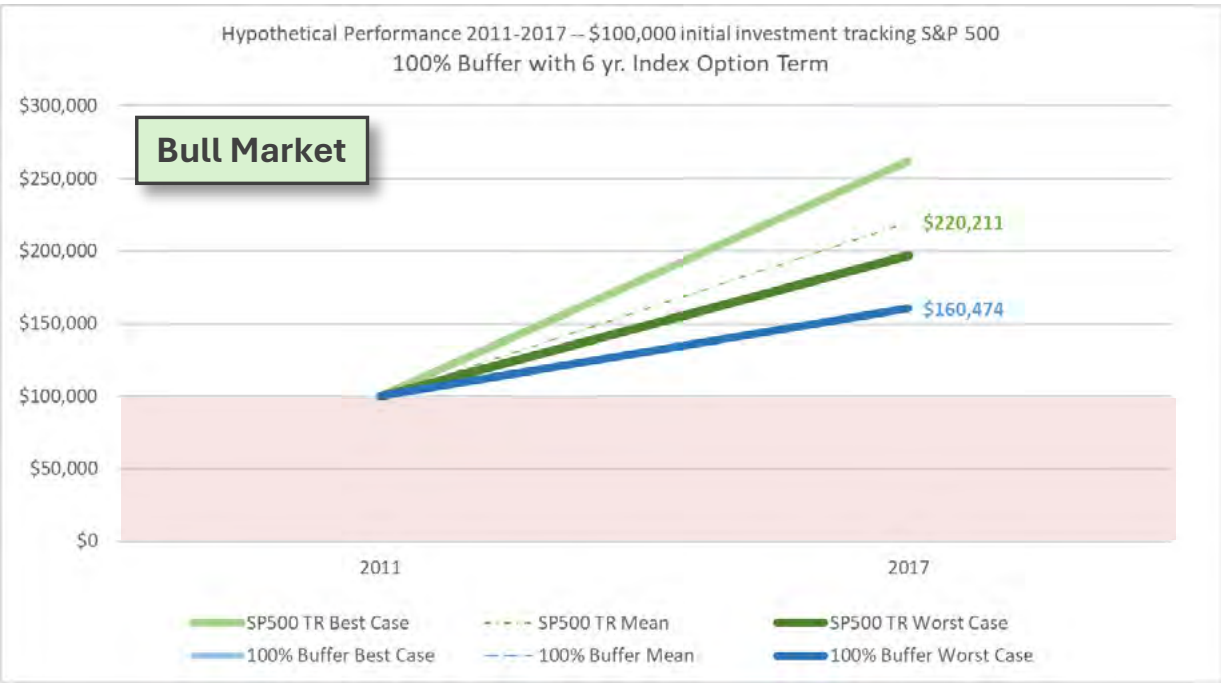




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

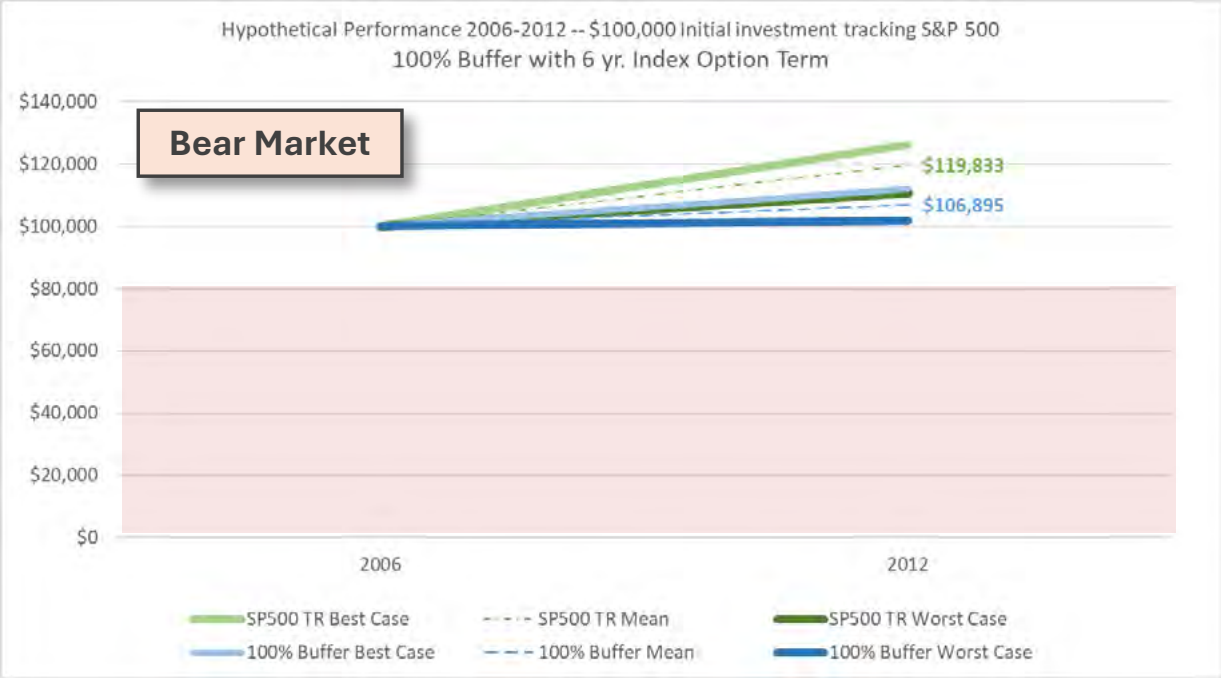
Hypothetical Performance Comparison:
100% Buffer with Six-Year Index Term | All Market Analysis Periods

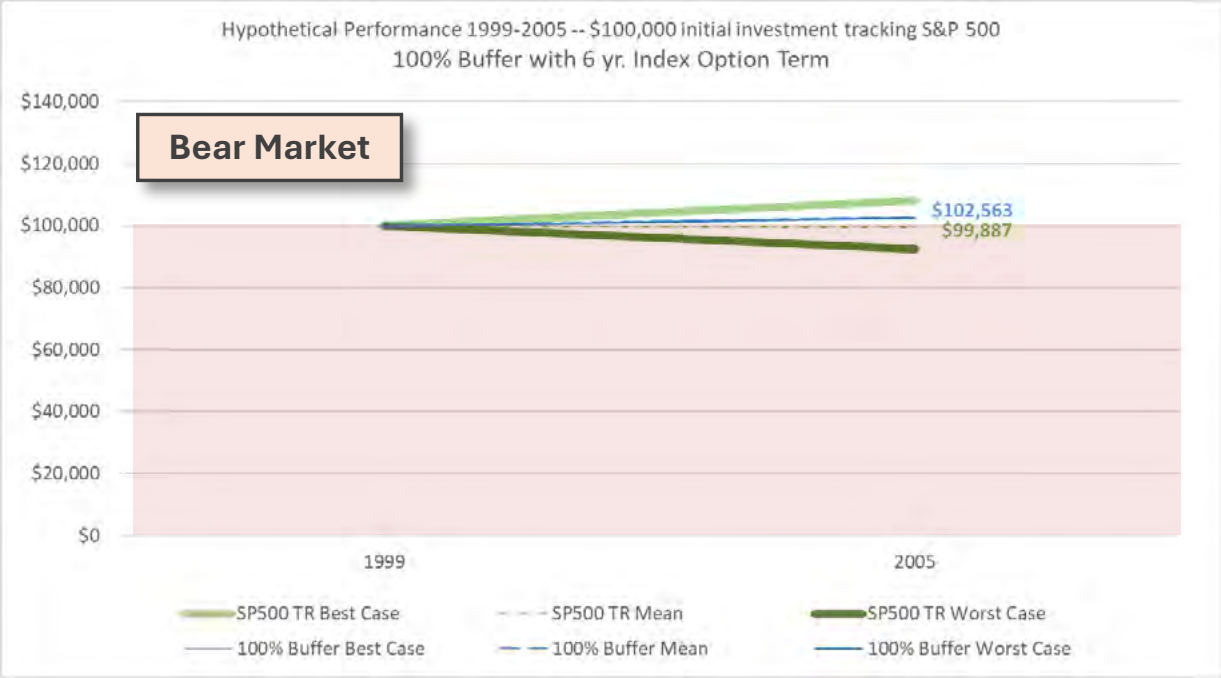




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

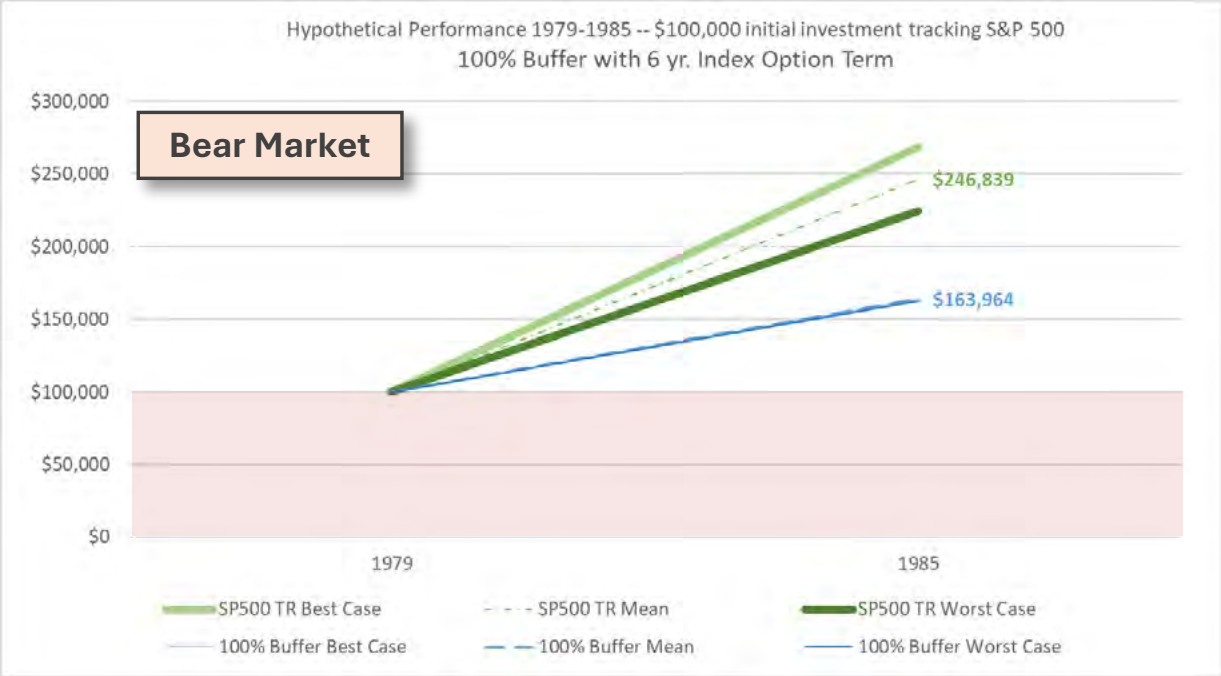
Hypothetical Performance Comparison:
100% Buffer with Six-Year Index Term | All Market Analysis Periods (Cont.)

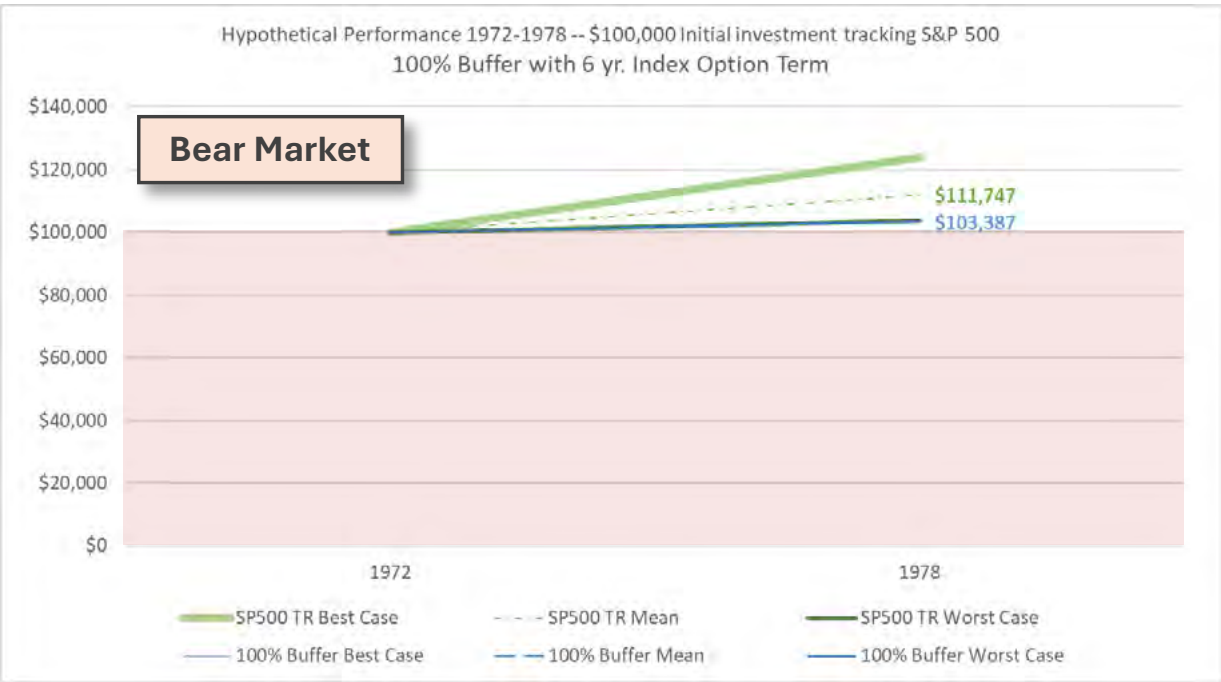




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

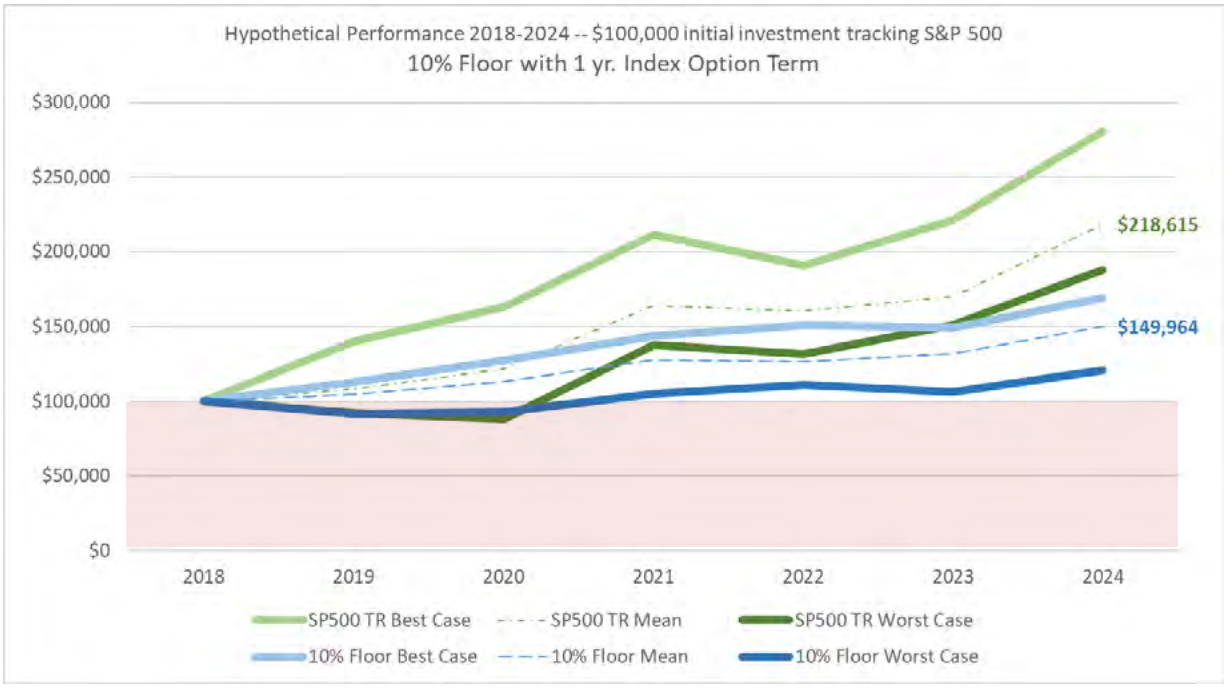
Hypothetical Performance Comparison:
100% Buffer with Six-Year Index Term | All Market Analysis Periods (Cont.)

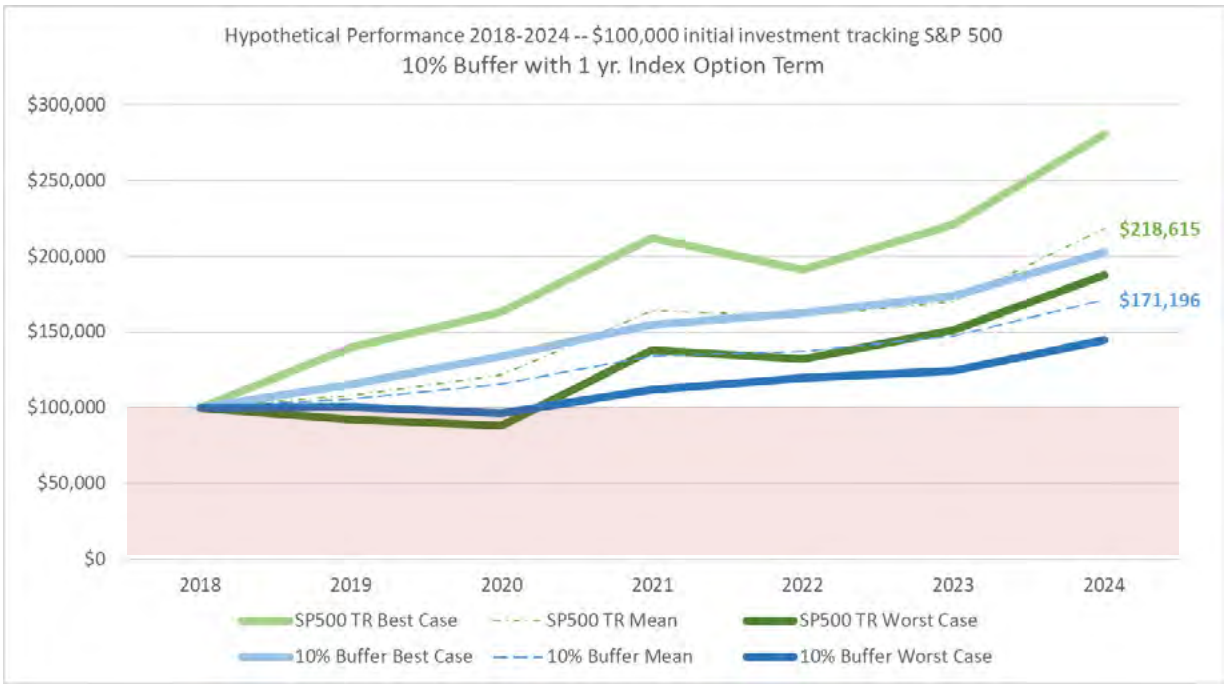




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

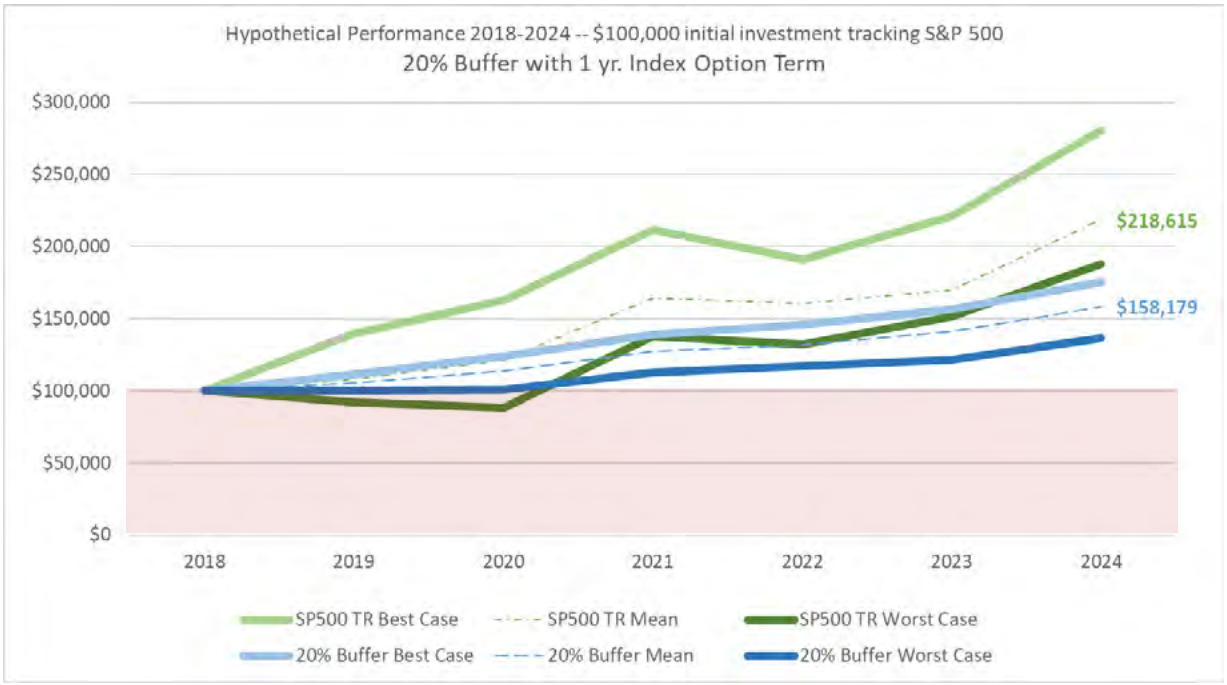
Hypothetical Performance Comparison:
All Protection Options with 1-Year Index Term | Period of Both Bull & Bear Markets – 2018-2024

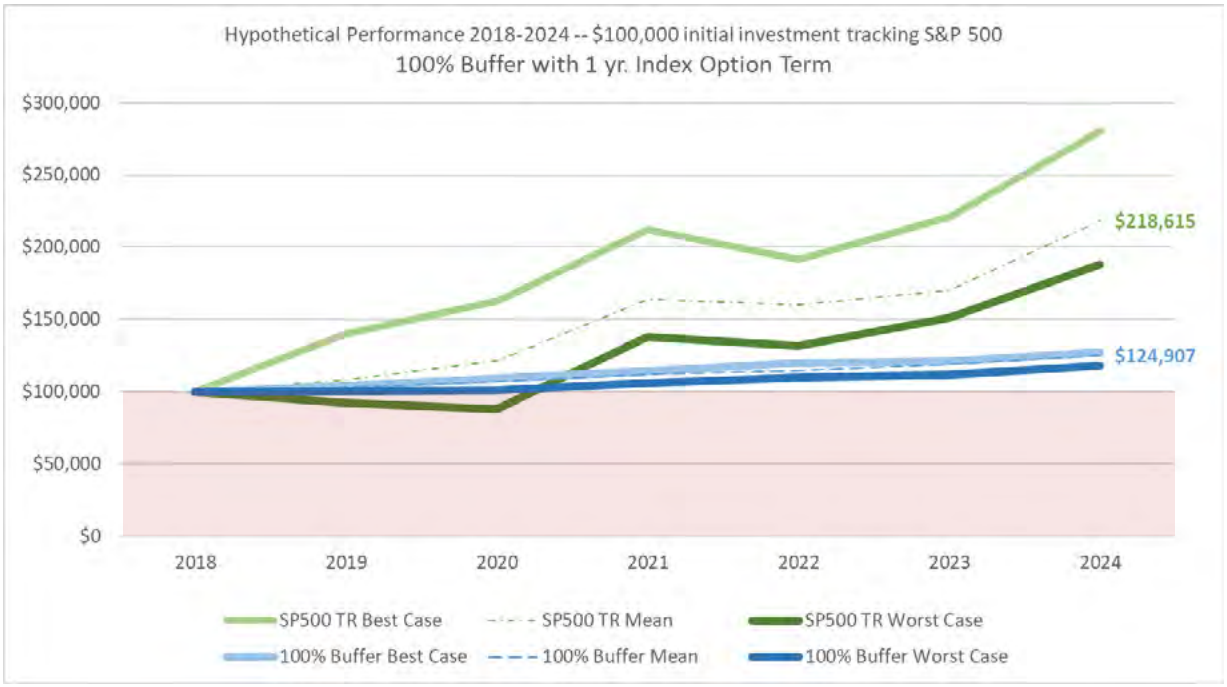




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

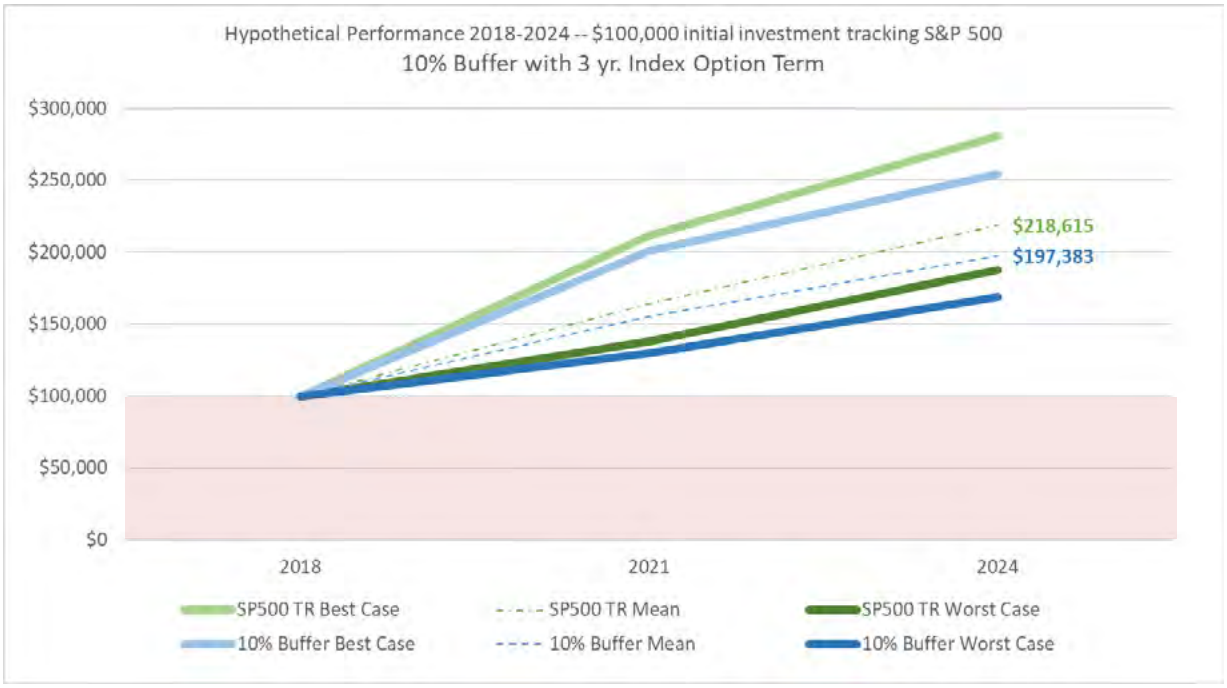
Hypothetical Performance Comparison:
All Protection Options with 1-Year Index Term | Period of Both Bull & Bear Markets – 2018-2024 (Cont.)

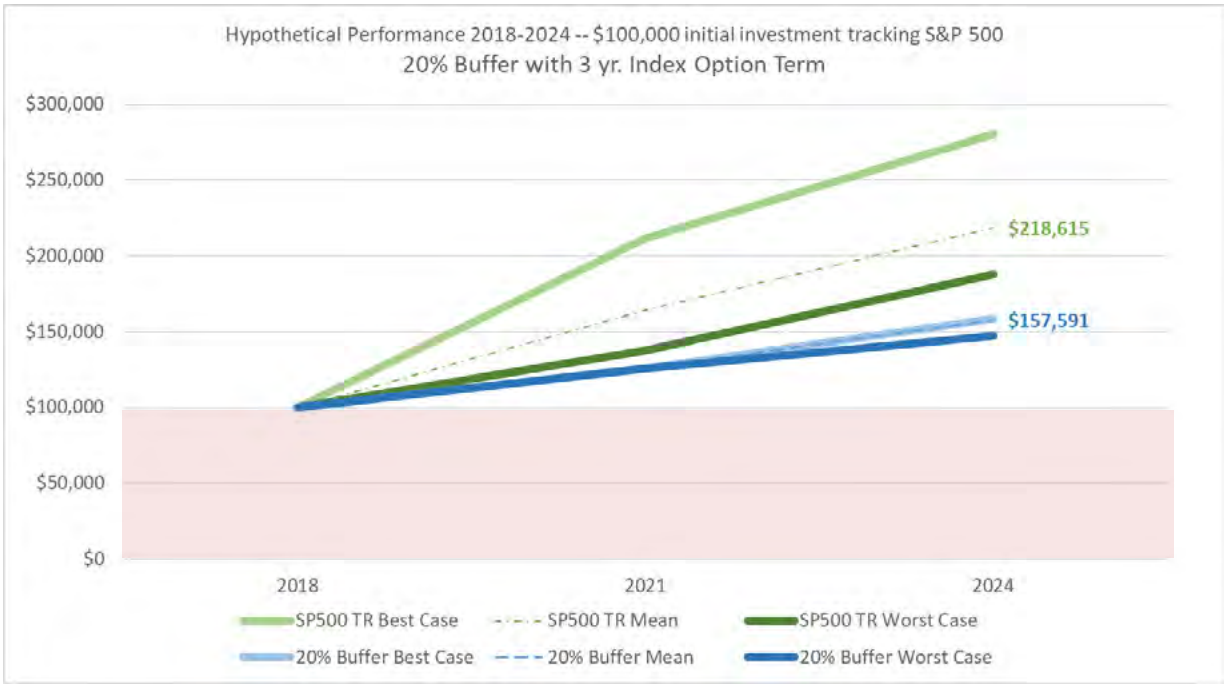




These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

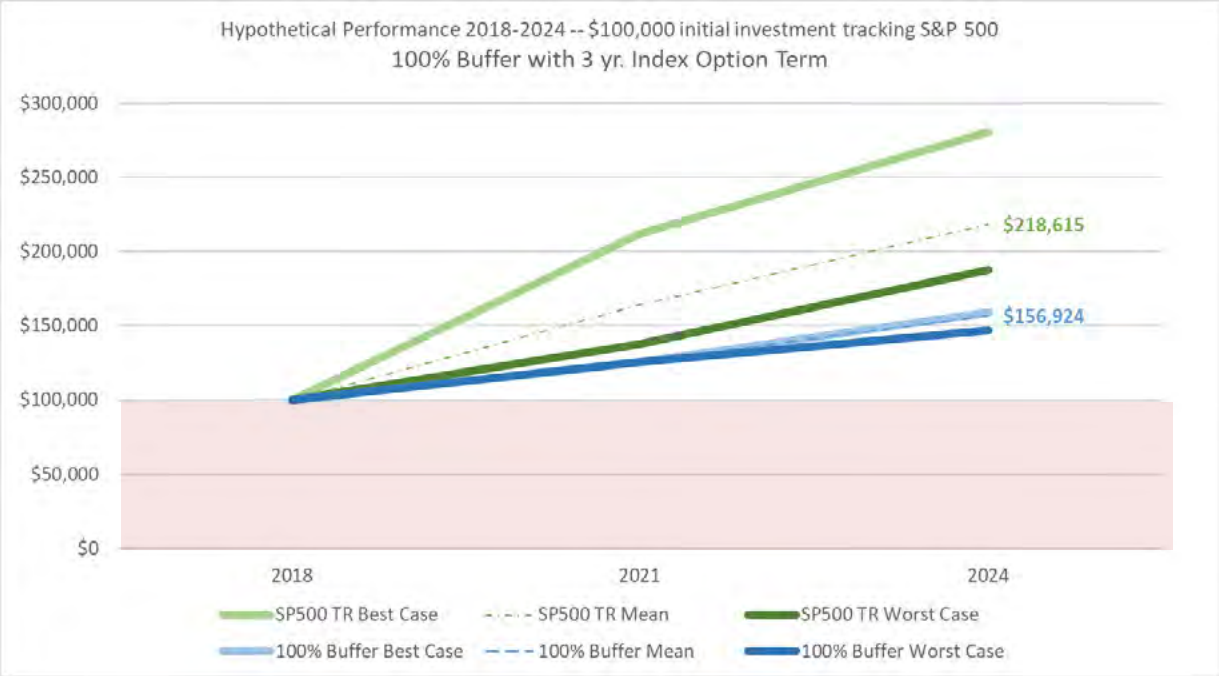
Hypothetical Performance Comparison:
All Protection Options with 3-Year Index Term | Period of Both Bull & Bear Markets – 2018–2024





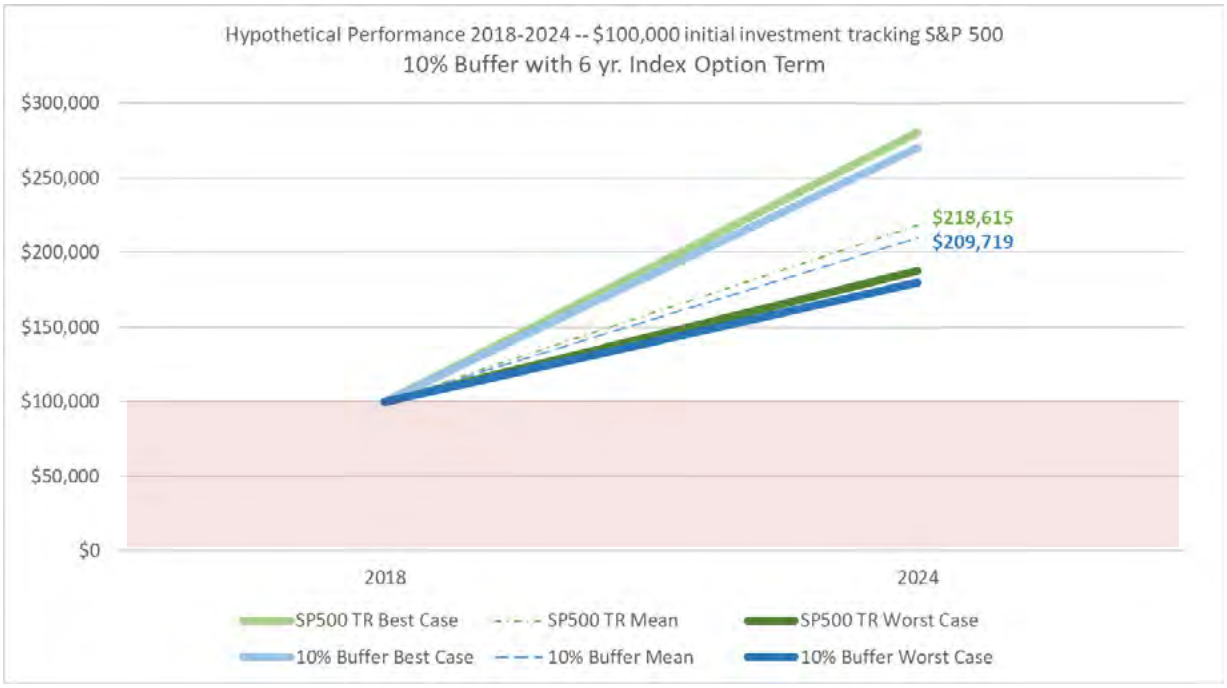
These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

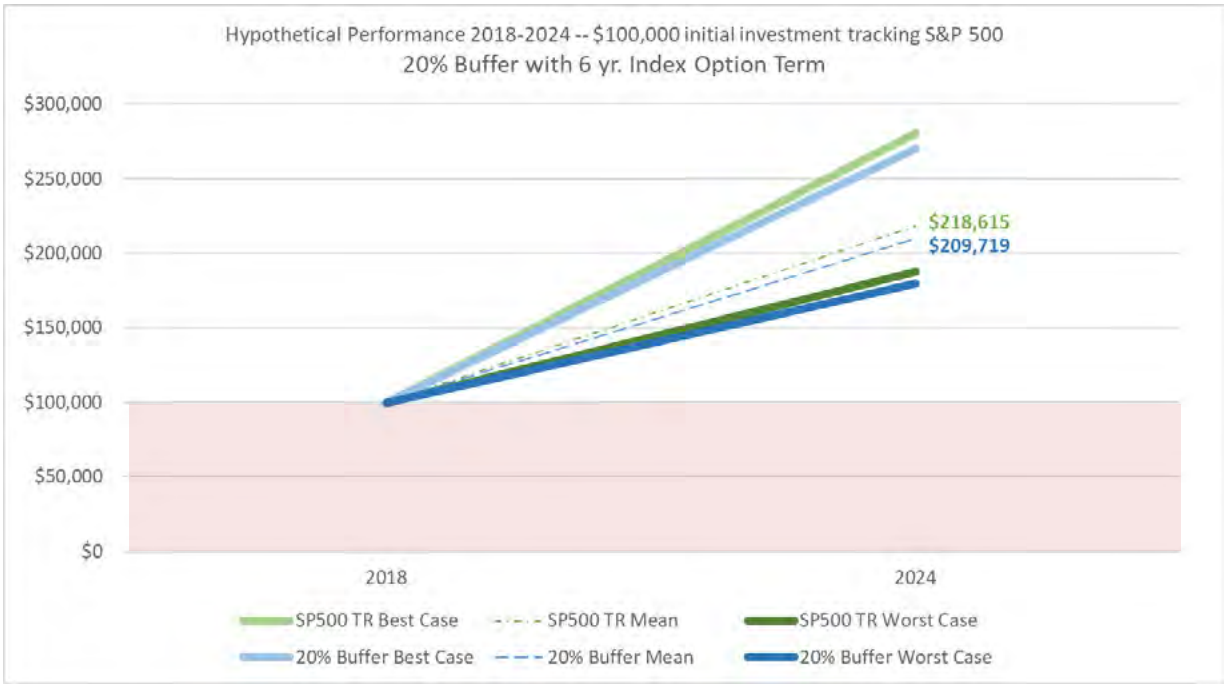
Hypothetical Performance Comparison:
All Protection Options with 3-Year Index Term | Period of Both Bull & Bear Markets – 2018–2024 (Cont.)



These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

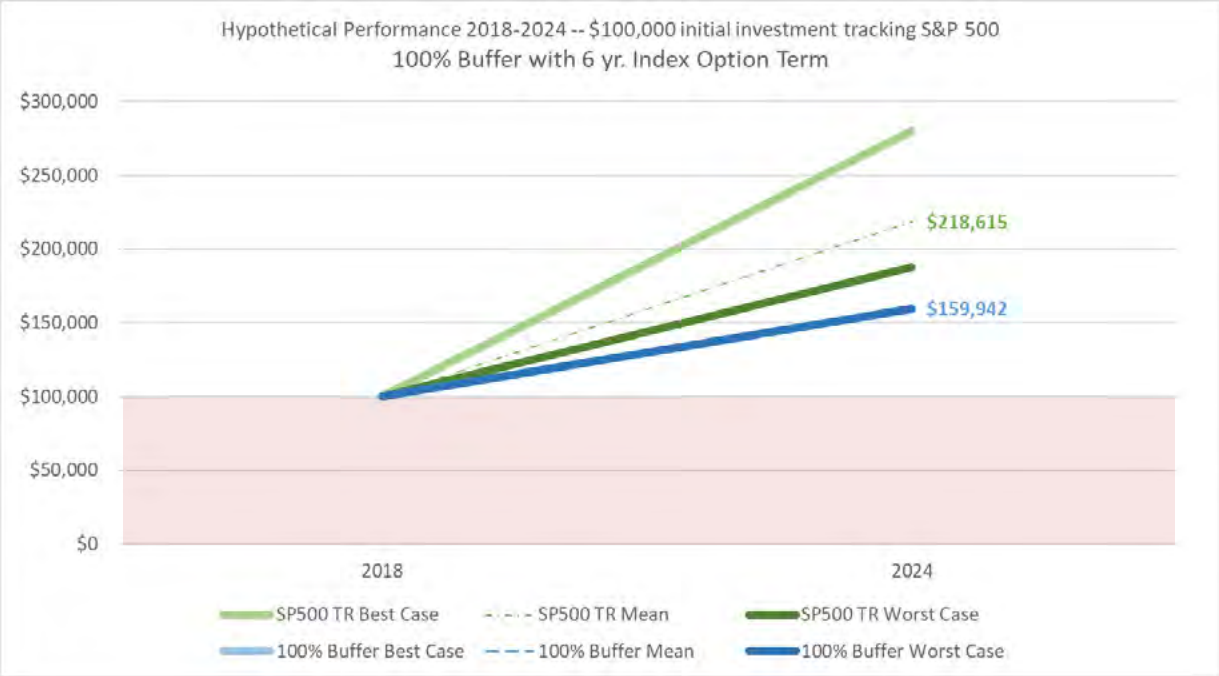
Hypothetical Performance Comparison:
All Protection Options with 6-Year Index Term | Period of Both Bull & Bear Markets – 2018–2024





These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

Hypothetical Performance Comparison:
All Protection Options with 6-Year Index Term | Period of Both Bull & Bear Markets – 2018–2024 (Cont.)



These hypothetical examples are meant for illustrative purposes only and do not reflect an actual investment, nor do they account for the effects of taxes or any investment expenses. Investment returns are not guaranteed, cannot be predicted, and will fluctuate. All investments are subject to risk, including the possible loss of the money invested. Past performance is no guarantee of future results.

Appendix B

Detailed discussion of the model

Overview

Many retirement investors will rely on their portfolios in some measure either to maintain their desired lifestyles or as a resource to manage additional expenses. As such, they will wish to draw on funds as needed. However, should they have the misfortune to retire into a down-market or experience one in the last years of accumulation, that externality could significantly impact the durability of their portfolios.

We modeled the effect of adding a RILA product to an investment portfolio—specifically, to ascertain whether it could help protect from sequence of returns risk in a prospective bear market. Results are measured over a six-year period across four bear markets, a bull market and a market that exhibited both bull and bear characteristics. The results evaluate the loss protection provided, the incidence of improving upon market performance, total return of the investment and the standard deviation of the investment. The model uses historical market data from 1972 to 2024. Within a six-year analytical period associated with a market period, one-, three- and six-year investment horizons are analyzed to assess the impact of those investment term options within a RILA.

The market data used to simulate portfolio performance for money in the market and for money in the annuity is:

1. **S&P 500 Total Return Index:** to represent the performance of an investment tied directly to the market
2. **S&P 500 Price Return Index:** to represent the performance of investment in a simulated RILA product offering an S&P 500 index term option

The S&P 500 Total Return Index values that are used are monthly (month-end) for the period of January 1972 to December 1987 and are daily from January 1988 through December 2024. The S&P 500 Price Return Index values represent the daily close price for the period of January 1972 to December 2024.

Five additional datasets were used to create or validate the model

1. Market yield on U.S. treasury securities at 10-year constant maturity, quoted on an investment basis (DGS10 data series) represents the risk-free rate of return
2. Market-based advisory cap rates (same rates across all periods) for advisory versions of RILA products featuring a 10% floor, 10% buffer, 20% buffer or 100% buffer protection options
3. Dynamic cap rates[7] indexed to the 30-year fixed rate mortgage average in the United States, percent, monthly, not seasonally adjusted ("MORTGAGE30US" data series)
4. Fixed return rates indexed to Moody's Seasoned AAA Corporate Bond Yield, percent, monthly, not seasonally adjusted ("DAAA" data series)
5. Derived annual dividend yield for the S&P 500

The 10-year treasury yield is the daily value quoted for each trading day from January 1972 to December 2024. The market-based cap rates represent the range of rates offered from May 2018 to May 2024 by an array of providers with which Jackson actively competes. The dynamic cap rates use an average of the six years of monthly mortgage rates applicable to each analytical period and adjusted using an index that

[7] To create the index used to derive the dynamic cap values based on market conditions for the period being modeled, we started by comparing the median value of a cap associated with the specific protection option (e.g., 20% buffer) to the mean value for the reference index (e.g., 30-year mortgage rates) for the reference period (e.g., May 2018 to May 2024). The resulting index value was then used to calculate a cap value using the average reference index values for the market period being modeled. Dynamic cap values are used for all 1-year terms across the various protection options, and for all fixed return values across every version of a simulated RILA. The data series used for 30-year mortgage rates is the 30-year fixed rate mortgage average in the United States, percent, monthly, not seasonally adjusted ("MORTGAGE30US") and the data series used for AAA bonds is the Moody's Seasoned AAA Corporate Bond Yield, percent, monthly, not seasonally adjusted ("DAAA"). Both were obtained from the Federal Reserve Bank of St. Louis Economic Research Division. For 3- and 6-year terms, static cap values are used. The values represent the median value for cap rates applicable to advisory RILAs offered by Jackson and its competitors for the period May 2018 to May 2024. For all simulated RILAs with a buffer protection option, the participation rate is 100%.

reflects the relationship between the 30-year mortgage rate average for 2024 and the median cap rate for 100% buffer (aka 0% floor) products in 2024. The fixed return rates use an average of the six years of corporate bond rates applicable to each analytical period and adjusted using an index that reflects the relationship between the AAA bond rate average for 2024 and the 3% fixed rate currently available. The dividend yield was calculated by Aswath Damodaran, Professor of Finance at the NYU Stern School of Business.

The datasets are used to calculate annual (YOY) performance across the first 248 trading days of each year of the four bear markets from 1972 to 2009 for the S&P 500. Investments tied directly to the index along with investment in the RILA S&P 500 index option are compared. When only monthly data was available, the value was applied to all days in the month.

S&P 500 Total Return Index

- Month-end values are applied across all trading days for the month to simulate daily values for modeling in the years where daily values were not available
- The year-over-year change in index value was used to calculate the annual yield for each day of the year
- S&P 500 Price Return Index and 10-year treasuries yield
- Daily values are available for the full period; no changes were made to the dataset
- 30-year mortgage average monthly rate and AAA Bond average monthly rate
- Monthly values are available for the full period; no changes were made to the dataset

For any of the datasets that contained daily values for non-trading days, the entries for the non-trading days (e.g., Saturday or Sunday) were dropped from the data.

Cap rates

Dynamic cap rates were applied to the one-year term option versions of RILA products. To derive the cap, current rates for each protection option were indexed to the average of 30-year mortgage rates available in 2024. The resulting indices were then applied to average mortgage rates for each of the five 6-year bear market analysis periods to derive a simulated cap value for those periods.

For the three- and six-year investment option terms, static values were used for cap and participation rates. They are based on the market averages for the period May 2018 through May 2024.

1 YR 100% BUFFER CAPS (2024)		1 YR. FIXED RETURN (2024)	
Min	6.00	2.65	FAMIR
Mid	**6.45**	**3.00**	**Current**
Max	8.00	3.35	Max
Index	**0.96**	**0.59**	**Index**

1 YR 20% BUFFER CAPS (5/2018-5/2024)	
Min	5.38
Mid	**12.00**
Max	16.81
Index	**2.60**

1 YR 10% BUFFER CAPS (5/2018-5/2024)	
Min	11.08
Mid	**16.46**
Max	25.25
Index	**3.57**

1 YR 10% FLOOR CAPS (5/2018-5/2024)	
Min	5.00
Mid	**13.38**
Max	16.75
Index	**2.90**

	DERIVED 1-YR SP500 INDEX OPTION CAPS FOR EACH BEAR MARKET ANALYSIS PERIOD			
	100% Buffer	20% Buffer	10% Buffer	10% Floor
1972–78	8.36%	22.65%	31.06%	25.24%
1979–85	13.32%	36.10%	49.51%	40.23%
1999–05	6.37%	17.28%	23.69%	19.25%
2006–12	5.02%	13.60%	18.66%	15.16%
2011–17	3.80%	10.31%	14.14%	11.49%
2018–24	4.57%	12.40%	17.01%	13.82%

MARKET-BASED CAP AND PAR REFERENCE RATES

	1 Year Term			3 Year Term		6 Year Term			
	Floor	Buffer							
	10%	10%	20%	10%	20%	10%		20%	
	Cap Rates					Cap Rate	Participation Rate	Cap Rate	Participation Rate
Min	5.00%	11.08%	5.38%	26.50%|	10.00%	305.00%	100.00%	155.00%	100.00%
25th Percentile	7.85%	13.33%	8.00%	201.83%	18.00%	412.50%	100.00%	200.00%	100.00%
Mid	13.38%	16.46%	12.00%	240.20%	26.00%	608.00%	100.00%	310.00%	100.00%
75th Percentile	14.25%	20.29%	13.45%	389.71%	45.00%	730.75%	100.00%	525.00%	100.00%
Max	16.75%	25.25%	16.81%	454.20%|	61.00%	818.25%	113.75%|	562.50%	106.25%

Based on competitive market data from 5/2018 to 5/2024

1 Year Term		3 Year Term		6 Year Term	
Buffer					
100%					
Cap Rate[A]	Participation Rate	Cap Rate[B]	Participation Rate	Cap Rate[B]	Participation Rate
6.45%	100.00%	28.00%	100.00%	65.00%	100.00%

[A] Dynamically adjusted based on 30-year mortgage rates

[B] Static value used for all time periods.

Based on estimates calculated by Jackson

Fixed return rates

For the fixed return rates applied to many versions of the RILA products (the one-year terms of all protection options and the three- and six-year terms of 100% buffer protection options), an estimated mean current rate of 3.00% was compared to the average of AAA bond rates available in 2024. The resulting index was then applied to average AAA bond rates for each of the six-year market analysis periods to derive a simulated fixed return rate for those periods.

The fixed rate of return used for each market period was:

	Oil shock	Double-dip	Dot-com	Global FC	Global FC recovery	Pandemic era
	BEAR				BULL	MIXED
Fixed Rate	4.86%	7.28%	3.80%	3.00%	2.38%	2.25%

Allocation of funds in a RILA investment

For all RILA versions with one-year investment option terms (with a 10% floor, 10% buffer, 20% buffer, and 100% buffer) and for the RILA version with the three- and six-year investment option terms with a 100% buffer, funds were allocated as follows:

- **Invested in the market index option: 90%**
- **Invested in the fixed return option: 10%**

For the three- and six-year 10% or 20% buffer protection options, 100% of funds were invested in the market index option.

S&P 500 Index

The values we obtained for the S&P 500 Total Return index for January 1972 through December 1987 are monthly. In order to create daily values, we considered two approaches: apply the monthly values to all trading days in that month or apply a dividend yield to the daily closing price of the index. We modeled both approaches and compared results. Across the comparative metrics, the differences in values were small: -1.3% for the oil shock period and 1.0% for the double-dip period. Thus, we used the total return values to be consistent across all market periods analyzed.

Dates

Money invested in a RILA product is invested on a specific day, which generally becomes the contract anniversary date. The date is subsequently used to determine crediting timeframes and to govern certain terms of the contract. Thus, the model was constructed to account for market performance on a daily basis from one year to the next, or to a subsequent year later on.

However, there are rules in a RILA product contract that govern what happens when an anniversary date falls on a day that the market is closed. For example, the anniversary date may be considered as the closest prior trading day or the first day following that date that the market is open. To avoid the complex logic associated with reassigning anniversary dates, the model maintains sequential integrity in calculating returns. For example, the 83rd trading day of 1980 was on April 29. Returns for an investment made on that day will be calculated on the 83rd trading day of subsequent years—which may fall anytime from April 29 to May 3 of the subsequent year.

Days

Trading days represent the days on which the NYSE is open. Across the period of January 1972 through December 2024, the actual number of trading days varied from a minimum of 248 to a maximum of 254. In order to avoid complex logic in calculating annual returns across differing numbers of days each year, the model uses the first 248 days as a sample of the total for the year. This equates to between a 98% and 100% sample—which should be considered a valid representation of the full year. However, to ensure the model didn't miss some significant year-end effect that would materially change output, the average S&P 500 (Total Return and Price Return) index value of days 249-254 was compared to the average of the preceding five days.

The minimum difference in averages across both indices is 0.00%, the mean is -0.76% and the max is 5.80%, an outlier—no other year exhibited a difference greater than 2.33%. Thus, the exclusion of those two to six days does not appear to have a material effect not already captured in the variation across the first 248 days of each year.

Construct

A hypothetical $100,000 investment is made on each of the first 248 trading days of the initial year of the analytical period. In every year following through the 6-year period, the value of the investment for a one-year term is calculated by comparing the value of the underlying index YOY to determine the positive or negative yield and then applying that to the investment value. Investment values are calculated across asset classes and RILA product types for each of the 248 trading days in the six market periods from 1972-2024.

For a three-year investment option term, the value was calculated at the end of three years and the end of six years.

For a 6-year investment option term, a single value (for each trading day) was calculated at the end of the six years.

Portfolio metrics

Many RILA product contracts apply an interim value adjustment if funds are withdrawn before the end of a term specified in the contract. This model assumes the investment is held for six years.

For the one-year investment option term, the three portfolio metrics calculated were:

- **six-year total return (R_p)**, which is calculated to be the percentage difference between the starting amount and the ending amount after six years.
- **Standard deviation (σ_p),** which is calculated using the values at the end of each of the one-year periods across the six-year term.
- **Sharpe Ratio**, which is calculated using the values at the end of each of the one-year periods across the six-year term applied to the formula displayed below.

For the three- and six-year investment option terms, only the six-year total return was calculated.

The metrics were calculated across the 248 trading days for each of the six annual periods related to a market period being analyzed. The total return is the percentage change in value from the initial investment to the ending value as a function of the initial value. The standard deviation is calculated based on the six annual returns for the analytical period. The formula used for the Sharpe Ratio is:

$$S = \left(\frac{R_p - R_f}{\sigma_p} \right)$$

For each day, for each year, the risk-free rate R_f (10-year treasury) is subtracted from the portfolio return R_p to calculate the excess return. Then, the six-year average of excess returns is divided by the standard deviation of portfolio returns across the same six years to determine the Sharpe Ratio.

Money in the market

The S&P 500 Total Return Index is used to calculate returns. For each trading day, a yield is calculated based on the year-over-year difference in index values for that day. The yield is then applied to the investment value to determine the positive or negative return for that day in that year.

Returns in a RILA product

The S&P 500 is the underlying index. The Price Return Index is used to calculate returns. For each trading day, the annual yield is calculated based on the difference in index values year-over-year.

If the return is negative, the relevant protection option logic is applied to determine if the actual yield is zeroed out or reduced (buffer), or capped (floor) to determine the adjusted yield. If the return is positive, the appropriate cap rate is applied to determine if the adjusted yield is the actual yield or the capped value.

The adjusted yield is then applied to the investment value to determine the positive or negative return for that day in that year.

Fixed returns

Earnings on the funds in the fixed return option are compounded daily and credited annually. For each trading day, returns are calculated by using the applicable fixed rate to derive an annual return. The annual return is then divided by 365 to get an average daily return. The average daily return is raised to the power of 365 to determine the compounded return for the year. That amount is applied to the investment value to determine the annual change for that trading day.

Summary

The analysis period for a bear market is defined as a six-year period beginning the year before the bear market occurred. For each year in the analysis period, performance was calculated for each of the first 248 trading days of that year.

Results for one-year term options

Description	Timing	Scenario	Months	Div Yld[1]	Analysis Period	MEAN SHARPE RATIO					PROTECTION OPTION						
						Market	Floor	Buffers			10% Floor		10% Buffer		20% Buffer		100% Buffer
							10% Floor	10% Buffer	20% Buffer	100% Buffer	Loss Incurred	Loss Capped	Loss Eliminated	Loss Reduced	Loss Eliminated	Loss Reduced	Loss Eliminated
1 Year Term Results																	
Oil Shock	Jan 73-Oct 74	Bear Mkt Occur	21	31%	1972-78	-0.29	-0.87	-0.39	-0.34	-0.87	29%	71%	29%	71%	74%	26%	100%
Double-Dip	Nov 80-Aug 82	Bear Mkt Occurs	21	32%	1979-85	0.35	-0.65	0.16	0.17	-0.65	34%	66%	34%	66%	97%	3%	100%
Dot Com Bubble	Mar 00-Oct 02	Bear Mkt Occurs	31	10%	1999-05	-0.24	-0.12	-0.04	0.22	-0.33	17%	83%	17%	83%	64%	36%	100%
Global Financial Crisis	Oct 07-Mar 09	Bear Mkt Occurs	17	14%	2006-12	0.08	0.24	0.13	0.27	0.12	27%	73%	27%	73%	46%	54%	100%
Global FC Recovery	Apr 09-Feb 20	Bull Mkt Occurs	131	13%	2011-17	1.47	0.24	0.13	0.27	0.12	99%	1%	27%	73%	46%	54%	100%
Pandemic Era	Jan 22-Oct 22	Mixed Bag	10	10%	2018-24	0.81	0.53	0.80	0.87	0.52	53%	47%	54%	46%	99%	1%	100%

Description	IMPROVING UPON MARKET PERFORMANCE				WINNING STRATEGY				
	10% Floor	10% Buffer	20% Buffer	100% Buffer	Market	10% Floor	10% Buffer	20% Buffer	100% Buffer
	Static Cap	Dynamic/ Static Cap	Dynamic/ Static Cap	Dynamic Cap		Static Cap	Dynamic/ Static Cap	Dynamic/ Static Cap	Dynamic Cap
1 Year Term Results									
Oil Shock	**59%**	**99%**	**100%**	**100%**	0%	**8%**	0%	**92%**	**2%**
Double-Dip	0%	0%	0%	0%	**100%**	0%	0%	0%	0%
Dot Com Bubble	**100%**	**100%**	**100%**	**100%**	0%	0%	0%	**100%**	0%
Global Financial Crisis	**94%**	**77%**	**94%**	**93%**	0%	**61%**	**2%**	**37%**	0%
Global FC Recovery	0%	0%	0%	0%	**100%**	0%	0%	0%	0%
Pandemic Era	0%	0%	0%	0%	**100%**	0%	0%	0%	0%

Description	RETURN & VOLATILITY														
	Market			10% Floor			10% Buffer			20% Buffer			100% Buffer		
	6 yr R_p[2]	6yr σ_p[3]	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value
1 Year Term Results															
Oil Shock	12%	0.1593	$111,747	18%	0.1025	**$118,177**	26%	0.1061	**$126,392**	37%	0.0793	**$137,195**	29%	0.0344	**$128,592**
Double-Dip	147%	0.1669	$246,839	96%	0.1344	$195,832	113%	0.1244	$213,212	114%	0.1085	$213,768	73%	0.0540	$172,863
Dot Com Bubble	0%	0.1620	$99,887	20%	0.0983	**$119,808**	25%	0.1006	**$125,198**	41%	0.0646	**$141,275**	29%	0.0296	**$128,807**
Global Financial Crisis	20%	0.2082	$119,833	34%	0.0908	**$133,675**	26%	0.1315	**$125,675**	33%	0.0906	**$132,873**	25%	0.0220	**$125,098**
Global FC Recovery	120%	0.0853	$220,211	59%	0.0443	$133,675	26%	0.1315	$173,520	33%	0.0906	$156,911	25%	0.0114	$125,098
Pandemic Era	119%	0.1613	$218,615	50%	0.0737	$149,964	61%	0.0640	$171,196	51%	0.0452	$158,179	25%	0.0186	$124,907

Green cells indicate instances when the simulated RILA performed better than the market for that metric, during that market analysis period.

[1] Estimated dividend yield for S&P 500 index companies compounded annually over 6-year period.
[2] R_p is the Return for the portfolio
[3] σ_p is the Standard Deviation for the portfolio

Results for three-year term options

Description	Timing	Scenario	Months	Div Yld	Analysis Period	MEAN SHARPE RATIO					PROTECTION OPTION						
						Market	Floor	Buffers			10% Floor		10% Buffer		20% Buffer		100% Buffer
							10% Floor	10% Buffer	20% Buffer	100% Buffer	Loss Incurred	Loss Capped	Loss Eliminated	Loss Reduced	Loss Eliminated	Loss Reduced	Loss Eliminated
3 Year Term Results																	
Oil Shock	Jan 73-Oct 74	Bear Mkt Occur	21	31%	1972-78	N/A[1]					N/A[2]		0%	100%	35%	65%	100%
Double-Dip	Nov 80-Aug 82	Bear Mkt Occurs	21	32%	1979-85								No losses occurred.				
Dot Com Bubble	Mar 00-Oct 02	Bear Mkt Occurs	31	10%	1999-05								13%	88%	39%	61%	100%
Global Financial Crisis	Oct 07-Mar 09	Bear Mkt Occurs	17	14%	2006-12								0%	100%	4%	96%	100%
Global FC Recovery	Apr 09-Feb 20	Bull Mkt Occurs	131	13%	2011-17								0%	100%	4%	96%	100%
Pandemic Era	Jan 22-Oct 22	Mixed Bag	10	10%	2018-24								No losses occurred.				

Description	IMPROVING UPON MARKET PERFORMANCE				WINNING STRATEGY				
	10% Floor	10% Buffer	20% Buffer	100% Buffer	Market	10% Floor	10% Buffer	20% Buffer	100% Buffer
	Static Cap	Dynamic/ Static Cap	Dynamic/ Static Cap	Dynamic Cap		Static Cap	Dynamic/ Static Cap	Dynamic/ Static Cap	Dynamic Cap
3 Year Term Results									
Oil Shock	N/A	0%	0%	**72%**	**28%**	N/A	0%	0%	**72%**
Double-Dip		0%	0%	0%	**100%**		0%	0%	0%
Dot Com Bubble		**96%**	**95%**	**100%**	0%		0%	0%	**100%**
Global Financial Crisis		**48%**	**40%**	**100%**	0%		0%	0%	**100%**
Global FC Recovery		0%	0%	0%			0%	0%	0%
Pandemic Era		0%	0%	0%	**100%**		0%	0%	0%

Description	RETURN & VOLATILITY														
	Market			10% Floor			10% Buffer			20% Buffer			100% Buffer		
	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value
3 Year Term Results															
Oil Shock	26%	N/A[3]	$111,747	N/A			12%	N/A	$99,379	12%	N/A	$108,878	16%	N/A	$115,842
Double-Dip	82%		$246,839				57%		$181,322	26%		$144,584	51%		$150,769
Dot Com Bubble	30%		$99,887				23%		$103,275	17%		$107,708	20%		$120,128
Global Financial Crisis	57%		$119,833				48%		$120,196	26%		$115,964	28%		$128,219
Global FC Recovery	35%		$220,211				48%		$193,677	26%		$157,919	58%		$157,854
Pandemic Era	119%		$218,615				34%		$197,383	25%		$157,591	57%		$156,924

Green cells indicate instances when the simulated RILA performed better than the market for that metric, during that market analysis period.

[1] There are only two performance data points with a three-year term. The Sharpe Ratio is not used to assess performance.
[2] The 10% Floor was not analyzed for the three-year term.
[3] There are only two performance data points with a three-year term. The Standard Deviation is not used to assess performance.

Results for six-year term options

Description	Timing	Scenario	Months	Div Yld	Analysis Period	MEAN SHARPE RATIO					PROTECTION OPTION						
						Market	Floor	Buffers			10% Floor		10% Buffer		20% Buffer		100% Buffer
							10% Floor	10% Buffer	20% Buffer	100% Buffer	Loss Incurred	Loss Capped	Loss Eliminated	Loss Reduced	Loss Eliminated	Loss Reduced	Loss Eliminated
6 Year Term Results																	
Oil Shock	Jan 73-Oct 74	Bear Mkt Occurs	21	31%	1972-78	N/A[1]					N/A[2]		40%	60%	100%	0%	100%
Double-Dip	Nov 80-Aug 82	Bear Mkt Occurs	21	32%	1979-85								N/A				N/A
Dot Com Bubble	Mar 00-Oct 02	Bear Mkt Occurs	31	10%	1999-05								23%	77%	100%	0%	100%
Global Financial Crisis	Oct 07-Mar 09	Bear Mkt Occurs	17	14%	2006-12								N/A				N/A
Global FC Recovery	Apr 09-Feb 20	Bull Mkt Occurs	131	13%	2011-17								0%	0%	0%	0%	100%
Pandemic Era	Jan 22-Oct 22	Mixed Bag	10	10%	2018-24								N/A				N/A

Description	IMPROVING UPON MARKET PERFORMANCE				WINNING STRATEGY				
	10% Floor	10% Buffer	20% Buffer	100% Buffer	Market	10% Floor	10% Buffer	20% Buffer	100% Buffer
	Static Cap	Dynamic/ Static Cap	Dynamic/ Static Cap	Dynamic Cap		Static Cap	Dynamic/ Static Cap	Dynamic/ Static Cap	Dynamic Cap
6 Year Term Results									
Oil Shock	N/A	0%	0%	0%	100%	N/A	0%	0%	0%
Double-Dip		0%	0%	0%	100%		0%	0%	0%
Dot Com Bubble		52%	52%	78%	22%		0%	0%	78%
Global Financial Crisis		0%	0%	0%	100%		0%	0%	0%
Global FC Recovery		0%	0%	0%	100%		0%	0%	0%
Pandemic Era		1%	0%	0%	99%		1%	0%	0%

Description	RETURN & VOLATILITY														
	Market			10% Floor			10% Buffer			20% Buffer			100% Buffer		
	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value	6 yr R_p	6yr σ_p	Mean End Value
6 Year Term Results															
Oil Shock	12%	N/A[3]	$111,747	N/A			-3%	N/A	$96,872	0%	N/A	$80,000	3%	N/A	$103,387
Double-Dip	147%		$246,839				106%		$181,283	106%		$133,213	64%		$163,964
Dot Com Bubble	0%		$99,887				-1%		$99,177	0%		$100,000	0%		$102,563
Global Financial Crisis	20%		$119,833				5%		$105,467	5%		$105,467	7%		$106,895
Global FC Recovery	120%		$220,211				5%		$193,677	5%		$193,677	60%		$160,474
Pandemic Era	119%		$218,615				86%		$209,719	86%		$209,719	60%		$159,942

Green cells indicate instances when the simulated RILA performed better than the market for that metric, during that market analysis period.

[1] There are only two performance data points with a three-year term. The Sharpe Ratio is not used to assess performance.
[2] The 10% Floor was not analyzed for the three-year term.
[3] There are only two performance data points with a three-year term. The Standard Deviation is not used to assess performance.

Contact your Jackson team or visit jackson.com for more information

Bank and Financial Institution Representatives: 800/777-7900

Independent and Non-Bank Broker/Dealer Representatives: 800/711-JNLD (5653)

Wirehouse/Regional Representatives: 800/340-JNLD (5653)

RIA and Wealth Managers: 800/711-7397

Insurance Platforms: 800/711-7305

JMR113067 06/26

JACKSON®