MassMutual Ascend
Life Insurance Company



RILA indexed strategy options and index analysis

A comprehensive guide to indexed strategies available on MassMutual Ascend Life Insurance Company's registered index-linked annuities, with index analysis using rolling returns

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With a registered index-linked annuity (RILA) from MassMutual Ascend, you aren't investing your money directly in the market. Instead, you allocate funds to indexed strategies, which provide market-linked growth potential and partial downside protection.

Indexed strategies are linked to a variety of indexes and ETFs, and offer several types of upside potential and downside protection factors. Here's a breakdown of the different components that make up our indexed strategies.

Each indexed strategy consists of the following four components

INDEX OR ETF	TERM LENGTH	DOWNSIDE PROTECTION FACTOR	UPSIDE POTENTIAL FACTOR
S&P 500 Index	1-Year	0% Floor	**Cap** (with or without Cap Control)
Russell 2000 Index	2-Year	-10% Floor	**Upside Participation Rate**
iShares MSCI EAFE ETF	3-Year	50% Downside Participation Rate	**Performance Trigger**
iShares U.S. Real Estate ETF	6-Year	10% Buffer	**Dual Performance Trigger**
SPDR Gold Shares ETF		20% Buffer	
First Trust Barclays Edge Index			

MassMutual Ascend's registered index-linked annuities can only be sold through a Broker/Dealer that is contracted with MassMutual Ascend Life Insurance Company℠. Any sales solicitation must be accompanied or preceded by a prospectus. To obtain a copy of the prospectus, please visit MassMutualAscend.com/RILArates.

INDEXES AND ETFS

available on MassMutual Ascend's RILA strategies

S&P 500 Index	One of the most commonly followed equity indices, this index tracks stocks issued by 500 of the top companies in leading industries of the U.S. economy.
Russell 2000 Index	Seeks to provide a comprehensive, unbiased barometer of the small cap segment of the U.S. equity market by measuring the performance of about 2,000 small-cap U.S. equities from various industries.
iShares MSCI EAFE ETF	Seeks to track the investment results of an index composed of developed market equities, including those in Europe, Australia, Asia and the Far East, but excluding the U.S. and Canada.
iShares U.S. Real Estate ETF	Seeks to track the performance of the Dow Jones U.S. Real Estate Capped Index, which is composed primarily of U.S. equities in the real estate sector and real estate investment trusts (REITs).
SPDR Gold Shares ETF	Designed to reflect the market value of gold bullion.
First Trust Barclays Edge Index	Seeks to provide equity and fixed income exposure through a blend of the Capital Strength Index™ and Value Line Dividend Index™ and Barclays' US 2-year Treasury Futures, 5-year Treasury Futures and 10-year Note Futures Indexes while aiming to control risk by maintaining a volatility target at or below 7%. Since the index is on an excess return basis (i.e., it returns the index performance in excess of risk-free rates), the risk free return is deducted from the equity underliers. The risk free rate used in this calculation is the U.S. Fed Funds Rate published by the Federal Reserve of New York (ticker: FEDL01) for each day divided by 360. No such adjustment is needed to the US Treasury futures indexes as these securities returns are naturally on an excess return basis.

TERM LENGTHS

available on MassMutual Ascend's RILA strategies

1-Year	Interest is credited at the end of a 1-year period
2-Year	Interest is credited at the end of a 2-year period
3-Year	Interest is credited at the end of a 3-year period
6-Year	Interest is credited at the end of a 6-year period

Strategies linked to the S&P 500® Index (SPX), the Russell 2000 Index (RTY), the iShares MSCI EAFE ETF (EFA), the iShares U.S. Real Estate ETF (IYR), and the SPDR Gold Shares ETF (GLD) provide returns based, in part, on the change in the price of the index or ETF. The price change does not include dividends that might be paid on the underlying investments of the index or ETF.

Strategies linked to the First Trust Barclays Edge Index (FTEDGE7) provide returns based, in part, on the change in net asset value of the underlying investments of the index. The net asset value change includes dividends that might be paid on the underlying investments of the index. The launch date for this index was 4/14/2023.

Not all strategies available with all indexes and ETFs.

3-year term strategies only available for terms that start in the first four contract years.
6-year term strategies only available for terms that start in the first contract year.

DOWNSIDE PROTECTION FACTORS

available on MassMutual Ascend's RILA strategies

0% Floor	Provides complete protection against index losses at the end of each term. Regardless of negative index change, strategy value will not decrease.
-10% Floor	Provides protection against index losses in excess of -10% each term. If the negative index change is between 0% and -10%, the strategy value will decrease by the negative index change. If the negative index change is greater than -10%, the strategy value decrease is limited to -10%.
50% Downside Participation Rate	Provides protection against half of index losses each term. If the index change is negative at the end of a term, the strategy value decreases, limited by the 50% downside participation rate.
10% Buffer	Provides protection against the first 10% of index losses each term. If the negative index change is between 0 and -10%, the strategy value will not decrease. If the negative index change is greater than -10%, the strategy value will decrease by the remaining loss in excess of -10%.
20% Buffer	Provides protection against the first 20% of index losses each term. If the negative index change is between 0% and -20%, the strategy value will not decrease. If the negative index change is greater than -20%, the strategy value will decrease by the remaining loss in excess of -20%.

UPSIDE POTENTIAL FACTORS

available on MassMutual Ascend's RILA strategies

Cap	Offers earning potential up to a cap that is set for each term. If the index change is positive at the end of a term, the strategy value grows, up to the cap. Select indexed strategies include a Cap Control feature. Cap Control guarantees that cap rates for renewal terms will be set within a defined range of the cap for the initial term.*
Upside Participation Rate	Offers earning potential limited by an upside participation rate that is set for each term. If the index change is positive at the end of a term, the index change is multiplied by the upside participation rate to determine the strategy value increase.
Performance Trigger	Offers earning potential up to the trigger rate that is set for each term. The trigger rate is credited when index performance is positive or level.
Dual Performance Trigger	Offers earning potential up to the trigger rate that is set for each term. The trigger rate is credited when index performance is positive, level, or when the index loss does not exceed the buffer, which is 10% on all dual performance trigger strategies.

*Allocation to Cap Control strategies is only available during the first contract year and is not available through reallocations. Once allocated, funds must remain in the strategy in renewal terms during the Early Withdrawal Charge Period.

Not all combinations of indexes/ETFs, term lengths, downside protection factors and upside potential factors are available. Strategy availability varies by registered index-linked annuity product, by state and by distribution.

Some registered index-linked annuities have a fee that is deducted from each indexed strategy on a daily basis. The fee for any given day is calculated as a percentage of and is subtracted from the then remaining investment base of an indexed strategy. The above Downside Protection Factors section only describes how strategy performance is affected by the downside limits, without taking fees into account.

To learn more about the specific RILAs available to you and their various features, including fees, talk with your financial professional.

INDEX ANALYSIS USING ROLLING RETURNS

The data in the following tables uses 1-year rolling returns[1] of the applicable index or ETF to highlight average performance, positive performance, negative performance and return distribution.

	1-Year Term **S&P 500 Index (SPX)** 12/31/2005 – 12/31/2025 4,959 observations[2]	1-Year Term **Russell 2000** 12/31/2005 – 12/31/2025 4,959 observations[5]	1-Year Term **iShares MSCI EAFE ETF** 12/31/2005– 12/31/2025 4,959 observations[8]
Average Performance			
Average Return	9.91%	8.07%	3.19%
Average Gain	16.21%	18.85%	14.75%
Average Loss	-14.30%	-13.23%	-13.31%
Positive Performance			
Maximum Return	74.77%[3]	128.78%[6]	73.02%[9]
Number of Gains	3,935 (79%)	3,293 (66%)	2,915 (59%)
Negative Performance			
Minimum Return	-48.82%[4]	-48.89%[7]	-55.85%[10]
Number of Losses	1,023 (21%)	1,664 (34%)	2,040 (41%)
Return Distribution			
-100% to -20%	5.10%	7.52%	7.26%
-20% to -10%	4.90%	9.78%	12.85%
-10% to 0%	10.63%	16.25%	21.11%
0% to 10%	20.23%	20.81%	21.36%
10% to 20%	36.56%	21.98%	23.67%
20% to ∞	22.59%	23.65%	13.75%

[2]One flat year, in which the return was 0%, included in observations

[3]Max return: 1-yr period ending 3/23/2021

[4]Min return: 1-yr period ending 3/5/2009

[5]Two flat years, in which the return was 0%, included in observations

[6]Max return: 1-yr period ending 3/18/2021

[7]Min return: 1-yr period ending 3/5/2009

[8]Four flat years, in which the return was 0%, included in observations

[9]Max return: 1-yr period ending 3/9/2010

[10]Min return: 1-yr period ending 11/20/2008

[1]Rolling returns refers to every 1-year period that started on a business day within the listed date range

	1-Year Term **iShares U.S. Real Estate ETF** 12/31/2005 – 12/31/2025 4,959 observations[11]	1-Year Term **SPDR Gold Shares ETF** 12/31/2005 – 12/31/2025 4,959 observations[14]
Average Performance		
Average Return	3.77%	10.51%
Average Gain	16.35%	19.69%
Average Loss	-14.44%	-8.05%
Positive Performance		
Maximum Return	116.25%[12]	71.66%[15]
Number of Gains	2,934 (59%)	3,318 (67%)
Negative Performance		
Minimum Return	-64.09%[13]	-29.28%[16]
Number of Losses	2,024 (41%)	1,638 (33%)
Return Distribution		
-100% to -20%	9.98%	2.60%
-20% to -10%	9.09%	6.61%
-10% to 0%	21.76%	23.88%
0% to 10%	23.49%	20.97%
10% to 20%	17.54%	14.36%
20% to ∞	18.13%	31.58%

[11]One flat year, in which the return was 0%, included in observations

[12]Max return: 1-yr period ending 3/23/2021

[13]Min return: 1-yr period ending 3/5/2009

[14]Three flat years, in which the return was 0%, included in observations

[15]Max return: 1-yr period ending 12/23/2025

[16]Min return: 1-yr period ending 11/26/2013

INDEX ANALYSIS USING 2-YEAR ROLLING RETURNS

The data in the following tables uses 2-year rolling returns[1] of the applicable index or ETF to highlight average performance, positive performance, negative performance and return distribution.

	2-Year Term
	S&P 500 Index (SPX) 12/31/2005 – 12/31/2025 4,698 observations[2]
Average Performance	
Average Return	19.90%
Average Gain	27.29%
Average Loss	-21.36%
Positive Performance	
Maximum Return	99.15%[3]
Number of Gains	3,985 (85%)
Negative Performance	
Minimum Return	-51.77%[4]
Number of Losses	713 (15%)
Return Distribution	
-100% to -20%	7.56%
-20% to -10%	3.32%
-10% to 0%	4.30%
0% to 10%	13.09%
10% to 20%	21.46%
20% to ∞	50.28%

[2]Zero flat years, in which the return was 0%, included in observations

[3]Max return: 2-yr period ending 3/23/2022

[4]Min return: 2-yr period ending 3/9/2009

[1]Rolling returns refers to every 2-year period that started on a business day within the listed date range

INDEX ANALYSIS USING 3-YEAR ROLLING RETURNS

The data in the following tables uses 3-year rolling returns[5] of the applicable index or ETF to highlight average performance, positive performance, negative performance and return distribution.

	3-Year Term **S&P 500 Index (SPX)** 12/31/2005 – 12/31/2025 4,436 observations[6]	3-Year Term **Russell 2000** 12/31/2005 – 12/31/2025 4,436 observations[9]
Average Performance		
Average Return	30.58%	23.33%
Average Gain	39.85%	33.08%
Average Loss	-20.51%	-16.63%
Positive Performance		
Maximum Return	102.61%[7]	138.02%[10]
Number of Gains	3,755 (85%)	3,566 (80%)
Negative Performance		
Minimum Return	-46.97%[8]	-52.68%[11]
Number of Losses	681 (15%)	870 (20%)
Return Distribution		
-100% to -20%	9.49%	6.94%
-20% to -10%	2.55%	6.11%
-10% to 0%	3.31%	6.56%
0% to 10%	1.22%	7.71%
10% to 20%	1.62%	15.01%
20% to ∞	81.81%	57.66%

[6]Zero flat years, in which the return was 0%, included in observations

[7]Max return: 3-yr period ending 3/9/2012

[8]Min return: 3-yr period ending 3/5/2009

[9]Zero flat years, in which the return was 0%, included in observations

[10]Max return: 3-yr period ending 3/9/2012

[11]Min return: 3-yr period ending 3/5/2009

[5]Rolling returns refers to every 3-year period that started on a business day within the listed date range

INDEX ANALYSIS USING 6-YEAR ROLLING RETURNS

The data in the following tables uses 6-year rolling returns[1] of the applicable index or ETF to highlight average performance, positive performance, negative performance and return distribution.

	6-Year Term **S&P 500 Index (SPX)** 12/31/2005 – 12/31/2025 3,654 observations[2]	6-Year Term **Russell 2000** 12/31/2005 – 12/31/2025 3,654 observations[5]
Average Performance		
Average Return	79.47%	61.18%
Average Gain	79.92%	61.54%
Average Loss	-1.02%	-7.29%
Positive Performance		
Maximum Return	207.76%[3]	256.44%[6]
Number of Gains	3,634 (99%)	3,635 (99%)
Negative Performance		
Minimum Return	-3.12%[4]	-17.75%[7]
Number of Losses	20 (1%)	19 (1%)
Return Distribution		
-100% to -20%	0.00%	0.00%
-20% to -10%	0.00%	0.16%
-10% to 0%	0.55%	0.36%
0% to 10%	9.82%	4.11%
10% to 20%	3.04%	9.20%
20% to ∞	86.59%	86.18%

[2]Zero flat years, in which the return was 0%, included in observations

[3]Max return: 6-yr period ending 3/5/2015

[4]Min return: 6-yr period ending 11/15/2012

[5]Zero flat years, in which the return was 0%, included in observations

[6]Max return: 6-yr period ending 3/9/2015

[7]Min return: 6-yr period ending 3/18/2020

[1]Rolling returns refers to every 6-year period that started on a business day within the listed date range

For advice tailored to your specific circumstances, contact your financial professional.

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