

First Trust Barclays Edge Index 1-Year Index Analysis

With a fixed-indexed or registered index-linked annuity from MassMutual Ascend Life Insurance Company, you can allocate funds to 1-year term indexed strategies that earn returns based on the First Trust Barclays Edge Index. This index is a multi-asset index seeking to provide equity and fixed income exposure through a combination of indexes, while aiming to control risk by maintaining a volatility target at or below 7%. The Index is on an excess return basis, which means it returns the index performance in excess of risk-free rates. Let's take a closer look.

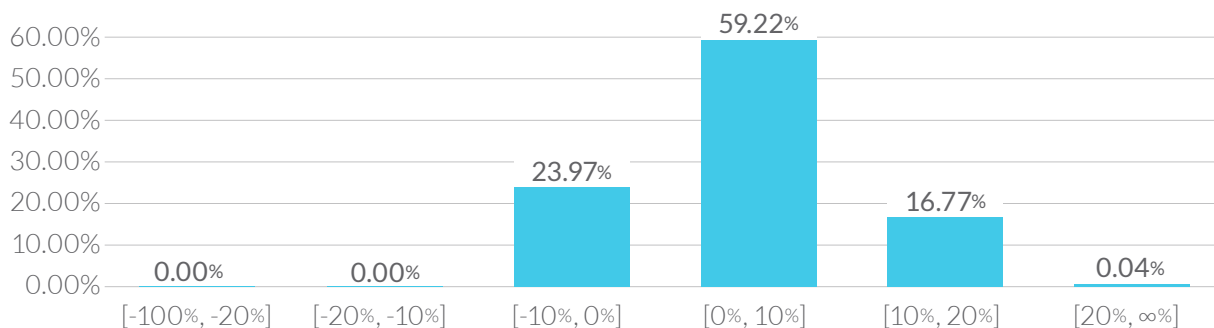
First Trust Barclays Edge Index returns using rolling periods

The data below uses hypothetical 1-year rolling returns¹ to illustrate how the First Trust Barclays Edge Index would have performed if it existed from December 31, 2013 through December 31, 2023, for a total of 2,349² observations.

| Hypothetical Average Performance | | | Hypothetical Positive Performance | | Hypothetical Negative Performance | |
|----------------------------------|--------------|--------------|-----------------------------------|----------------|-----------------------------------|---------------|
| Average Return | Average Gain | Average Loss | Maximum Return ³ | Num of Gains | Minimum Return ⁴ | Num of Losses |
| 4.61% | 7.05% | -3.13% | 20.33% | 1,786 (76%) | -6.81% | 563 (24%) |

First Trust Barclays Edge Index return distribution

Using the same hypothetical data set and assumptions, the return distribution graph below illustrates how frequently the hypothetical annualized returns fell into specific ranges. The table below the graph shows the hypothetical average return by range.



| Hypothetical Return Range | [-100%, -20%] | [-20%, -10%] | [-10%, 0%] | [0%, 10%] | [10%, 20%] | [20%, ∞%] |
|--|---------------|--------------|------------|-----------|------------|-----------|
| Hypothetical Average First Trust Barclays Edge Index Return by Range | N/A | N/A | -3.13% | 5.56% | 12.26% | 20.33% |

MassMutual Ascend offers several types of annuities, which have varying levels of upside potential and downside protection. Annuities also offer benefits such as tax deferral and guaranteed lifetime income. Talk with your financial professional about how an annuity can fit into your portfolio and help you reach your goals.

The launch date of the First Trust Barclays Edge Index was April 14, 2023.

¹1-year rolling returns refers to every 1-year period that started on a business day after December 30, 2013 and ended before January 1, 2024.

²Zero flat years, in which the First Trust Barclays Edge Index hypothetical return was 0%, is included in the number of total observations.

³Hypothetical maximum return: 1-year period ending 1/26/2018

⁴Hypothetical minimum return: 1-year period ending 1/2/2023

Not a bank or credit union deposit or obligation • Not FDIC or NCUA-Insured • Not insured by any federal government agency
May lose value • Not guaranteed by any bank or credit union

Annuities are long-term investments and may not be suitable for all investors. Withdrawals from an annuity contract may have tax consequences.

IMPORTANT DISCLOSURE RELATING TO BACK TESTED INDEX WEIGHTINGS

This material is provided for information purposes only and to provide general information about the historical exposures of the index's equity and fixed income components as a result of the application of the index methodology and has inherent limitations. It is not intended as a recommendation or an offer or solicitation for the purchase or sale of any security or financial instrument, or to enter into a transaction involving any financial instrument. Nothing in this material should be construed as investment, tax, legal, accounting, regulatory or other advice.

The back tested performance included has many inherent limitations, some of which are described below:

- Hypothetical exposures are achieved by implementing the index's methodology.
- The creation of historical index exposures involves assumptions and the benefit of hindsight and do not reflect the impact that material market or economic events might have had on the underlying indexes or volatility control weightings.
- No representation is being made that the Index will maintain to similar exposures in the future. Actual results will materially vary from the hypothetical performance levels presented herein.

Neither Barclays Bank PLC ("BB PLC") nor any of its affiliates (collectively "Barclays") is the issuer or producer of MassMutual Ascend's products and Barclays has no responsibilities, obligations or duties to investors in MassMutual Ascend's products. The Barclays US 2Y Treasury Futures Index, Barclays US 5Y Treasury Futures Index, Barclays US 10Y Note Index, and Barclays Switch USD Signal Index (collectively, the "Indices"), together with any Barclays indices that are components of the Indices, are trademarks owned by Barclays and, together with any component indices and index data, are licensed for use by FTIS in connection with the First Trust Barclays Edge Index.

Barclays' only relationship with the MassMutual Ascend in respect of the Indices is the licensing of the Indices to FTIS, which are administered, compiled and published by BB PLC in its role as the index sponsor (the "Index Sponsor") without regard to MassMutual Ascend's products or investors in MassMutual Ascend's products. Additionally, MassMutual Ascend as issuer or producer of MassMutual Ascend's products may for itself execute transaction(s) with Barclays in or relating to the Indices in connection with MassMutual Ascend's products. Investors acquire MassMutual Ascend's products from MassMutual Ascend and investors neither acquire any interest in the Indices nor enter into any relationship of any kind whatsoever with Barclays upon making an investment in MassMutual Ascend's products. MassMutual Ascend's products are not sponsored, endorsed, sold or promoted by Barclays and Barclays makes no representation regarding the advisability of MassMutual Ascend's products or use of the Indices or any data included therein. Barclays shall not be liable in any way to MassMutual Ascend, investors or to other third parties in respect of the use or accuracy of the Indices or any data included therein.

The Products are not issued, sponsored, endorsed, sold, recommended, or promoted by First Trust, Bloomberg, Nasdaq, Value Line, or their respective affiliates (collectively, the "Companies"). The Companies do not make any representation regarding the advisability of investing in the Products or products based on the FTIS Index, Barclays Indices, Nasdaq Index, or Value Line Index, do not make any warranties or bear any liability with respect to such products, and do not make any warranties or bear any liability with respect to the Products, the FTIS Index, or another party's index.

THE COMPANIES DO NOT GUARANTEE THE ADEQUACY, ACCURACY, TIMELINESS, COMPLETENESS, AND/OR UNINTERRUPTED CALCULATION OF THE PRODUCTS, FTIS INDEX, BARCLAYS INDICES, NASDAQ INDEX, VALUE LINE INDEX, OR ANY DATA INCLUDED THEREIN OR ANY COMMUNICATION WITH RESPECT THERETO, INCLUDING, ORAL, WRITTEN, OR ELECTRONIC COMMUNICATIONS. THE COMPANIES SHALL HAVE NO LIABILITY FOR ANY ERRORS, OMISSIONS, OR INTERRUPTIONS IN THE PRODUCTS, FTIS INDEX, BARCLAYS INDICES, NASDAQ INDEX, OR VALUE LINE INDEX. THE COMPANIES MAKE NO WARRANTY, EXPRESS OR IMPLIED, AS TO THE RESULTS TO BE OBTAINED BY LICENSEES, OWNERS OF THE PRODUCTS OR OF PRODUCTS BASED ON THE FTIS INDEX, BARCLAYS INDICES, NASDAQ INDEX, OR VALUE LINE INDEX, OR BY ANY OTHER PERSON OR ENTITY FROM THE USE OF THE FTIS INDEX, BARCLAYS INDICES, NASDAQ INDEX, OR VALUE LINE INDEX, OR ANY DATA INCLUDED THEREIN.

The First Trust Barclays Edge Index ("FTIS Index") is a product of FT Indexing Solutions LLC ("FTIS") and is administered and calculated by Bloomberg Index Service Limited and its affiliates (collectively, "BISL"). FIRST TRUST® and First Trust Barclays Edge Index are trademarks of First Trust Portfolios L.P. (collectively, with FTIS and their respective affiliates, "First Trust"). The foregoing index and trademarks have been licensed for use for certain purposes by Barclays, Bloomberg, and MassMutual Ascend Life Insurance Company (collectively, the "Licensees") in connection with the FTIS Index and certain products utilizing the FTIS Index (collectively, the "Products").

The Capital Strength Index ("Nasdaq Index") is a product of Nasdaq, Inc. (collectively, with its affiliates, "Nasdaq"). NASDAQ®, CAPITAL STRENGTH INDEX™, NQCAPST™, and NQCAPST™ are trademarks of Nasdaq. The foregoing index and trademarks have been licensed for use for certain purposes by FTIS and Licensees in connection with the FTIS Index and the Products.

The Value Line Dividend Index ("Value Line Index") is a product of Value Line, Inc. ("Value Line"). VALUE LINE® and VALUE LINE DIVIDEND INDEX™ are trademarks or registered trademarks of Value Line. The foregoing index and trademarks have been licensed for use for certain purposes by FTIS and Licensees in connection with the FTIS Index and the Products. The FTIS Index is not sponsored, endorsed, recommended, sold or promoted by Value Line and Value Line makes no representation regarding the advisability of investing in any product utilizing the FTIS Index.

BLOOMBERG® is a trademark and service mark of Bloomberg Finance L.P. Bloomberg Finance L.P., BISL, and their affiliates ("Bloomberg") are not affiliated with First Trust or Barclays. Bloomberg's relationship to First Trust and Barclays is only (1) in the licensing of the FIRST TRUST®, BARCLAYS®, and FIRST TRUST BARCLAYS EDGE INDEX™ trademarks and (2) to act as the administrator and calculation agent of the FTIS Index, which is the property of FTIS. Bloomberg does not guarantee the timeliness, accurateness, or completeness of the FTIS Index or any data or information relating thereto and shall have no liability in connection with the FTIS Index or any data or information relating thereto.

Annuities issued by MassMutual Ascend Life Insurance CompanySM (Cincinnati, Ohio), a wholly owned subsidiary of Massachusetts Mutual Life Insurance Company (MassMutual) under contract forms P1833621NW, P1825218NW, P1841622NW, P1074514NW, P1129918NW, ICC20-P1474420NW, P1474420NW, ICC20-P1144520NW, P1144520NW, ICC20-P1144420NW, P1144420NW, P1470017NW, P1112916NW, P1134618NW, P1140219NW, P1146620NW, ICC21-P1476721NW, ICC21-P1152121NW, ICC21-P1152021NW, P1833621ID, P1825218ID, P1841622ID, P1074514ID, P1129918ID, P1112916ID, P1134618ID, P1140219ID, P1146620ID, and P1470017ID.

All guarantees subject to the claims-paying ability of MassMutual AscendSM.

This content does not apply in the state of New York.

NOT A BANK OR CREDIT UNION DEPOSIT OR OBLIGATION • NOT FDIC OR NCUA-INSURED • NOT INSURED BY ANY FEDERAL GOVERNMENT AGENCY • MAY LOSE VALUE • NOT GUARANTEED BY ANY BANK OR CREDIT UNION

∴ MassMutual Ascend

© 2024 MassMutual Ascend Life Insurance Company, Cincinnati, OH 45202.

All rights reserved. www.MassMutualAscend.com

P1857624NW

4/24