

# Understanding Fixed-Indexed Annuities (FIA) and Their Potential Role in Asset Allocation Portfolios

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## Executive Summary

- This paper provides an overview of fixed-indexed annuities, including the main advantages and limitations, historical performance relative to equities and fixed income, as well as an assessment of the benefits that these products may provide to multi-asset portfolios.
- The biggest advantage of fixed-indexed annuities is the principal protection feature. Principal protection may be very important for investors nearing or already in retirement, many of whom are extremely averse to market downturns. In addition to the capital preservation properties of a FIA, they also provide the opportunity for capital growth based on the performance of the selected market index.
- Risk and return characteristics of a FIA are more consistent with fixed income compared to risk and return characteristics of equity. This is an important performance differentiator on a forward looking basis, given the relatively unattractive outlook for traditional fixed income portfolios.
- Our analysis demonstrated that the historical return and risk of the FIA we evaluated were similar to fixed income, while exhibiting a higher correlation to equities. We also evaluated the performance of the FIA and fixed income conditional of various market environments.
- It may be appropriate for investors to consider a FIA as an alternative to fixed income, as our analysis shows that FIAs tend to outperform in periods when interest rates are below the long-term median, which is consistent with current conditions. Given the near-zero interest rate environment, the interest rate risk related to fixed income investments is becoming increasingly asymmetric to the downside. In contrast, our ex-ante analysis showed a higher expected return forecast for the FIA, while providing a capital preservation feature with similar historical risk and return characteristics to that of fixed income, which may yield a more compelling outcome in multi-asset portfolios on a forward looking basis.
- Our analysis indicated that the FIA we evaluated serves as a suitable replacement to traditional fixed income<sup>1</sup> in asset allocation models of equity and fixed income investments. Our analysis included both historical and ex-ante analysis to show the impact of including the FIA in asset allocation portfolios.

## What is a Fixed-Indexed Annuity (FIA)?

People planning for retirement may use a fixed-indexed annuity (FIA)<sup>2</sup> to participate in market performance for a contract-specified period-of-time, after which they may have options such as receiving periodic income payments or a lump sum payment of the FIA's final market value. The main difference between a FIA and a traditional annuity, or immediate annuity, is that a FIA is able to generate tax-deferred interest linked to a market index in the accumulation phase. Investors should seek to understand the contract details and the implications of the potential outcomes associated with each product structure. There are many combinations of contract specifications for FIAs, many of which include but are not limited to the following to the Term, Market Index, Indexing Method, Interest Crediting Strategy, and Surrender Charges.

The return calculation for a FIA product entails two steps: indexing and crediting. Indexing, also known as index tracking, measures the return of the market index over a stated period-of-time. Fixed-indexed annuities typically apply one of three main indexing methods to calculate a market index's return for each time-period: Point-to-Point, Sum, and Averaging. Different indexing methods may result in a set of divergent outcomes<sup>3</sup>, and therefore, it is important for investors to understand the index tracking method for a given product, the most common of which is the point-to-point method. Crediting strategies, on the other hand, return a specified

<sup>1</sup> The benchmark used for our analysis is the Bloomberg Barclays U.S. Aggregate Bond Total Return Index. Different benchmarks that include more credit exposure and structured credit may yield a different outcome.

<sup>2</sup> FIA was developed in 1995 by a Canadian insurance company, Keyport Life.

<sup>3</sup> For instance, the "sum" method is more sensitive to market volatility compared to the "averaging" method, while the "point-to-point" method is most sensitive to timing risk.



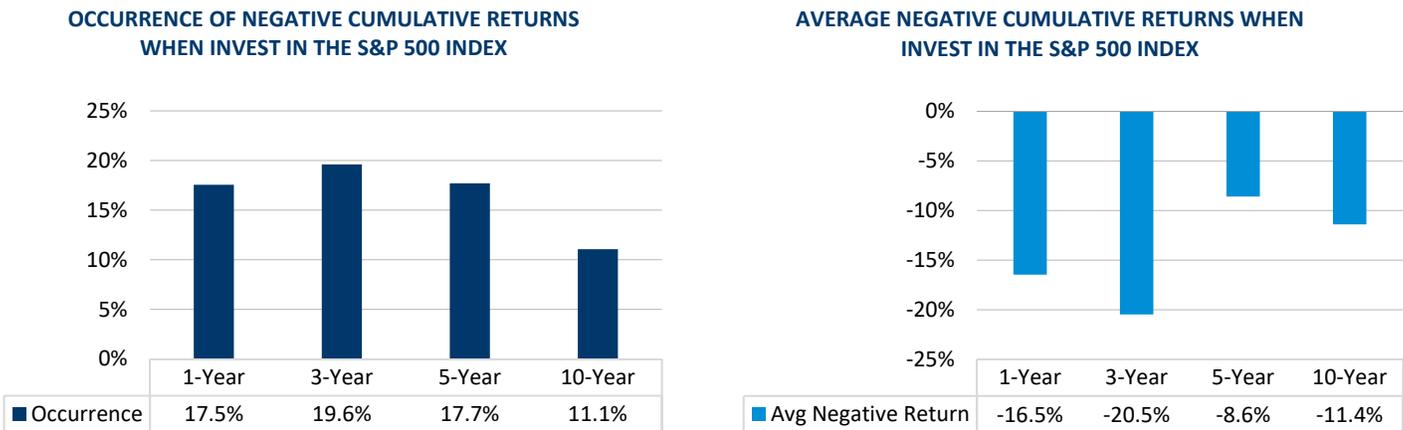
amount of interest to the FIA account for any given level of market index return. Crediting strategies<sup>4</sup> measure the amount of interest the insurance company credits to the account after the market index return is calculated using one of the aforementioned indexing methods. Once the indexing and crediting strategies have been determined, the return calculation is rules-based, transparent, and clearly defined in the FIA contract.

## Advantages of Investing in Fixed-Indexed Annuities

The biggest advantage of fixed-indexed annuities is the principal protection feature. As described in the last section, there is no downside risk except for the counter-party risk associated with the financial status of the insurance company. Principal protection may be very important for investors nearing or already in retirement, many of whom are extremely averse to market downturns. *Exhibit 1-A* shows that investors in the S&P 500 Index risk an 11.1% probability of experiencing an average negative total return of -11.4% over a time horizon of 10 years. One important benefit of the principal protection feature is the reduction in path risk, or sequence-of-return risk, relative to investing in a market index.

Despite the capital preservation properties of a FIA, they still provide the opportunity for capital growth based on the performance of the selected market index. Other low risk assets, such as CDs and short-term bonds, offer capital preservation but also more limited rates of returns, which could lead to negative real returns during periods of high inflation. Fixed-indexed annuities, however, offer participation in some of the upside of appreciating capital markets.

**Exhibit 1-A. Path Risk of Investing in the S&P 500 Index<sup>5</sup>**



## Limitations of Fixed-Indexed Annuities

As with many other structured products, fixed indexed annuities have both benefits and limitations. For example, the principal protection guarantee of a FIA may come with the trade-off of lower capital market returns<sup>6</sup> relative to an equity market index, primarily due to structural costs to get market exposure and/or to hedge the market risk in a FIA. Furthermore, FIAs may not capture dividends when tracking a price return index, which may also limit returns. Therefore, investors should not be surprised to find that the returns of fixed-indexed annuities are more comparable to conservative investment products such as fixed income assets, as we discuss in the subsequent sections of this paper.

<sup>4</sup> These crediting strategies could be combined under certain cases, for instance, a participation rate with a spread.

<sup>5</sup> The observation time window is from 1991/12 to 2019/12. Investors could invest in the S&P 500 Index at any month-end date within the time window and hold the position for 1, 3, 5, or 10 years.

<sup>6</sup> Fixed indexed annuities rarely provide 100% participation in the upside return of a traditional equity market index such as the S&P 500 Index if it is used as the underlying market index.



Like most annuity products, FIA investors may be subject to surrender fees which could range from 5% to 10% depending on the term of period on the FIA contract. This lack of liquidity may lead to opportunity costs if the investors’ time horizon and risk appetite do not fit with the terms of the product. That being said, some products may offer more attractive liquidity features, which may also come at the expense of lower cap rates relative to those products with less liquidity. Fixed-indexed annuities are also subject to counter-party risk, and investors should assess the credit worthiness and financial strength of the insurance company that sponsors the product as part of evaluating an investment in a fixed-index annuity.

## Historical Performance Profile of FIA

To get a clear view of how the FIA would have performed historically, we simulated historical cap rates for the past 28 years (1991/12 to 2019/12) and applied them to a new FIA developed for the defined contribution market. We then evaluated the historical performance of this FIA product relative to traditional equity and fixed income asset classes.

### HISTORICAL PERFORMANCE OF EQUITY, FIXED INCOME AND FIA

We are able to simulate the performance of a FIA using simulated hypothetical cap rates and compare the performance with that of traditional asset classes such as equities and fixed income<sup>7</sup>. Assuming the cap rate is reset at the beginning of each year from 1991 to 2019, we calculate the cumulative growth of the FIA, equities, and fixed income over this 28-year time period, as shown in Exhibit 1-B. The results may be surprising for investors who expect to receive equity-like returns with downside protection from a FIA. The FIA performance profile shown is actually more comparable with fixed income, providing modest capital growth with downside protection.

Exhibit 1-B. Cumulative Growth of Equity, Fixed Income, and the FIA

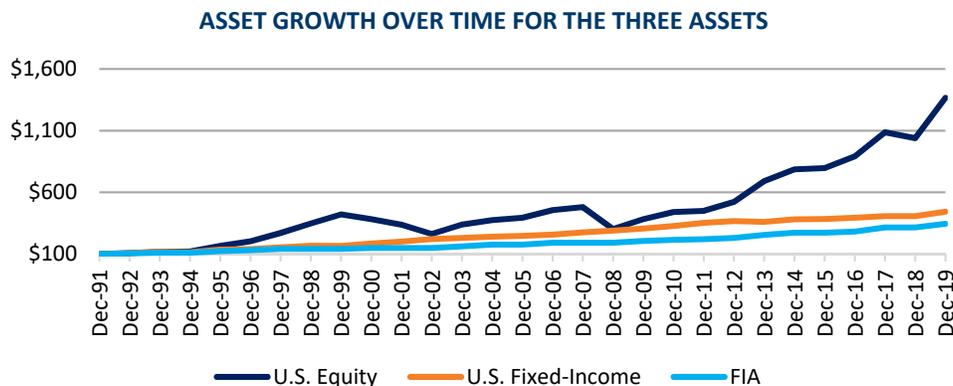


Exhibit 1-C shows a comparison of the historical calendar year risk and return metrics of these three assets, which demonstrates the following:

- The FIA exhibits a risk and return profile that is more commensurate to fixed income than equities.
- We also observe that return and risk metrics of the FIA is more comparable to fixed income, and is therefore a better substitute for fixed income in a multi-asset portfolio.
- The historical simulation indicates that the FIA would have historically underperformed fixed income by 0.94% annually with a lower volatility level. The exhibit also highlights the fact that U.S. Fixed-Income delivered negative returns 10.7% of the time, while the FIA provided principal protection during the same periods. This is an important performance differentiator on a forward looking basis, given the relatively unattractive outlook for traditional fixed income portfolios.

<sup>7</sup> The S&P 500 Total Return Index and the Bloomberg Barclays U.S. Aggregate Bond Total Return Index are proxies for equity and fixed-income respectively.



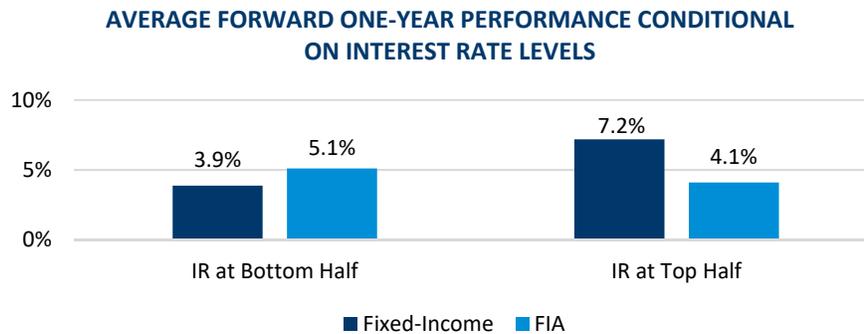
**Exhibit 1-C. Historical Simulated Performance Statistics: Annualized Returns From 1991 -2019**

	U.S. EQUITY	U.S. FIXED INCOME	FIA
Ann. Returns	9.79%	5.46%	4.52%
Ann. Volatility	17.52%	4.55%	4.18%
& of Negative-Return Years	17.9%	10.7%	0.0%
Correlation with Equity	1.00	0.06	0.67
Correlation with Fixed Income	0.06	1.00	0.24

**FORWARD PERFORMANCE UNDER DIFFERENT MARKET ENVIRONMENTS: FIA VS. FIXED INCOME**

Given that we have identified the performance similarity between FIAs and fixed income, it’s also important to assess the performance of these the two investments during different market environments, for which the distinct market variables are interest rates and historical equity volatility<sup>8</sup>. For the purpose of this analysis, we measured the forward 12-month return for the FIA and fixed income following each month-end observation of the U.S. 10 Year Treasury Yield during a 27-year time-period. The chart in *Exhibit 1-D* shows the average forward 12-month return for the FIA and fixed income, conditional on the top and bottom half of the observed interest rate over the entire time-period.

**Exhibit 1-D. Forward Performance of FIA and Fixed-Income Conditional on Interest Rate Levels (1991 – 2018)**



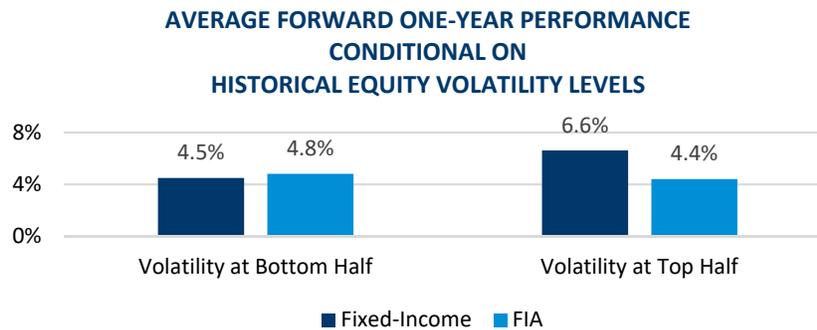
The analysis in *Exhibit 1-D* shows that fixed income conditional forward returns are consistent with the fact that fixed income performance tends to be suppressed when interest rates are at a relatively low level: not only because the yield income of a fixed income asset is relatively low, but also because asset value depreciation is more likely due to interest rate hikes. FIAs have similar patterns of conditional performance as fixed income because the financing cost for FIAs to capture equity market participation is directly related to the yield of corporate fixed income securities, which are very sensitive to interest rates. Nonetheless, the observation that the FIA outperformed fixed income when interest rates were relatively low is an important criteria when evaluating the product as a fixed income replacement.

We conducted the same analysis using historical equity volatility as the conditional variable. As shown in *Exhibit 1-E*, the FIA outperformed fixed income by 0.3% on average during the 12 months following periods when equity volatility was in the bottom-half of observations. The FIA underperformed fixed income by 2.2% on average when the historical volatility level was in the top-half of observations. This demonstrates that while the FIA may over/underperform fixed income under different market environments, the historical performance over the whole period was relatively comparable to that of fixed income.

<sup>8</sup> Interest rate is based on U.S. Treasury 10-Year bond yields, and historical equity volatility is based on trailing 12-month volatilities of the S&P 500 Index.



**Exhibit 1-E. Forward Performance of FIA and Fixed-Income Conditional on Historical Equity Volatility**



**Asset Allocations with FIAs**

In the following analysis, we first explore the historical simulated performance data, and we then apply Wilshire’s Capital Asset Pricing Model assumptions to evaluate a FIA’s role on an ex-ante basis.

**FIA AS A FIXED-INCOME REPLACEMENT IN A 60/40 PORTFOLIO**

A balanced 60% equity/40% fixed income portfolio represents the industry standard guidepost for constructing moderate-risk asset allocation portfolios. Therefore, we conduct our analysis using this asset allocation structure, and consider three different sets of portfolios to incorporate the FIA as a fixed income replacement. We first apply an approach similar to that of Roger G. Ibbotson<sup>9</sup>, in which he analyzed how the FIA performed based on the performance of fixed income, as measured by below and above median performance for fixed income returns over the observation time-period. We applied a different simulation method over a more recent time-period<sup>10</sup> from 1991-2019, as shown in *Exhibit 2-A*, and came to the same observations. Overall, replacing fixed income with the FIA in a 60%/40% portfolio resulted in a marginal change in average one-year returns during the 28-year observation time window. However, investors should also consider the future benefit of such investments given the current low yields offered by traditional fixed income, which therefore have relatively unattractive forward looking return expectations.

**Exhibit 2-A. Average One-Year Returns Based on the Performance of Fixed Income<sup>11</sup>**

	Average One-Year Return		OVERALL
	WHEN FIXED INCOME RETURN BELOW THE MEDIAN	WHEN FIXED INCOME RETURN ABOVE THE MEDIAN	
<b>% of Observations</b>	<b>50.0%</b>	<b>50.0%</b>	<b>100.0%</b>
<b>U.S. Equity</b>	12.04%	10.02%	11.03%
<b>U.S. Fixed Income</b>	2.15%	8.89%	5.53%
<b>FIA</b>	4.42%	4.75%	4.58%
<b>60/40 (Equity &amp; Fixed Income)</b>	8.09%	9.57%	8.83%
<b>60/20/20 (Equity &amp; Fixed Income &amp; FIA)</b>	8.54%	8.74%	8.64%
<b>60/40 (Equity &amp; FIA)</b>	8.99%	7.91%	8.45%

We also evaluated how the FIA performed when fixed income underperformed and outperformed equities. Based on the data shown in *Exhibit 2-B*, we found that fixed income underperformed and outperformed equities 72.9% and 27.1% of time, respectively. When fixed income underperformed equities, the FIA outperformed fixed income due its participation in some of the return of equities. This contributed to higher average returns for portfolios that incorporated the FIA as a fixed income substitute. When fixed income

<sup>9</sup> Roger G. Ibbotson. (2018). *Fixed Indexed Annuities: Consider the Alternative*. Zebra Capital Management, LLC.

<sup>10</sup> We simulated FIA cap rates from 1991/12 to 2019/12, and R G. Ibbotson on his paper simulated FIA participation rates from 1927 to 2016.

<sup>11</sup> We measured the returns for all 12-month periods from 1991-2019, and calculated the average returns during time-periods when returns of fixed-income were below and above the median.



outperformed equities, the two portfolios that incorporated the FIA as a fixed income substitute had lower average returns than the original 60%/40% portfolio.

**Exhibit 2-B. Average One-Year Returns Based on the Relative Performance of Fixed-Income vs. Equities<sup>12</sup>**

	Average One-Year Return		OVERALL
	WHEN FIXED INCOME UNDERPERFORMED EQUITY	WHEN FIXED INCOME OUTPERFORMED EQUITY	
% Of Observations	72.8%	27.1%	100.0%
U.S. Equity	18.42%	-8.88%	11.03%
U.S. Fixed Income	4.70%	7.77%	5.53%
FIA	5.61%	1.83%	4.58%
60/40 (Equity & Fixed Income)	12.94%	-2.22%	8.83%
60/20/20 (Equity & Fixed Income & FIA)	13.12%	-3.41%	8.64%
60/40 (Equity & FIA)	13.30%	-4.60%	8.45%

**Ex-ante FIA Performance Analysis**

We now consider ex-ante analysis to forecast how the FIA may perform based on current market conditions and evaluate whether the FIA is still an appropriate fixed income replacement based on this framework. We incorporate Wilshire’s CAPM model as of June 2020 to source our long-term asset class risk and return assumptions for equity and fixed income. Using these assumptions, we conducted simulations to generate a large sample of one-year returns for the FIA<sup>13</sup>, based on which we derive return distributions. As shown in *Exhibit 2-C1*, under CAPM assumptions based on the current market environment, the FIA has an ex-ante annualized return of 2.78% vs. 1.25% for fixed income, while its annualized expected volatility is much lower than that for fixed income. The table in *Exhibit 2-C2* shows the ex-ante return distributions for the three assets. We observe that the FIA has a higher median return level than fixed-income, while offering a downside protection feature. At the same time, there is a 36.1% probability that fixed income will deliver a negative return in the current low-interest-rate environment based on our ex-ante analysis, which is considerably higher than 10.7% of the negative calendar year return occurrence for fixed-income in the past 28 years, as shown earlier in the paper.

**Exhibit 2-C1. Ex-Ante Performance for Equity, Fixed-Income and the FIA**

	Ex-Ante Performance		
	ANNUALIZED RETURN	ANNUALIZED VOLATILITY	% OF NEGATIVE RETURNS
Equity	6.01%	14.76%	34.2%
Fixed Income	1.25%	3.52%	36.1%
FIA	2.78%	2.79%	0.0%

**Exhibit 2-C2. Ex-Ante Annualized Return Distributions for Equity, Fixed-Income and the FIA**

	Ex-Ante Annualized Return Distributions		
	25 <sup>th</sup> PERCENTILE	MEDIAN	75 <sup>th</sup> PERCENTILE
Equity	-3.94%	6.02%	15.9%
Fixed Income	-1.12%	1.25%	3.6%
FIA	0.00%	2.04%	5.4%

<sup>12</sup> We measured the returns for all 12-month periods from 1991-2019, and calculated the average returns during time-periods when fixed-income underperformed and outperformed equities.

<sup>13</sup> The FIA product tracks the performance of the S&P 500 Low Volatility Daily Risk Control 5.0% Excess Return Index, and its cap rate is set at 7.2% to reflect the actual FIA pricing at 2020/6.



## Conclusions

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- Fixed-indexed annuities are unique investment products that may provide investors with exposure to an attractive risk-reward profile. However, the contract specifications of each product may significantly impact the performance, fees, and liquidity for investors. It's important that investors evaluate and understand the underlying market index, the indexing and crediting methodologies, and the surrender charges for each individual FIA to ensure that these specifications are consistent with their risk profile and liquidity needs. That being said, some products may offer more attractive liquidity features, which may also come at the expense of lower cap rates relative to those products with less liquidity.
- Fixed-indexed annuities may provide principal protection and tax-deferred growth based on positive returns of a market index, but they may fall short of equities in providing capital growth. Our historical simulation demonstrated that over the long-term, the FIA exhibited much lower return and risk relative to equities. However, the FIA in our analysis exhibited a comparable performance profile to fixed income over the 28-year period. We also observed that, on average, the FIA outperformed fixed income in the 12 months following periods of time when interest rates or equity volatility were at relatively low levels.
- Fixed-indexed annuities may act as a fixed income replacement in multi-asset class models, while also providing diversification benefits. Our analysis showed that the FIA performed relatively well during time-periods when fixed income underperformed relative to its own history, or when fixed income underperformed equities.
- Our ex-ante analysis showed that using the FIA as a fixed income replacement in a portfolio that is underweight equity risk relative to fixed income could result in similar outcomes in average performance, while potentially benefiting from better downside protection due to the principal protection feature of the FIA.
- In summary, it is appropriate for investors to consider a FIA as an alternative to fixed income, as our analysis shows that FIAs tend to outperform in periods when interest rates are below the long-term median, which is consistent with current conditions. Given the near-zero interest rate environment, the interest rate risk related to fixed income investments is becoming increasingly asymmetric to the downside. In contrast, our ex-ante analysis showed a higher expected return forecast for the FIA, while providing a capital preservation feature with similar historical risk and return characteristics to that of fixed income, which may yield a more compelling outcome in multi-asset portfolios on a forward looking basis.



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