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# The Role of Annuities in Managing Sequence of Returns Risk Approaching and in Retirement

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# The Role of Annuities in Managing Sequence of Returns Risk Approaching and in Retirement

## Overview

In *The Role of Annuities in Managing Sequence of Returns Risk Approaching and in Retirement*, from the Spring 2024 issue of *The Journal of Retirement*, **Amit Soni** of **New York Life Investments** argues that individuals approaching retirement should allocate a portion of their assets to annuities to address the sequence-of-returns risk associated with stocks and bonds. Sequence-of-returns risk is highest for new retirees because it may not be possible to fully recover from market drawdowns that happen early in retirement. Annuities mitigate that risk by providing a fully predictable stream of income. Using a variety of Monte Carlo simulations and scenario analyses, Soni concludes that the optimal allocation to annuities (including Social Security benefits and traditional pensions) is roughly 50% to address uncertainty about both the level and timing of future investment performance.

## Practical Applications

- **Including annuities in a decumulation plan can improve the retirement experience for many individuals.** Compared to a traditional balanced portfolio, an optimal portfolio with annuities can substantially reduce the risk of experiencing shortfalls while minimizing potential bequests.

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## Key Definitions

### Longevity risk

Longevity risk is the risk that a retiree will live longer than expected and exhaust their retirement savings during their lifetime.

### Decumulation

Decumulation is the process of spending down one's retirement savings in retirement. A decumulation plan combines elements of investment strategy and spending strategy to maximize the amount that a retiree can afford to spend each period while managing the risk of exhausting resources during the retiree's lifetime. Annuities (including Social Security benefits and pension benefits) can be an important part of a decumulation plan for addressing longevity risk.

### Sequence risk, sequence-of-returns risk

Sequence risk is the risk that major investment losses may occur at a bad time in investors' lives, preventing them from having their desired level of spending in retirement. For example, a 30% drop in an investor's portfolio around the time of retirement will reduce the maximum level of sustainable spending much more than one that occurs 20 years earlier (when two decades remain to let the market recover) or 20 years later (when most of the portfolio already will have been withdrawn for retirement income).

- **As sequence-of-returns risk increases, higher allocations to annuities are warranted.** This result holds under varying definitions of what constitutes "success" for a decumulation strategy.
- **Protection against large unforeseen cash flow needs can be achieved with higher allocations to annuities.** Examples of large unforeseen cash flow needs include large withdrawals for health reasons or, more optimistically, for travel in retirement.

## Discussion

Advice regarding the accumulation phase of financial planning is familiar: allocate more to stocks when young and reduce portfolio risk as one gets closer to retirement. The young have time on their side to recover from potential losses in the volatile stock market and can reduce risk over time by gradually shifting their allocations from stocks to bonds. Yet increasing allocations to bonds may not be optimal given an uncertain withdrawal horizon in the decumulation phase. Soni argues that since boomers are now entering retirement, largely without traditional pensions (i.e., defined-benefit plans), it will become increasingly necessary to put more effort toward optimally allocating assets during the decumulation phase. That phase is characterized by longevity risk, possible liquidity events, and sequence-of-returns risk. Soni examines the challenges of optimal allocation in the decumulation phase by optimizing a hypothetical retirement portfolio allocation in a series of simulations.

> **❝The complexity of competing objectives on the decumulation side means little insight has been produced on the benefits various types of traditional and nontraditional investments can provide in managing risks that are unique to the retirement puzzle.❞**
>
> —The Role of Annuities in Managing Sequence of Returns Risk Approaching and in Retirement

## Annuity

An annuity is an insurance product that pays the purchaser a regular income, either for life or for a specified period. A deferred annuity is one where the income starts in the future; an immediate annuity is one where the income starts at the inception of the contract. A fixed annuity provides for fixed future payments, while payments from a variable annuity depend on the performance of a pool of investments. A single-premium annuity is a type of annuity that is purchased with a single lump-sum payment to the insurance company. Some annuities provide for payments for the joint lifetimes of the purchaser and their spouse. Most annuities have substantial surrender charges and early withdrawal penalties, but some offer a guaranteed lifetime withdrawal benefit (GLWB) that allows for early withdrawals with no penalty. Annuities provide a tool for retirees to address the risk of outliving their assets. The cost of an annuity depends on the annuitant's age (life expectancy), the annuity start date, and market conditions (e.g., interest rates) at the time of purchase. Annuities sometimes have been criticized for having high commissions and, in the case of variable annuities, high ongoing fees.

## Contract value

With respect to a variable annuity, the contract value is the amount that an investor would receive, less fees, if they walked away from the annuity.

Soni explains that by adding an annuity to a traditional stock and bond retirement portfolio, the probability of shortfall risk can be reduced without a material impact on the potential bequest. For simplicity, he focuses on an *immediate single-premium lifetime annuity (SPIA)*. When seeking a superior portfolio, Soni expects a nonzero allocation to the annuity and also demonstrates how the optimal allocation to the annuity changes in response to different conditions.

> **❝During the accumulation phase, we reduce market-timing risk by smoothing out cash flows through dollar cost averaging. Similarly, at the onset of retirement, we need to smooth this discontinuity in cash flows to reduce the sequence-of-returns risk and annuities can play a vital role in doing so.❞**
>
> **—The Role of Annuities in Managing Sequence of Returns Risk Approaching and in Retirement**

For the simulations, Soni drew from historical returns for US equities (Russell 1000 Index), an investment-grade bond index, and a high-yield bond index to create 1,000 market scenarios of 360 monthly returns. He combined them with a 6.14% yield from the SPIA quote for a 65-year-old female obtained from ImmediateAnnuties.com as of February 2023. He then generated the returns of portfolios in all possible four-asset class combinations, with weights ranging from zero to 100% in increments of 5%. This resulted in 1,881 portfolios, each with 1,000 market scenarios. He calculated the utility of these portfolios given asset class assumptions as shown in Exhibit 1, determined which portfolios had the highest utility, and then looked at the allocations of the portfolios that were optimal in the sense that they maximize utility for the investor.

| Exhibit 1: Asset Class Assumptions | | | | | | |
|---|---|---|---|---|---|---|
| | (A) Historical and Scaled Down Returns and Volatility of Asset Classes and Macro Variable | | | (B) Historical Monthly Correlations of Key Asset Classes | | |
| | Hist. Rtrns. | Avg. Rtrns. for Simult'n | Hist. Vol. | B'berg Agg. Bond Index | ICE BofA US HY Index | Russell 1000 Idx |
| Bloomberg Agg. Bond Idx | 6.2% | 4.6% | 4.4% | 1.00 | 0.33 | 0.18 |
| ICE BofA US High Yield Idx | 8.3% | 5.9% | 8.4% | | 1.00 | 0.63 |
| Russell 1000 Index | 10.6% | 7.6% | 15.4% | | | 1.00 |
| US CPI | 2.9% | 2.0% | 0.9% | | | |

Notes: Panel A shows the historical risk and return characteristics for the asset classes considered and for US inflation (consumer price index for urban consumers or the CPI). For scenario analysis, the CPI is assumed to be 2.0%, the long-term Federal Reserve target for Personal Consumption Expenditures (PCE), and the historical asset class returns are also scaled down in the same proportion. Panel B shows the historical asset class correlations for the same period as in Panel A: August 1983 to February 2023.

## Guaranteed benefit base

With respect to a variable annuity, the guaranteed benefit base is a hypothetical number that is used to calculate the guaranteed lifetime income benefit that will be paid out during the withdrawal period.

## Guaranteed roll-up rate

With respect to a variable annuity, the guaranteed roll-up rate is a guaranteed minimum growth rate applied to the benefit base. Depending on the annuity selected, roll-up rates can be applied daily, monthly, quarterly, or, most commonly, on an annual basis. They can be simple or compounded.

## Deferral period, accumulation period

With respect to an annuity, the deferral period, also known as the accumulation period, is the period before distributions begin.

To assess the suitability of the portfolios for the investor, Soni analyzed the following case: the retirement portfolio belongs to a 65-year-old female, total assets are $1 million, and income needs are $40,000 per year adjusted for inflation over a 30-year estimated retirement period. Soni used a utility function based on a coverage ratio to evaluate the portfolio's likelihood of meeting the competing objectives of avoiding a shortfall and increasing the expected bequest. The coverage ratio was defined as the number of years of inflation-adjusted sustainable withdrawals relative to the length of retirement.

To maximize utility, the optimal balance between shortfall risk and providing a bequest depends on the investor's risk aversion. Soni chose a single set of utility function parameters to represent the hypothetical retiree and, for each portfolio allocation, calculated the average utility across all 1,000 market scenarios. In the highest (average of the top 5%) utility portfolios, the initial average portfolio allocation to the annuity is almost 50%. Apart from having the highest utility across market scenarios, these optimal portfolios have slightly higher bequest amounts and a failure rate that is one-third that of an otherwise comparable 60% stock and 40% bond portfolio. Here, the failure rate means the portfolio assets did not outlive the asset owner.

Having established the initial portfolio, Soni examined how the optimal allocation to the annuity changed in response to different conditions in two different ways: sequence-of-returns risk

### Distribution period, withdrawal period

With respect to an annuity, the distribution period, also known as the withdrawal period, is the period during which distributions occur.

### Payout rate

With respect to a variable annuity, the payout rate is an age-based guaranteed withdrawal rate used for calculating the amount of the benefit paid to the annuity holder. The amount is determined by multiplying the guaranteed benefit base by the payout rate.

and liquidity events. Soni ranked 1,000 market scenarios in order of the sequence risk of equity class returns and divided the sample into deciles. The sequence-of-returns risk is measured by the aggregate of compounded returns that each withdrawal failed to experience. The higher the number, the greater the risk. Repeating the portfolio construction and utility calculations as before, by these deciles, revealed a clear pattern for a greater preference for the annuity at higher levels of sequence risk.

In a separate exercise, Soni compared five different liquidity events equal to one year's living expenses. The five separate events occurred in years 5, 10, 15, 20, and 25 of the retirement period. The earlier the events occur, the larger the optimal allocation to annuity. When a liquidity event happens early in retirement, it is akin to a higher sequence-of-returns risk where the portfolio is vulnerable to poor returns early in retirement.

In summary, the initial utility-maximizing portfolio allocation to the immediate single-period lifetime annuity was approximately half of the portfolio, and optimal allocations were positively related to both sequence-of-returns risk and liquidity-event risk. Soni further noted that to improve this strategy and mitigate market-timing risk associated with the purchase of annuities, they should be purchased over time, such as in a laddering strategy.

## Related Research

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