

Unbundling Investments from Insurance to Solve for Lifetime Sequence-of-Return Risk

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- Sequence-of-return risk affects individuals over their entire investing lifetime.
- We quantify how strategies that use a volatile portfolio to target a wealth accumulation goal or to sustain a constant spending strategy expose individuals to much greater risk than one might expect when looking at average long-term market returns. This risk is increased in a low interest rate environment.
- Individuals from different birth cohorts who otherwise behave in identical ways may experience dramatically different and unpredictable wealth accumulations, sustainable withdrawal rates, and sustainable levels of spending.
- This risk peaks in the “fragile decade” around the retirement date.
- The impact of this risk on sustainable retirement spending can be mitigated in a straightforward way by creating a risk wrapper for the investment portfolio through a contingent deferred annuity.
- Adding this protection during the fragile decade is an effective tool to help protect retirement spending from the amplified impacts of market volatility without having to reduce exposure to the expected beneficial risk premium from the stock market.
- ConstanceSM is a new option that allows for insurance to be placed on an existing investment portfolio to support lifetime income without creating a taxable event since assets do not need to be repositioned inside an annuity structure.



Introduction

Individual investors could be extremely vulnerable to the sequence of market returns experienced over their investing lifetimes. Individuals who behave in the same way over their careers, saving the same percentage of the same salary for the same number of years, can experience very different retirement outcomes based solely upon the specific sequence of

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investment returns accompanying their career and retirement. These outcomes relate to wealth accumulations at retirement, the sustainable withdrawal rate from investments during retirement, and the level of sustainable spending in retirement that combines pre-retirement wealth accumulation with the post-retirement sustainable withdrawal rate. This vulnerability

reaches its peak at the retirement date, as the portfolio returns experienced around that time will have the largest impact on lifetime financial outcomes. This is also the point in which a return to employment becomes increasingly difficult, such that a post-retirement market drop can be devastating to a retirement plan.

Actual wealth accumulations and sustainable withdrawal rates will vary substantially for those retiring at different times, as these outcomes depend disproportionately on the shorter sequence of returns just before and after retirement. The “fragile decade” is a term that describes the 10-year period centered around retirement.

In practical terms, someone investing over a 60-year lifecycle cannot depend on what they perceive as the average market return over those 60 years. Each year’s return does not contribute equally to financial outcomes.

Furthermore, U.S. financial markets have entered uncharted waters regarding the low bond yields available to investors. For those presently reaching retirement, this leads to an important concern about sustainable retirement spending. Retirement costs have risen dramatically relative to the past, and retirees will struggle to find suitable strategies in an investments-only world. With bonds, low interest rates mean bond portfolios will generate less income and will leave investors more exposed to capital losses should interest rates rise. This can increase exposure to sequence risk as retirees must rely more on capital gains to support spending from an investment portfolio. The lifetime sequence-



of-return risk problem is larger for those approaching retirement at the present.

We describe an innovative solution for retirees to manage sequence risk by pooling their market risk and longevity risk through a contingent deferred annuity that provides the traditional risk pooling benefits of an annuity with a much smaller “annuity footprint,” helping to overcome many of the traditional obstacles to annuity use.

Then we quantify the lifetime impact of sequence-risk using capital market assumptions more reflective of today’s market environment in order to emphasize the impact of this problem on retirees in a quantitative manner. This will highlight the concept of the fragile decade facing investors in the years just before and after retiring.

A New Solution to Protect Retirement Spending from Sequence-of-Return Risk

The importance and amplification of investment volatility in the fragile decade is one of the defining characteristics that distinguishes retirement income from the preceding wealth accumulation phase. Retirees have four basic methods for managing this sequence risk. First, they can simply spend less throughout retirement while investing aggressively and hoping for market upside that may only translate into a larger legacy. This is the concept embedded in heuristics such as the 4% rule and is surely the least satisfying of the options for those wishing to maximize retirement spending. Other options include to adjust spending in response to market performance, to reduce

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exposure to market volatility in strategic ways, or to have non-correlated assets outside the investment portfolio that can provide a temporary source of spending during a market downturn.

Here we emphasize the new ConstanceSM contingent deferred annuity from RetireOne[®] and Midland National[®] Life Insurance Company as an innovative and practical approach for managing volatility for the retirement plan by pooling market and longevity risk in the years around the retirement date. Rather than having individuals reduce their stock allocation in the fragile decade to avoid the heightened investment risk, retirees can wrap that risk for their investments with insurance that will provide protected lifetime payments for those who unfortunately face a poor sequence of market returns. This can be set up 5 or 10 years before retirement to protect retirement spending from poor returns in the fragile decade.



In the past, this type of approach could only be accomplished through a variable annuity with an optional guaranteed living benefit that required a greater degree of commitment and other potential downsides such as needing to sell nonqualified assets and pay capital gains taxes to cover the annuity premium. But ConstanceSM is a new option that allows for a risk wrapper to be placed on an existing investment portfolio

without creating a taxable event. The guarantee can be used with any portfolio that meets certain asset allocation criteria and draws from an approved list of mutual funds or ETFs from a variety of leading companies.

Investment managers can continue to manage these portfolios while helping to protect their client's

spending from sequence risk and potentially supporting a higher stock allocation than otherwise through the increased risk capacity afforded through protected lifetime income.

ConstanceSM is a contingent deferred annuity supporting lifetime income. It will feel quite different from a traditional annuity as the annuity aspect only comes into play later if the protected assets are depleted through planned retirement distributions accompanied by some combination of a poor sequence of market returns and a long retirement horizon. Until that happens, the client continues to invest the underlying assets as they would with eligible ETFs and mutual funds in a brokerage account, tax-deferred retirement account, or Roth

account, and pays a fixed fee for a risk wrapper on the account.

The three options for ConstanceSM are Core, CorePlus, and CorePlus X. Each provides more favorable lifetime income options for a higher fee. The fee supports a coverage base as a high watermark value of the underlying assets on contract anniversary dates to continue supporting protected lifetime income if the

underlying assets are depleted. When distributions begin, an age-based payment percentage is then locked in to support income as a percentage of the contract base. The protection can also be dropped at any point, which may be useful for those who make it through the fragile decade without experiencing a bad sequence of returns. Now

we investigate further exactly what this product is designed to protect.

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Lifetime Sequence-of-Return Risk

When seeking to use portfolio returns as a source of retirement spending, retirees must also deal with the sequence-of-return risk that amplifies the impact of traditional investment volatility. Financial market returns near the retirement date matter a great deal. Even with the same average returns over a long period of time, retiring at the start of a bear market is very dangerous because wealth can be depleted quite rapidly. With sequence risk for portfolio distributions, the extra shares sold to meet a spending goal when markets are down are no



longer available to experience the growth of any subsequent market recovery. The financial market returns experienced in the fragile decade around the retirement date matter a great deal more than retirees may realize.

Though sequence-of-return risk is related to general investment risk and market volatility, it differs in an important way. The average market return over a 30-year retirement period could be quite generous, suggesting that investment risk might be low. But if negative returns are experienced when one starts to spend from their portfolio, there is a difficult hurdle to overcome even if the market offers higher returns later to subsequently improve the average performance. This amplifies the impacts of investment volatility by making the retirement outcome more dependent on a shorter return sequence.

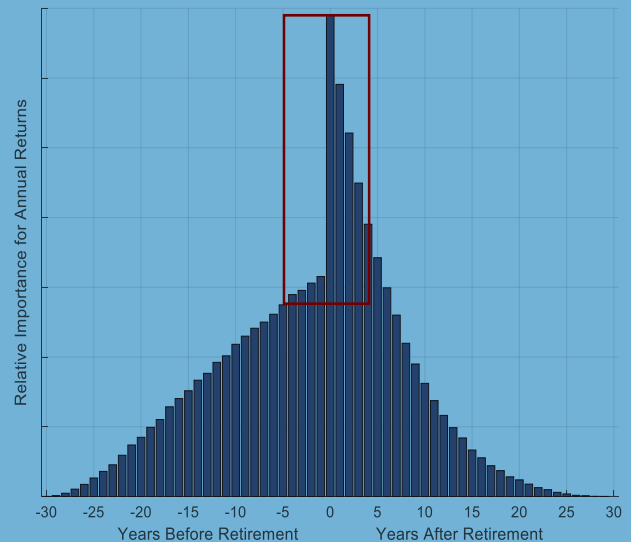
The dynamics of sequence risk suggest that a prolonged recessionary environment early in retirement could jeopardize the retirement prospects for a particular cohort of retirees. That scenario does not imply a large-scale economic catastrophe. This is a subtle but important point. Some retirees could experience very poor retirement outcomes relative to those retiring a few years earlier or later. Sustainable withdrawal rates can fall below what would be expected for average market returns over long periods of time, because the ordering of those returns matters.

Individual investors are vulnerable to the sequence of market returns experienced over their investing lifetimes. Individuals who behave in the same way over their careers—saving the same percentage of the same salary for the same number of years—can experience disparate outcomes based solely on the specific sequence

of investment returns that accompanies their career and retirement.

Exhibit 1 provides a visual for how sequence-of-return risk impacts both the accumulation and distribution phases, and how the impact also grows with retirement distributions. The exhibit is based on statistical regression analysis, which determines how much of the outcome (wealth accumulation for the first 30 years and sustainable withdrawal rate for the last 30 years) can be explained by the returns experienced in each year of the investing life-cycle. The exhibit isolates the impact of each year's return on lifetime outcomes using a larger sample of one million Monte Carlo simulations based on a 75 percent stock allocation. More details for the simulations are provided in the Methodology appendix.

*Exhibit 1: Lifetime Sequence-of-Return Risk: Wealth Accumulation and Maximum Spending Rate
75% Stock Allocation, Inflation-Adjusted Spending,
1 Million Monte Carlo Simulations*



Note: Assumptions are described in the Methodology appendix.



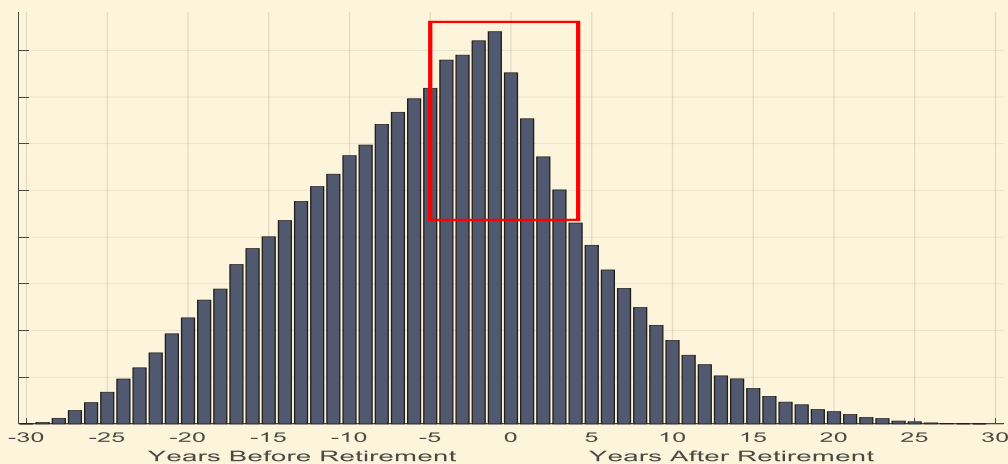
For the first 30 years (when individuals are saving), the portion of the final wealth accumulation at the retirement date that can be explained continues to grow from year 1 through year 30. With few contributions having yet to be made in the early part of one's career, the early returns have very little impact on the absolute level of wealth accumulated at the end of the savings period. But as retirement approaches, a given percentage return produces an increasing impact on the final wealth value in absolute terms as those returns impact more years of contributions. This is sequence-of-return risk in the context of the accumulation phase, as people are more vulnerable to the returns experienced after contributing more to their savings. A given percentage change has a bigger impact on absolute wealth, and a large drop in the portfolio value could offset the capital gains earned for most of the early part of one's career.

In years 31 through 60, during the retirement distribution phase, the exhibit shows the

impact of each year's return on the maximum sustainable withdrawal rate. The return in the first retirement year has the biggest impact on the rate of sustainable retirement spending. Retirees are extremely vulnerable to what happens just after they retire. As one moves further into retirement, returns have a rapidly decreasing impact, as the outcome for that retirement (high or low sustainable spending) was already set in motion during the first 5-10 years.

Exhibit 2 provides another variation of lifetime sequence risk that can help provide more intuition for these results. This exhibit combines the wealth accumulation at retirement with the maximum sustainable spending rate in retirement to obtain a maximum level of retirement spending for each Monte Carlo simulation. This integrates the pre- and post-retirement periods together to obtain one spending number and then investigates how that number relates to market returns in the 60-year investing lifecycle.

*Exhibit 2: Lifetime Sequence-of-Return Risk: Maximum Level of Retirement Spending
75% Stock Allocation, Inflation-Adjusted Spending, 1 Million Monte Carlo Simulations*



Note: Assumptions are described in the Methodology appendix.



Many retirees will find this to be a much more satisfying way to manage sequence risk than other common methods

With the integrated maximum lifetime spending for retirement, we do not see the same jump in the first year of retirement. The most important market return is the one experienced in the last year before retiring. With this measure, the pre-retirement years become relatively more important, expressing how a change in wealth prior to applying the maximum sustainable withdrawal rate for that retirement can have a bigger impact on the sustainable level of spending. Nonetheless, it remains the case that the years before and after retirement continue to have a disproportionate impact on the level of sustainable spending for the retiree. This further speaks to the value of seeking protections before the retirement date arrives.

Sequence-of-return risk affects individuals throughout their entire investing lives. Individuals from different birth cohorts who otherwise behave in identical ways may experience dramatically different wealth accumulations, sustainable withdrawal rates, and sustainable levels of spending. These outcomes are unpredictable. Strategies using a volatile portfolio to target a wealth accumulation goal or to sustain a constant spending strategy expose individuals to much greater risk than one might expect when thinking about average market returns over a 60-year investing cycle.

Conclusion

Sequence-of-return risk affects individuals over their entire investing lifetime. Individuals from different birth cohorts who otherwise behave in identical ways may still experience dramatically different retirement outcomes. Strategies to use a volatile portfolio to target a wealth accumulation goal or to sustain a constant spending strategy expose individuals to much greater risk than one might expect when looking at average long-term market returns. The impact of this risk on sustainable retirement spending can be mitigated in a straightforward way by creating a risk wrapper for the investment portfolio through a contingent deferred annuity. Protections can be turned on or off depending on how the individual's portfolio performs during the critical fragile decade around the retirement date. This can help to bridge the retirement period by setting a minimum withdrawal base that is protected by the portfolio insurance, which is flexible enough to cover qualified or non-qualified assets in brokerage accounts. Many retirees will find this to be a much more satisfying way to manage sequence risk than other common methods such as reducing spending with a "safe" withdrawal rate or relying on time diversification with a bucket approach.





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Methodology Appendix

This analysis was performed using 1 million Monte Carlo simulations for stock and bond returns. We simulated portfolio returns for a 60-year period (30 years of accumulation followed by a 30-year retirement). Simulations were based on two asset classes: a large-capitalization U.S. stock index and aggregate U.S. bonds. Returns and volatilities for these asset classes were taken from BlackRock's capital market expectations provided in August 2021 for 30-year horizons, which is the longest they offer. We assume the 30-year expectations apply through our full simulated time periods. We assume the asset classes are not correlated. Exhibit A.1 provides these expectations. The capital market expectations do reflect the lower interest rate environment facing today's investors. Inflation is assumed at two percent.

Exhibit A.1

CAPITAL MARKET EXPECTATIONS

	Arithmetic Means	Geometric Means	Standard Deviations
U.S. Large Cap Equity	8.6%	7.2%	16.8%
U.S. Aggregate Bonds	2.9%	2.8%	4.7%

Source: BlackRock Investment Institute, August 2020. Data as of June 30, 2021. Return expectations over 30 years for gross total nominal returns.

As for estimating lifetime sequence risk, savings and spending were simulated with annual data. Savings are assumed to be made at the end of the year as a fixed percentage of a constant inflation-adjusted salary. Withdrawals are made at the start of each year. The withdrawal amount is defined as the percentage of initial retirement date assets withdrawn, and this amount adjusts for inflation in subsequent years. The maximum sustainable withdrawal rate over 30 years is the initial percentage of assets withdrawn in the first year such that the portfolio balance reaches zero at the end of the 30th year. Annual rebalancing is used to restore the targeted 75% stock allocation. Portfolio administrative and planning fees are not charged, and taxes are not part of this analysis.

Ordinary least squares regressions are then run on the retirement outcomes (wealth accumulation, sustainable withdrawal rate, and maximum spending level) against each year's portfolio return. The estimate of that year's importance to the lifetime planning outcome is the R^2 from the regression, which is the percentage of the retirement outcome variable that can be explained by the market return. A higher R^2 implies greater importance for the market return, so that the exhibits can be interpreted as showing lifetime sequence risk through the relative importance of each year's market return in determining retirement outcomes. If each year were equally important, the bars would have the same height. But this is not the case, as returns near the retirement date show much greater importance.



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