

Summer 2018

MAIN POINTS:

- Sequence risk is “getting the right returns at the wrong time.” It is the risk that a portfolio used for spending earns its lowest returns in its early years and ends up depleted or with a much lower balance than expected. The risk exists because earlier withdrawals are gone forever and, thus, no longer available to deliver returns when the portfolio recovers in the future.
- A portfolio with an attractive long-term return can still end with a significantly lower value if it suffers a stretch of mediocre returns in its early years. This can be as bad as a sharp bear market crash.
- Investors can minimize (but not fully eliminate) sequence risk by allocating less to risky assets in the few years before and following their retirement dates, a critical time window we call the “sequence sandwich”.
- Investors also have methods to manage sequence risk while in retirement:
 - 1) spend a fixed amount per year
 - 2) spend a fixed % per year
 - 3) use a cash reserve buffer
 - 4) increase portfolio risk over time.

Out Of Sequence

Getting The Right Returns At The Wrong Time

Imagine doing all the right things in one’s financial journey—saving, investing, sticking to a plan—only to face a bad stretch of returns at the start of retirement. Such a turn of events is called “sequence risk.”

Sequence risk is “getting the right returns at the wrong time.” When spending from a portfolio (for retirement, charity or education), it is the risk that the portfolio earns its lowest return during earlier years and ends up exhausted or with a lower balance than expected. The risk exists because withdrawals in early years are gone forever and, thus, no longer available to deliver returns when the portfolio recovers in the future.

“Sequence risk is
*getting the right returns
at the wrong time*”



Sequence risk is like a foot race in which a worthy competitor trips early in the race, yet runs as fast as the winning runner for the rest of the race. The runner had the potential to win, yet a bad break early in the race eliminated the chance to finish at the top.

Although the portfolio’s yearly returns could result in a respectable long-term rate of return, if earlier returns are much lower, the ongoing withdrawals can significantly reduce the portfolio’s value before the better returns arrive. Sequence risk also lurks when an investor sells all or a portion of their investments during a portfolio decline. By failing to remain invested when the good returns later arrive, such panicked investors commit an “unforced error” and penalize themselves with sequence risk.

HOW SEQUENCE RISK OCCURS, OR “WHAT HAPPENED TO JOHN’S \$1 MILLION?”

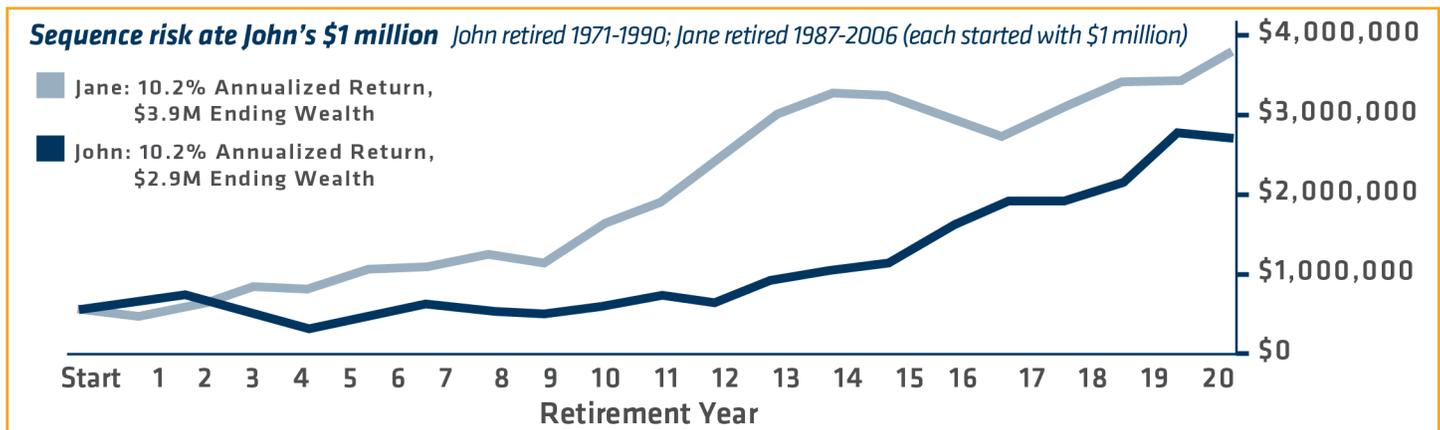
The order in which returns arrive doesn't matter when there are no cash flows into and out of a portfolio. A \$1,000,000 portfolio that suffers a drop of **-50%** and then rebounds **+100%** finishes with the same \$1,000,000 balance as a portfolio that receives the returns in reverse, **+100%** first and **-50%** later. Regardless of the order of returns, the total return over the period remains at **0%** for both portfolios.

However, once cash flows are taken into account, the results are very different for the two scenarios. For example, consider a lucky retiree with \$1,000,000 who takes \$50,000 withdrawals annually. Under the good sequence of returns, the portfolio grows **100%** from \$1,000,000 to \$2,000,000 and easily funds the \$50,000 withdrawal. After the **-50%** drop in the second year this portfolio finishes with \$975,000, below the original starting value but more than enough to fund the next

\$50,000 withdrawal. By contrast, for an unlucky retiree with the “bad” sequence, the portfolio falls **50%** to \$500,000, and the \$50,000 annual withdrawal draws the portfolio down to \$450,000. The subsequent **100%** return brings the portfolio back up to \$900,000, well below the \$975,000 that the lucky retiree had at the end.

To see how this plays out in actual practice, consider two hypothetical retirees in the past:

- John retires at the end of 1970 and earns an annualized return of 10.2% for twenty years.
- Jane retires at the end of 1986 and also earns an annualized return of 10.2% for twenty years.
- Each starts with \$1 million to fund \$50,000 of annual spending.
- Each is invested 60% in US stocks and 40% in US Treasury ten-year notes for twenty years.
- Twenty years into retirement John's account is worth \$2.9, but Jane's account has \$3.9 million.



Source: Annual total return data for S&P 500 and 10-Year US Treasury note for 1928-2017 from Prof. Aswath, NYU Stern School of Business and from FRED database, St. Louis Federal Reserve. Webster Private Bank calculations based on hypothetical portfolio examples described here.

Where did John's \$1 million go?

As the chart above shows, John suffered his worst returns in the early years of his retirement. He retired just before the 1973-1974 bear market, which, when combined with his annual withdrawals, depleted his portfolio to \$818,000 at the end of 1974. The unfortunate sequence of returns means his portfolio barely kept pace with annual withdrawals until later on, when he recouped the losses and then some.

In contrast, Jane suffered no major decline until much later, in the 2000-2002 bear market. During the early part of her retirement, her annual returns exceeded her annual withdrawals. She ended up with \$3.9M in her account after twenty years because of a favorable sequence of returns.

THE SEQUENCE SANDWICH: AVOIDING RISK AROUND THE RETIREMENT DATE

Retirement savings are at risk of getting squeezed by a poor long-term sequence of returns in the years before and after the retirement date. This crucial time period is known as the “Sequence Sandwich”, and can be as unnerving as retiring into a bear market. Future retirees (which many of us are) can take action to minimize sequence risk **leading up to and right after** the planned retirement date, by reducing the allocation to stocks in these Sequence Sandwich years. We demonstrate below how avoiding the Sequence Sandwich would have worked, on average, across some of the worst six-year stretches of bad returns in both the three years prior and three years after the retirement date (1929-35, 1937-43 and 1969-75).

Let’s compare two approaches – the Adaptive portfolio and the Basic portfolio:

- Both portfolios start with \$1,000,000, save \$50,000 per year prior to retirement, will spend \$50,000 per year in retirement, and are invested 60% in stocks and 40% in bonds.
- The Adaptive portfolio reverses its stock/bond allocation for the 3 years immediately prior to and following the retirement date, holding 40% in stocks and 60% in bonds. Thereafter, it returns to 60% stocks and 40% bonds.
- Basic simply holds the 60% stock and 40% bond allocation all the way through.

Avoiding the “Sequence Sandwich” Adaptive Approach vs. Basic Buy-and-Hold							
	Retirement Year	Stock Returns	Bond Returns	Adaptive Portfolio		Basic Portfolio	
				Balance	Return	Balance	Return
Before Retirement	-3	-17.3%	0.2%	\$981,970	-6.8%	\$947,006	-10.3%
	-2	2.6%	8.5%	\$1,092,176	6.1%	\$1,043,838	4.9%
	-1	-10.2%	3.9%	\$1,122,875	-1.8%	\$1,045,918	-4.6%
In Retirement	1	-0.2%	5.7%	\$1,110,240	3.3%	\$1,018,470	2.2%
	2	7.6%	1.2%	\$1,101,897	3.8%	\$1,019,863	5.0%
	3	-2.6%	4.1%	\$1,067,256	1.4%	\$970,369	0.0%
	TOTAL	-20.3%	25.6%		5.6%		-3.6%
	Difference	-34.0%	+11.7%	\$96,887	9.2%		

Source: Stock and Bond Returns based on average of annual returns of S&P 500 index and 10-Year US Treasury note across 1929-35, 1937-43 and 1969-75. Data from Prof. Aswath, NYU Stern School of Business and FRED database, St. Louis Federal Reserve. Webster Private Bank calculations.

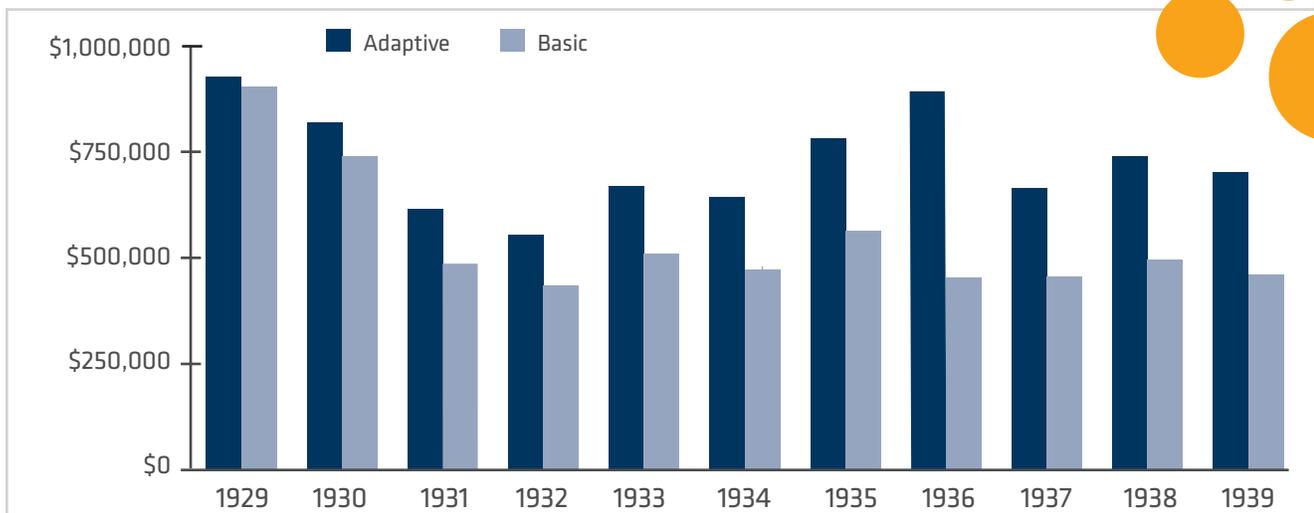
The main point we notice is how much more money the Adaptive portfolio has at the end of the period vs. the Basic portfolio. This is because the Adaptive portfolio incurs a fraction of the losses that the markets delivered in this hypothetical worse-case scenario. In addition, in spite of a total period return of only **+5.6%**, the Adaptive portfolio ends up over **\$96,000 higher** (nearly +10% more) than it would have been if it had stuck to the Basic buy-and-hold approach with a **60%** stock and **40%** bond allocation.

What about The Great Depression?

The granddaddy of bad sequence risks is, of course, the Great Depression period of 1929-1932. There weren't a lot of \$1 million retirees withdrawing \$50,000 annually then, but an investor who began retirement in 1929 with the Basic portfolio invested 60% stocks / 40% bonds, would have witnessed the portfolio shrink **-57%**, to about **\$433,000** by the end of **1932**. If the investor had the stomach to hold on and rebalance the asset allocation each year, the portfolio

would have ended at just over **\$455,000** by the end of **1939**. An Adaptive portfolio that flipped its stock-bond allocation during the first three years of retirement would have side-stepped part of the market decline at that time. It was never able to recapture its original \$1 million level, but the Adaptive portfolio finished with over **\$700,000** at the end of **1939**. By avoiding the worst returns early in retirement, the Adaptive portfolio was better prepared to earn the higher returns that came later in the 1940s, 1950s and beyond.

Sequence risk in The Great Depression



Year	1929	1930	1931	1932	1933	1934	1935	1936	1937	1938	1939
Stock Returns	-8.3%	-25.1%	-43.8%	-8.6%	50.0%	-1.2%	46.7%	31.9%	-35.3%	29.3%	-1.1%
Bond Returns	4.2%	4.5%	-2.6%	8.8%	1.9%	8.0%	4.5%	5.0%	1.4%	4.2%	4.4%

Source: Annual total returns for S&P 500 and 10-Year US Treasury note. Webster Private Bank calculations.

FOUR WAYS TO MANAGE SEQUENCE RISK IN RETIREMENT

What course of action should one take in any given year of retirement? Sustaining living standards with only the income distributions from a portfolio is an inefficient retirement strategy in the current era of relatively low interest rates. Such a rigid approach could “lock” the portfolio into a very conservative, static asset allocation. This risks reducing one’s standard of living in real terms in old age, as the growth of the portfolio fails to keep pace with inflation. However, investors with a meaningful allocation to stocks (e.g., at least 30%), still face sequence risk in their retirement and should consider techniques to manage their spending in order to maximize the odds of their portfolio surviving.

We recommend four common methods to manage sequence risk in retirement:

1. **Set a conservative, fixed dollar level of spending** each year.
2. **Spend only a fixed % of the portfolio** each year.
3. **Maintain a cash reserve “buffer”** to ride out the volatility of a more aggressive portfolio.
4. **Gradually increase portfolio risk**, from a conservative starting allocation, over time.

Method	How It Works	Appropriate For	Pros	Cons
1. Spend a fixed dollar amount	Maintain consistent amount of spending, adjusted for inflation each year.	Investors with spending needs below what portfolio can generate in income and dividends.	Allows for precise budgeting with virtually no variation.	Cannot be combined with an aggressive portfolio. Spending is driven by inflation rather than portfolio return.
2. Spend a fixed % of portfolio	Take a fixed percentage from the portfolio based on its value each year.	Investors who can weather a high degree of variation in annual spending.	Virtually eliminates sequence risk, as withdrawals ebb and rise with portfolio values.	Potentially volatile spending from year to year, risking a shortfall to meet required needs.
3. Maintain a cash reserve “buffer”	Keep a few years of spending in cash, separate from the investment portfolio.	Investors that can save a high amount of cash outside of their investment portfolio.	Prevents selling investments in a down market. Provides peace of mind for multiple years.	Additional cash can be a drag on overall growth of total wealth.
4. Increase portfolio risk over time	Use a “rising equity glide path:” allocate more to fixed income in early years, more to stocks later.	Investors approaching or at their retirement date.	Reduces portfolio volatility in early years, when probability of retirement failure is greater.	Doesn’t fully eliminate sequence risk, forfeits potential upside in retirement early years.

Source: Recommendations based on Pfau, Wade D., “The Lifetime Sequence of Returns: A Retirement Planning Conundrum,” (2013).

CONCLUSION: ASSURANCE OVER SPECULATION

Sequence risk always lurks, yet, while the risk can't be completely eliminated, there are ways to curtail the severe consequences of a bad luck of the draw. We have shown how sequence risk drains investors of future savings, demonstrated how to avoid it in the early years of retirement, and offered methods to mitigate sequence risk while in retirement.

There is an opportunity cost to avoiding sequence risk, namely missing the potentially higher returns offered by risky assets like stocks. An investor who deliberately minimizes sequence risk will "underperform" on a relative basis if a raging bull market occurs in the early years of retirement. In the real world, however, relative performance never

pays the mortgage, buys food, settles medical bills and funds charitable causes. For those with actual needs to meet (and dreams to fulfill), the odds of running out of money or having insufficient savings could be devastating. Simply put, the downside of sequence risk more than outweighs missing any potential upside.

Obviously, each individual investor's circumstances are unique and most investors will be best served making important strategic retirement decisions with the guidance of a professional advisor. We encourage you to explore how your portfolio might be impacted by sequence risk and to discover potential remedies with your Webster Private Bank portfolio manager.

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We want you to be successful. If you would like to learn more about how we can help achieve your goals, please contact Peter Gabriel, Head of Private Banking, at 203.328.8110 or pgabriel@websterbank.com.

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