

Revisiting the Risks of Retirement Spending Rules

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Article Highlights

- Spending only portfolio income can lead to favoring lower-quality investments with higher yields and potentially erodes the portfolio's value on an inflation-adjusted basis.
- Overestimating projected returns and/or underestimating future inflation can cause withdrawal strategies based on portfolio return to fail.
- Inflation-adjusted withdrawal rates have been shown to work over long periods of time, as long as withdrawal rates are not too high and life expectancy is not forecast too conservatively.

How much savings can you spend annually in retirement?

In 1998 the *AII Journal's* editor, Maria Crawford Scott, discussed three different approaches for determining how much savings a retiree could spend per year ("Retirement Spending Rules: What Can Go Wrong?," July 1998). The purpose of the article was to help retirees and those planning for retirement understand the various risks associated with those spending rules and provide guidelines for how to minimize them.

Considering that 20 years have passed since the article's original publication, we decided to update it. Stock and bond yields have been updated to current levels, the latter of which is important because bonds yield significantly less than they did 20 years ago. The historical returns used for calculating portfolio survival rates now run through year-end 2017; therefore, they factor in both the post-dotcom-bubble bear market and the 2007–2009 financial crisis.

None of these changes alter the big takeaways. Withdrawing too high a percentage of savings dramatically increases longevity risk—the chance of a person outliving their savings. Relying too heavily on portfolio income leads to unrealistic return assumptions and relying on overly risky investment options. Only the most conservative withdrawal strategies



have historically ensured that a portfolio lasts a retiree's lifetime, but these come with the risk of not providing enough income to live on.

There are also various uncertainties that will require revisiting the chosen portfolio withdrawal strategy on a regular basis. These include but are not limited to:

- Incorrect or unrealistic spending assumptions: New retirees may spend more than they anticipated on their lifestyles. This occurs because, during the early phase of retirement, many remain highly active. The cumulative cost of regular leisurely activities, not to mention travel and home renovation and/or moving expenses, can be higher than anticipated.
- Medical expenditures: Though medical expenditures tend to be greatest at the end of life, unexpected illnesses, injuries and dental work can lead to high and unanticipated spending.
- Very high inflation: In the January 2018 *AII Journal* ("Insights on Using the 4% Withdrawal Rule From Its Creator"), retired financial planner William Bengen said an extended period of high inflation approaching double digits could cause his withdrawal rule to fail.
- Very poor market returns: Bear markets occurring early in retirement can have a determinantal impact on a portfolio, particularly at withdrawal rates of 5% or more.

There are various ways to address these risks using a combination of investment and financial products, portfolio allocations and withdrawal strategies. This article focuses on the third part, withdrawal strategies. In particular, three methods for determining how much can be withdrawn and spent are addressed:

- Spending the portfolio's annual income;
- Spending the portfolio's annual total return;
- Spending an amount tied to historical withdrawal rate strategies, such as Bengen's famous 4% inflation-adjusted withdrawal strategy.

None of the three strategies guarantees that you will have enough money to cover living expenses unless you have far greater wealth than you will need or otherwise have enough in annuitized income (e.g., pension, Social Security, etc.) to cover living expenses. In this article, we will give you guidelines for minimizing the risk of following a particular strategy.

Spending Portfolio Income

One opinion on retirement spending strategies is to "never touch principal." According to this viewpoint, only portfolio income should be spent; the underlying assets should never be sold to fund withdrawals. Such an approach has the appeal of ensuring that the retiree does not outlive their savings.

Implementing such an approach in the real world isn't so easy, especially in the ongoing low-yield environment. It can prompt a retiree to attempt to maximize income by putting savings in higher-yielding, but also riskier and lower-quality, stocks and bonds. At the conservative end, it can also lead to a portfolio comprising only bonds.

The focus on income over growth creates two risks. First, it can cause underlying wealth to decline if the search for yield leads to securities whose inherent risks cause their prices to decline a greater amount than the income generated. Secondly, by de-emphasizing growth, the portfolio becomes exposed to the potential erosion of real value—as well as real income—due to inflation. While high-quality bonds, when bought at fair value and held to maturity, will retain their absolute value, the retiree's wealth will be reduced relative to inflation over time.

In order to maintain a real (inflation-adjusted) level of income, a portfolio must grow enough to offset inflation. However, bonds have no growth element; instead, that growth must come from stocks. And the less an investor invests in stocks, the greater the stock portion must grow to overcome inflation.

For example, the current dividend yield on the S&P 500 index is approximately 1.9% as of mid-October 2018, while the yield on intermediate-term (five-year) government bonds is 3.0%. A portfolio invested 50% in the S&P

500 and 50% in bonds would therefore have an annual income of 2.5%.

How can the income provided by this portfolio yield be maintained in real terms if inflation holds at the 2.3% year-over-year change in the September 2018 consumer price index? The bond portion would not grow at all—it would remain a fixed percentage of a fixed amount. Dividends, however, increase over time. The dividend yield on stocks in the portfolio is a percentage of an increasing amount, so the actual dollars distributed rise to help offset inflation. If inflation holds at 2.3%, the price gain on the stock portion would have to be at least 4.6% (2.3% divided by 50%) for the portfolio to provide a constant real portfolio income; the total return of the stock portfolio (income plus capital gains) would be 6.5% (1.9% + 4.6%).

If the portfolio had a lower percentage invested in stocks, the total return required for the common stock portion would rise, eventually reaching unrealistic rates in light of historical stock returns [which the 2018 SBBI Yearbook (Duff & Phelps, 2018) calculates as 10.2% for large-cap stocks]. This is illustrated in Table 1, which provides the

approximate return on the common stock portion that would be required to maintain a constant total portfolio yield for various allocations and inflation rates. Returns in the table that are bold and underlined represent unrealistic stock return assumptions.

As an example, let's assume you have a \$1 million portfolio, with 20% invested in stocks and 80% invested in bonds. That would provide you with an income of 2.8%, or \$28,000. But in order to maintain that level of real income (in purchasing power terms) if inflation were to rise to, say, 3.0% annually, your stock portfolio would

Table 1. Common Stock Returns Required to Maintain Portfolio Yield

The underlined and bolded returns are unrealistic for a large-cap stock portfolio given the long-term historical average. The table assumes a 1.9% dividend yield and a below-historical-average bond yield of 3.0%. Changes in either assumption will alter the required yields.

Portfolio Allocation (%)		Total Portfolio Yield (%)	Stock Return Required to Maintain Portfolio Yield (%)			
Stocks (%)	Bonds (%)		2.3% Inflation	3.0% Inflation	4.0% Inflation	5.0% Inflation
100	0	1.9	4.2	4.9	5.9	6.9
90	10	2.0	4.5	5.2	6.3	7.5
80	20	2.1	4.8	5.7	6.9	8.2
70	30	2.2	5.2	6.2	7.6	9.0
60	40	2.3	5.7	6.9	8.6	10.2
50	50	2.5	6.5	7.9	9.9	<u>11.9</u>
40	60	2.6	7.7	9.4	<u>11.9</u>	<u>14.4</u>
30	70	2.7	9.6	<u>11.9</u>	<u>15.2</u>	<u>18.6</u>
20	80	2.8	<u>13.4</u>	<u>16.9</u>	<u>21.9</u>	<u>26.9</u>
10	90	2.9	<u>24.9</u>	<u>31.9</u>	<u>41.9</u>	<u>51.9</u>
0	100	3.0	—	—	—	—

have to return 16.9% per year, an unrealistically high rate of return to be sustained given the historical averages. Changing the asset allocation to 50% stocks and 50% bonds would provide an income of 2.5%, or \$25,000. Though the amount of income is less, the return required for the stock portion with 3.0% inflation is 7.9%, a long-term stock return that is below the long-term historical average. A more conservative assumption allows for a margin of error should a period of lower-than-average returns be incurred (particularly early in retirement), making it much more likely that that real level of income can be maintained.

If you use this spending rate approach, make sure to include an adequate amount of growth investments. Your annual withdrawal amount will be lower than if you try to maximize current income, particularly given today's low dividend yields, but you will not be sacrificing future portfolio income levels.

Spending the Portfolio's Return

Another approach is to spend the long-term average annual total return (income and capital gains) generated by the portfolio. Like the "spend the income" approach, this strategy leaves the original investment dollars untouched, but since it is based on total return rather than income, it encourages retirees to invest in more growth-oriented vehicles. The long-term average return is used because single-year returns of stocks are volatile and it is difficult to vary spending by such drastic amounts.

One risk with this approach is overestimating the long-term returns you will receive on your portfolio.

To reduce this risk, make sure you use realistic estimates of return rates based on long-term historical averages that include all kinds of market environments. As a general rule, don't rely on shorter, more current periods, such as the last 20 years, since they may not repeat. (You may have to adjust your expectations for bonds, given where current yields are relative to the historical

Table 2. Historical Rates of Returns

Asset Class	Last 50 Years (%)	Since 1926 (%)
Large-Cap U.S. Stocks	10.1	10.2
Small-Cap U.S. Stocks	12.1	12.1
Long-Term Corporate Bonds	8.2	6.1
Long-Term Gov't Bonds	7.9	5.5
Intermediate-Term Gov't Bonds	6.9	5.1
U.S. Treasury Bills	4.8	3.4
Inflation	4.0	2.9

Source: 2018 SBBI Yearbook (Duff & Phelps, 2018).

averages, however.) Table 2 presents average annual returns for various asset classes both for the past 50 years (reflecting the post–World War II period) and the longer-term period of 1926 through 2017.

In addition, make sure that you are diversified within your asset categories to assure broad participation in the market's returns. For example, don't invest your entire stock portfolio in a sector fund, but rather use a diversified portfolio of large-cap, small-cap and even international stocks.

Another major risk of this approach is that it does not allow for any growth in the original amount of the investment, since you are spending the entire return. That means that, in purchasing power terms, the original investment amount will decline with inflation.

The solution to this is to allow the original principal amount to grow each year by the rate of inflation. Put another way, you would withdraw an amount equal to the expected long-term total rate of return less inflation—the "real" rate of return.

For example, let's continue with the \$1 million portfolio that is invested 50% in stocks and 50% in intermediate-term bonds. Using the 50-year return assumptions from Table 2, your expected long-term total return would be 8.5% ($[50\% \times 0.101] + [50\% \times 0.069]$). If you expect inflation to be 3.0% over the time period, your real rate of return would be roughly 5.5% (8.5% less 3.0%). That means you could use a spending rate of 5.5%, or \$55,000. If you wanted to

be conservative in your projection of bond returns, you could cut the bond return in half to about 3.5%. This would put the return approximately close to its average return over the past 15 years. Doing so would reduce the spending rate to 3.8% (6.8% return less 3.0% inflation). An alternative option—given where bonds are now compared to their historical averages—would be to use the prevailing yield on bonds in the calculations, while establishing the 50-year level as the highest figure you would use in the calculations. It's by no means a perfect measurement but would give you an established benchmark versus trying to make a forecast.

As you can see, the challenge in making projections based on estimated returns is the risk of actual returns being different than, and potentially below, expectations. This risk requires factoring in the ability to vary spending, including being able to reduce expenditures or necessary income, should actual rates of return be less than expected.

Spending Based on Inflation-Adjusted Withdrawal Rates

A third approach is to spend an annual amount based on inflation-adjusted withdrawal rates shown to be historically successful.

Under this approach, portfolios are constructed for various asset allocations based on historical year-to-year rates of return for the asset classes. Then, various withdrawal rates are applied to these historical portfolios for various payout periods to determine if they are sustainable. For example, an inflation-adjusted 4% withdrawal rate is applied to a portfolio for 30 years, first for the time period covering the beginning of 1927 to the end of 1956, then for the next time period covering 1928 to 1957 and so on. The success rate is the percentage of all past payout periods in which savings were not exhausted despite the annual withdrawals taken, based on the sequence of actual historical returns over the period.

Table 3. Inflation-Adjusted Portfolio Success Rates (1927–2017)

The percentages show the likelihood of a retiree—using a certain portfolio allocation and withdrawing money at a given withdrawal rate—avoiding the possibility of outliving their money for a given period of time. All portfolios were rebalanced back to their target allocation annually. Withdrawal amounts were subsequently adjusted for inflation after the first year of a given time period.

35-Year Payout Period

Allocation	Withdrawal Rate as a % of the Initial Portfolio Value									
	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
100% Stocks	98	88	72	58	51	39	26	16	7	4
75% Stocks/25% Bonds	100	89	65	53	39	21	9	5	2	2
60% Stocks/40% Bonds	100	93	58	40	18	14	4	2	2	2
50% Stocks/50% Bonds	100	91	53	30	16	9	4	2	2	2
40% Stocks/60% Bonds	100	86	39	19	11	4	2	2	2	2
25% Stocks/75% Bonds	100	61	23	12	11	4	2	2	2	2
100% Bonds	70	23	12	11	4	2	2	2	2	2

30-Year Payout Period

Allocation	Withdrawal Rate as a % of the Initial Portfolio Value									
	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
100% Stocks	98	92	74	65	56	45	37	21	8	5
75% Stocks/25% Bonds	100	95	74	58	45	37	15	5	2	2
60% Stocks/40% Bonds	100	98	71	48	40	23	6	3	2	2
50% Stocks/50% Bonds	100	98	63	44	24	11	3	2	2	2
40% Stocks/60% Bonds	100	98	55	34	18	10	3	2	2	2
25% Stocks/75% Bonds	100	87	37	21	11	5	2	2	2	2
100% Bonds	82	39	23	11	5	2	2	2	2	2

25-Year Payout Period

Allocation	Withdrawal Rate as a % of the Initial Portfolio Value									
	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
100% Stocks	100	97	79	72	61	55	40	30	19	7
75% Stocks/25% Bonds	100	99	81	66	54	46	30	13	4	1
60% Stocks/40% Bonds	100	100	82	64	49	33	15	4	1	1
50% Stocks/50% Bonds	100	100	82	55	42	22	9	3	1	1
40% Stocks/60% Bonds	100	100	75	49	36	16	7	3	1	1
25% Stocks/75% Bonds	100	99	60	36	21	10	3	1	1	1
100% Bonds	97	79	33	22	10	4	1	1	1	1

20-Year Payout Period

Allocation	Withdrawal Rate as a % of the Initial Portfolio Value									
	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
100% Stocks	100	97	90	78	69	60	49	40	26	15
75% Stocks/25% Bonds	100	100	92	76	65	50	43	28	15	6
60% Stocks/40% Bonds	100	100	96	76	60	49	32	17	4	1
50% Stocks/50% Bonds	100	100	99	75	56	39	26	7	3	1
40% Stocks/60% Bonds	100	100	99	71	49	35	17	7	3	1
25% Stocks/75% Bonds	100	100	99	71	49	35	17	7	3	1
100% Bonds	100	100	75	38	22	10	4	1	1	1

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Table 3. Inflation-Adjusted Portfolio Success Rates (1927–2017) continued

15-Year Payout Period		Withdrawal Rate as a % of the Initial Portfolio Value								
Allocation	3%	4%	5%	6%	7%	8%	9%	10%	11%	12%
100% Stocks	100	100	97	90	77	69	65	51	43	34
75% Stocks/25% Bonds	100	100	100	95	79	69	58	45	36	21
60% Stocks/40% Bonds	100	100	100	99	82	65	53	40	27	13
50% Stocks/50% Bonds	100	100	100	100	82	65	45	35	19	4
40% Stocks/60% Bonds	100	100	100	100	81	62	40	30	13	3
25% Stocks/75% Bonds	100	100	100	99	78	55	31	16	8	3
100% Bonds	100	100	99	88	65	36	17	8	4	1

Source: Annual returns and inflation rates are from the 2018 SBBI Yearbook, now published by Duff & Phelps. Calculations were made by AAIL and include rolling (overlapping) periods for each allocation and payout period. Stocks are represented by the large-cap S&P 500 index and bonds are represented by intermediate-term government bonds.

To provide insights on various combinations, we've updated a table originally published in the February 1998 *AAIL Journal* ("Retirement Savings: Choosing a Withdrawal Rate That Is Sustainable," by Philip L. Cooley, Carl M. Hubbard and Daniel T. Walz). The authors calculated how frequently portfolios constructed of various allocation weightings of stocks and bonds lasted over varying periods of time when inflation-adjusted withdrawals were taken. A specific percentage withdrawal rate was used to calculate how much of the portfolio's value was to be distributed to the retiree during the first year. In the following years, the dollar amount of the withdrawal was increased by the rate of inflation. The original table covered all historical periods from 1926 to 1995.

Table 3 is the updated version. It covers the period of 1927 through 2017. The newer version includes a few changes. We've replaced long-term bonds with intermediate-term bonds, which are less sensitive to interest rate fluctuations (though they will still be affected by such changes). Large-cap U.S. stocks continue to be used for the stock allocation. Two additional allocations are included: 60% stocks/40% bonds and 40% stocks/60% bonds. These allocations provide more granularity, and the 60/40 allocation is a commonly accepted allocation strategy. Finally, we've added a 35-year time frame to account for longer life-spans.

At any point on the table, you can see the odds of a portfolio with a given percentage withdrawal rate lasting given a certain time frame. As an example, consider a retiree splitting their allocation between 50% in stocks and 50% in bonds. This retiree believes they will need their savings to last 30 years. The second set of numbers in Table 3 indicates that if they withdrew 5% initially (e.g., \$50,000 from a \$1 million portfolio) and increased the initial withdrawal amount (\$50,000) by the rate of inflation for each subsequent year (years two through 30), their portfolio would have supported them for the full payout period for only 63% of the rolling 30-year periods between 1927 and 2017. Some of the successful payout periods would have left a retiree with a sizeable amount of wealth remaining after the 30 years of withdrawals. However, if you had withdrawn at that rate during one of the unsuccessful 30-year time periods, which occurred more than a third of the time, you would have prematurely exhausted your assets. A 4% initial withdrawal rate historically has been much more successful, supporting withdrawals for the full payout period for 98% of the 30-year periods, assuming a 50/50 stock/bond mix. That would provide you with an initial withdrawal of \$40,000.

This approach encourages you to invest in more growth-oriented vehicles if you want higher withdrawal rates over

long payout periods—for portfolios with less than 50% invested in stocks, success rates are lower at withdrawal rates of 4% or higher over 30-year payout periods compared to portfolios with larger stock commitments. The approach also provides a relatively steady source of income that grows in real terms.

The risks to this approach?

One major risk is misjudging your payout period, presumably based on your life expectancy. If you assume a payout period that is too short, you run the risk of prematurely using up all of your resources. Consider a 6% withdrawal rate. The odds of it being successful over a 15-year period are high regardless of the mix of large-cap stocks and intermediate-term bond used. At 20 years, the odds of success drop, and are very low for an all-bond portfolio. At 30 years, even a potentially high-returning all-stock portfolio has run out of money during 35% of all of the periods analyzed. That is a high failure rate.

Err on the side of projecting a longer-than-expected life expectancy. Life expectancy tables include those who will die earlier or later for many ages. While there is an upper limit to how long humans can live, it is possible that a retiree could live longer than they think. Plus, not only could medical expenses rise late in life, living expenses could rise as well should assistance with daily activities (e.g., dressing, toileting,

etc.) and/or memory care be required. In the original version of this article, Crawford Scott suggested adding on 10 years or so, based on current health and family history. Those who are married must consider the life expectancy of their spouse as well.

Conclusion

There is no set consensus on the best way to fund retirement. The three aforementioned approaches are options but come with pitfalls (as do alternative strategies not discussed here). If you reduce risk under all of the strategies discussed here, you end up with similar guidelines that apply to any of the spending plans you may adopt:

- Make sure you have a mixture of growth investments, such as stocks, and stable investments, such as bonds. Don't sacrifice stability for growth if you want to protect the real value of your portfolio.
- Be conservative with the amount you withdraw each year from your portfolio. Under all of the approaches discussed, when conservative rates of return and diversified asset allocations were assumed, the sustainable withdrawal rates were between 3% to 4%. A 5% annual withdrawal rate would be based on less conservative assumptions (and would need comparatively more favorable market

conditions and shorter time horizons), while withdrawal rates of 6% to 7% would be aggressive and riskier.

- Use comparatively conservative return assumptions and higher inflation assumptions no matter which approach you use to allow for a margin of error. That doesn't mean that you need to invest conservatively but don't assume you are actually going to attain high rates of return with volatile investments either. It's easier to withdraw more when a clear surplus exists than to cut back when your assumptions have proven to be too aggressive.
- Have a plan for adjusting to down markets. One option is to allocate between two and five years of planned withdrawals to cash or cash equivalents. This allocation will come out of the portfolio's bond allocation and will prevent the need to sell stocks during a correction or bear market. Another option is to reduce the size of withdrawals. A study by Vanguard published in the January 2017 *AAIL Journal* ("Vanguard's Dynamic Spending Strategy for Retirees") found that a variable strategy in which withdrawals can be increased or decreased based on market conditions works if a retiree is willing to cut withdrawals when necessary.

- Diversification across various investment classes that do well at different times—large-company stocks, small-company stocks and international stocks—tends to smooth returns. Make sure that even in retirement your portfolio is diversified.
- Build in life expectancy assumptions that are beyond what you really expect, while realizing there are still limits to human life-spans.

One final point: All of these are do-it-yourself approaches. However, you could also buy an immediate annuity or a deferred annuity from an insurance company. Immediate annuities provide periodic payments soon after you pay a premium to the insurer. The amount of these payments can be fixed or varied, and you can choose to have them continue until death. Deferred annuities postpone payments until a future point. A newer version of them, longevity annuities, postpone payments until you reach a certain age. All come with certain risks: Payments may not keep up with inflation (especially when the annuities are purchased in a low return environment), if a rider is not purchased at an additional cost; the insurer may become insolvent; and you will not have anything left over for heirs when you die unless you pay extra for such a clause. The primary benefit, however, is that you, or you and your spouse, receive an income that you can't outlive. ▲

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