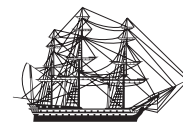


Spending From a Portfolio: Implications of a Total-Return Approach Versus an Income Approach for Taxable Investors

Vanguard Investment Counseling & Research



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Executive summary. During the accumulation years, many investors build retirement savings in both tax-advantaged accounts, such as IRAs or 401(k)s, and regular taxable accounts. When these investors reach retirement, they face decisions about how to spend from their investment portfolios—how much to spend yearly, which accounts to draw from, and how to keep the balance of the assets invested. In this paper, we explore the most common spending strategies, review best practices, and discuss some pitfalls that investors should avoid.

Investors spending from a retirement portfolio typically employ one of two well-known methods: the *total return* approach or the *income* approach. Historically, these approaches have been discussed as mutually exclusive—an investor follows either one or the other. In reality, the two approaches are similar in many ways, and in fact operate identically up to a point. Using the total-return approach, the investor spends from both the principal and income components of his or her portfolio. Under the income approach, the investor typically spends only the income generated by the portfolio, which often is not sufficient to meet spending needs. To make up for the shortfall, many investors elect to either increase their allocation to bonds, tilt their bond holdings toward high-yield bonds, or tilt their equity holdings toward higher-dividend-paying stocks—none of which are preferred strategies for maintaining inflation-adjusted spending over long periods.

Because the decision regarding a withdrawal strategy depends upon the investor's spending goals, as well as upon his or her asset allocation, we have included an appendix that provides general spending guidelines based on various allocations, time horizons, and success rates.

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Introduction

Investors spending from a portfolio often focus on its overall yield—the income received over a given period—rather than on the total return, which includes both the income and the increase or decrease in the portfolio's value. A spending approach based solely on income ignores capital change, whereas an approach based on total return utilizes both the income and capital appreciation of the portfolio.

It's important to note, however, that under the total-return approach, the income generated by the portfolio is the first source tapped to meet spending needs, and only when this source is insufficient does the investor liquidate some holdings. As a result, in situations when the total portfolio cash flow is more than the annual spending requirement, *the total-return approach is equivalent to the income approach*. Under both methods, all portfolio distributions in taxable registrations should flow into a "spending account" where they are available to meet spending needs.

Table 1. Portfolio yields at various asset allocations

| Asset allocation | Yield* | Income on a \$1 million portfolio |
|----------------------|--------|-----------------------------------|
| 100% bonds | 5.67% | \$56,700 |
| 80% bonds/20% stocks | 4.87 | 48,700 |
| 60% bonds/40% stocks | 4.07 | 40,700 |
| 40% bonds/60% stocks | 3.27 | 32,700 |
| 20% bonds/80% stocks | 2.47 | 24,700 |
| 100% stocks | 1.67 | 16,700 |

*Based on yields as of June 30, 2007, for the Lehman U.S. Aggregate Bond Index and the Morgan Stanley Capital International US Broad Market Index.

Source: Vanguard Investment Counseling & Research.

For example, **Table 1** depicts a hypothetical 60% bond/40% stock portfolio with a yield of 4.07%. An investor following the income-only approach would spend no more than 4.07% in the current year from this portfolio. For someone with \$1 million invested, that means spending \$40,700. If this amount is sufficient to meet the investor's spending needs (after first utilizing Social Security, pensions, and any other sources of noninvestment income), then the income and total-return approaches would be identical; in effect, there would be no need to sell any holdings.

However, if the investor requires more than 4.07% from this portfolio—say 5.00%—he or she would need to make changes. To adhere exclusively to an income approach, the investor would need to shift the asset allocation by increasing bond exposure closer to 100% or by concentrating on higher-yielding sectors.

An investor who reduces the exposure to equities will be, in effect, making a trade: acquiring higher current income in exchange for a higher risk to future income. To illustrate this point, **Table 2**, on page 3, summarizes potential outcomes for a 60% bond/40% stock portfolio and for one composed entirely of bonds, using calculations based on historical market data.¹ As you can see, a 65-year-old investor in this hypothetical 60%/40% portfolio who wants to spend 5% of the initial portfolio, adjusting for inflation annually thereafter, has a 75% chance of having assets left at age 95. However, if that same investor is 100% invested in bonds, his or her chance of having assets remaining at age 95 decreases to 47%. **Table 2** shows the best, worst, and median ending asset values at age 95. Plainly, a decision to move entirely into bonds significantly decreases the portfolio's ability to sustain the desired level of spending over the long run.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

All investing is subject to risk. Investments in bond funds are subject to interest rate, credit, and inflation risk.

1 See the Notes to Table 2 for market benchmarks used.

Table 2. Inflation-adjusted ending asset balances

| | 60% Bonds/ 40% Stocks | 100% Bonds |
|--|---------------------------|---------------------------|
| Best | \$5,983,000 | \$3,300,000 |
| Worst | Ran out after 19 years | Ran out after 17 years |
| Median | \$594,000 | Ran out after 20 years |
| Percentage of times the portfolio lasts 30 years | 75% | 47% |

Notes: Asset balances are determined using a real-path analysis which assumes that the investor begins investing at a specific point in history (for example, 1930 or 2000) and then applies the actual returns and inflation rates for each subsequent year to the investor's cash flow. Once the date reaches the present, the returns begin again in 1926 as an uninterrupted loop and continue to cycle until either the assets are depleted or the planning horizon has been attained.

For stock market returns, we use the Standard & Poor's 500 Index from 1926 to 1970, the Dow Jones Wilshire 5000 Index from 1971 through April 22, 2005, and the MSCI US Broad Market Index thereafter. For bond market returns, we use the Standard & Poor's High Grade Corporate Index from 1926 to 1968, the Citigroup High Grade Index from 1969 to 1972, the Lehman Long-Term AA Corporate Index from 1973 to 1975, and the Lehman U.S. Aggregate Bond Index thereafter.

Source: Vanguard Investment Counseling & Research.

In addition, if the \$1 million investor should need more than 5% for annual spending, an income-only approach would render it difficult (if not impossible) to maintain broad portfolio diversification in an economic environment such as the current one. Also, often the capital appreciation on a diversified portfolio will exceed the income received; therefore, if an investor needs more than the annual cash flows from his or her investments, the total-return approach is the more prudent, and most likely only viable, long-term spending method.

One final consideration: Our example assumes that all assets are in taxable registrations. If the investor's portfolio were divided equally between taxable and tax-advantaged accounts, all of the cash flows discussed above should be cut in half. This is because investors normally should deplete their taxable assets prior to spending from tax-advantaged assets, so that the latter can achieve tax-deferred or tax-free growth as long as possible. If our investor follows this practice, it is even likelier that an income-only approach will fail to produce sufficient cash flow to meet spending requirements.

When developing a sound investment/distribution plan, Vanguard believes that three critical decisions need to be made *prior* to selecting a spending approach.

First, the investor should decide on an asset allocation based on his or her unique goals and objectives, time horizon, risk tolerance, and investment experience—and not on the desired yield from the investment portfolio. This decision should be the investor's highest priority, because the vast majority of investment returns for a broadly diversified stock and bond portfolio can be attributed to asset allocation. Vanguard's own studies agree with well-known research elsewhere in empirically supporting the dominance of strategic asset allocation in determining total return and return variability. Market-timing and security selection can account for some percentage of portfolio return and variability over time, but the impact of these factors is, on average, smaller and negative.²

2 See Vanguard, 2003; Brinson, Hood, and Beebower, 1986; Brinson, Singer, and Beebower, 1991; and Ibbotson and Kaplan, 2000.

Second, it is extremely important to set a schedule for monitoring the portfolio and rebalancing as needed, so that the asset allocation stays aligned with the investor's goals and risk tolerance. Historically, stocks have offered higher returns than either bonds or cash reserves, but they also involve greater risks. If an investor's portfolio becomes more heavily weighted in stocks over time, the investor may be taking on more risk than he or she is comfortable with. On the other hand, if the portfolio becomes more heavily weighted in bonds, the investor may not earn a high-enough return to meet long-term financial goals. As a result, rebalancing is a key component of a successful strategic asset allocation. A further benefit: Consistent, periodic rebalancing reduces portfolio volatility over time (Tokat, 2006).

Finally, in most cases, taxable investors should plan to spend from their assets in a particular order: first, required minimum distributions from tax-deferred accounts (if applicable); second, taxable assets; third, tax-deferred assets; and finally, tax-free assets.

Once these three decisions have been made, the investor can determine whether the cash flows generated by the portfolio will be sufficient to meet his or her spending goals—in which case the total-return and income approaches would produce identical results—or whether it will be necessary to spend from the balance in the portfolio, which means following the total-return approach.

The mechanics of the total-return approach to spending

An investor who is withdrawing from a portfolio typically should have three primary objectives: to obtain the desired spending amount, to maintain the portfolio's asset allocation, and to minimize taxes. As previously stated, most investors should spend from their holdings in the following order: required minimum distributions (RMDs), if applicable; taxable assets; tax-deferred assets; and, last, tax-free assets. RMDs come first because these withdrawals are mandated by law. The order of the other categories is designed to maximize tax-efficient withdrawals and the tax-deferred or tax-free growth of portfolio assets.

For investors whose RMDs suffice to meet their spending needs, all other cash flows from any source (dividends, interest, capital gains distributions, or anything else) should be allocated to the most underweighted asset class in the portfolio. Following this strategy is the most tax-efficient way to keep the portfolio aligned with its target asset allocation as it reduces the number of times that rebalancing is required.

For investors whose RMDs are not sufficient (or who have no RMDs), cash flows in taxable registrations should be directed into a "spending account," which can be a money market or checking account. This account should be the next source tapped for spending, because the investor will owe taxes on these funds whether they are spent or reinvested. Since these investors will need the proceeds to meet near-term spending, reinvesting the income or capital gains and then liquidating holdings later to meet spending needs is not recommended. It also is not the most tax-efficient way to spend from a portfolio.

If more cash flows into the spending account than the investor needs to spend, then the excess can either be allocated to the most underweighted asset class at the next rebalancing or left in the spending account to meet future needs. Gradually increasing the most underweighted asset class will most likely reduce the number of times rebalancing is needed going forward.

If, on the other hand, the cash flows from taxable registrations appear to be less than the required annual spending amount, the gap can be met by selling assets from the taxable portfolio. The investor should choose whichever asset would produce the lowest taxable gain, or would even realize a loss. Many investors, who have a balance between their taxable and tax-advantaged accounts or have a majority of their assets in tax-advantaged accounts, can rebalance within their tax-advantaged accounts, which will most likely return the portfolio to its target asset allocation.

Many investors hesitate to sell a position at a loss, because they hope that the asset will eventually recover. This kind of sale does not necessarily mean abandoning the asset. Often an investor who owns a security at a loss in his or her taxable account can sell the position (capture the loss) and use the proceeds to meet spending needs. Then—within the constraints of the wash-sale rules³—the investor can purchase a similar investment in a tax-advantaged account at a similar price. As a result, the investor will have obtained cash to meet the spending objective, minimized taxes, and maintained the target asset allocation.

Once the investor's taxable portfolio has been exhausted, he or she should begin to spend from tax-deferred accounts, selling holdings from the most overweighted asset class in the tax-deferred portfolio. If the spending need is still not satisfied after the tax-deferred assets have been depleted, the investor should proceed in the same manner with tax-free holdings. For the majority of investors following this approach, spending and rebalancing can be accomplished with minimal taxes if properly executed.

Common approaches for increasing portfolio income—and why they may be inadvisable

For those investors who are not comfortable spending from their portfolio's balance and/or whose portfolio cash flow is insufficient for their needs, there are three primary ways to increase income: increase their overall allocation to bonds; keep their existing bond allocation but tilt it toward high-yield bonds; or tilt their existing equity allocation toward higher-dividend-paying stocks. None of these are preferred strategies for maintaining inflation-adjusted spending over long periods.

Increasing the overall allocation to bonds. Such a change would violate one of the most important planning decisions an investor can make, namely the portfolio asset allocation. The long-term consequences could be significant. As Table 2 illustrates, an investor who increases his or her bond allocation for the sole purpose of increasing income may sacrifice the long-term performance of the portfolio. Further, by giving up a portion of equity exposure, the investor is acquiring current income at the expense of added risk to future income.

³ A wash sale occurs when an investor sells a security at a loss and purchases a substantially identical security within 30 days before or after the sale. Therefore, the wash-sale period for any sale at a loss lasts for 61 days (day of sale plus 30 days before and after). In order to deduct the loss for tax purposes, an investor would need to avoid purchasing a substantially identical security during the wash-sale period. Consult a tax advisor or see IRS Code 1091 for more information.

Tilting the bond allocation toward high-yield bonds. Increasing the allocation to high-yield bonds will raise the portfolio's credit risk and may heighten overall volatility. In addition, this strategy is less tax-efficient than investing in a diversified bond portfolio.

Tilting the equity allocation toward higher-dividend-paying stocks. An investor contemplating a stock purchase solely to gain higher dividends needs to first consider two important questions: Why is the company paying a dividend, and what does the investor have to gain from dividends alone?

- **Why is the company paying a dividend?** The decision to pay, or not to pay, a dividend is a capital budgeting decision. If the company believes that it can reinvest its cash in projects with positive net present value, it should do so, putting the cash to work to increase shareholder value. Otherwise, it might be in the company's best interest to buy back some of its stock, thereby increasing the value of the remaining shares. Although recent tax law changes have temporarily equalized the tax rates on dividend payouts and capital gains, this factor has not changed the capital budgeting decision process.
- **What does the investor have to gain from dividends alone?** From a technical aspect, value is *not* created by a dividend payout. The stock's price will fall by the amount of the payout on the ex-dividend date, so the shareholder has not gained or lost any value—except that now, if the stock is held in a taxable account, the shareholder *owes taxes on the dividend*. If an investor is looking for a cash payment from a stock investment in a taxable account, it is more advantageous to sell some of the holding than to be paid a one-time dividend (see sidebar on page 7).

Table 3. Average yields and returns for general equity funds: 20 years ended 12/31/2006

| Yield | Number of funds | Average annual returns (%) | | |
|----------------|-----------------|----------------------------|----------------|--------------|
| | | Income return | Capital return | Total return |
| 2.5% or higher | 43 | 3.0 | 6.7 | 9.7 |
| Below 2.5% | 272 | 0.9 | 9.7 | 10.7 |

Source: Lipper.

Finally, many investors do not realize that a higher-yielding equity investment does not necessarily equate to a higher total return. For example, **Table 3** illustrates the yields of general equity mutual funds for the 20-year period ended December 31, 2006. The table divides the funds into those with annual yields of 2.5% or more and those that yielded less.

As you can see, of the 315 funds, only 43 had yields of 2.5% or more per year, and the average annual total return of these funds was 9.7% (consisting of a 3.0% income return and a 6.7% capital return). On the other hand, the stocks with annual yields below 2.5% had an average annual total return of 10.7% (0.9% income and 9.7% capital). In both scenarios, the yields were relatively stable, but the capital returns were volatile.

As a result, Vanguard believes that it would be more advantageous for an investor to spend from both the income and principal of the portfolio than to move toward a higher bond allocation, tilt toward high-yield bonds, or tilt toward higher-dividend-paying stocks.

The potential impact of a dividend versus a stock sale

| | Investor receives a dividend of \$3 per share | Investor receives no dividend but sells 100 shares |
|--|---|---|
| Beginning stock value (1,000 shares purchased at \$15 per share, now worth \$30 per share) | \$30,000 | \$30,000 |
| Cash flow to investor | \$2,550 (Dividend payout, less 15% tax) | \$2,775 (Sale proceeds, less 15% tax on \$15-per-share capital gain) |
| Ending stock value | \$27,000 (1,000 shares at \$27 per share) | \$27,000 (900 shares at \$30 per share) |
| Total ending value (cash flow + stock value) | \$29,550 | \$29,775 |
| Increase in total return by selling shares versus taking dividend | N/A | 75 basis points |

Source: Vanguard Investment Counseling & Research.

Tax treatment of dividends and capital gains: A myth of equality

The idea of tilting a portfolio toward higher-dividend-paying stocks became more popular after the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003 reduced the tax rate on qualified dividends from as high as 35% to 15%. The tax rate on qualified dividends is now equal to the tax rate on net long-term capital gains.

This reduction led many investors to believe that there was no difference between the taxation of cash flows on qualified dividends and the taxation of capital gains. Not so: While it is true that the 15% tax rates

are identical, the amounts that the tax is applied to are not. That is because a qualified dividend is taxed at 15% in its entirety; whereas if the equivalent sum is realized from a stock sale, the 15% capital gains tax will apply only to whatever portion of the sum represents a gain. As a result, both pre- and post-JGTRRA, dividends should be avoided from a tax perspective.

To illustrate this point, consider an investor who receives \$10,000 from a portfolio. Depending on how the money was withdrawn, the investor could have the outcomes shown in the table at left (assuming a 15% federal tax on qualified dividends, a 15% federal tax on capital gains, and a 3% state tax on capital gains).

Tax treatment: \$10,000 received as a dividend or from a sale

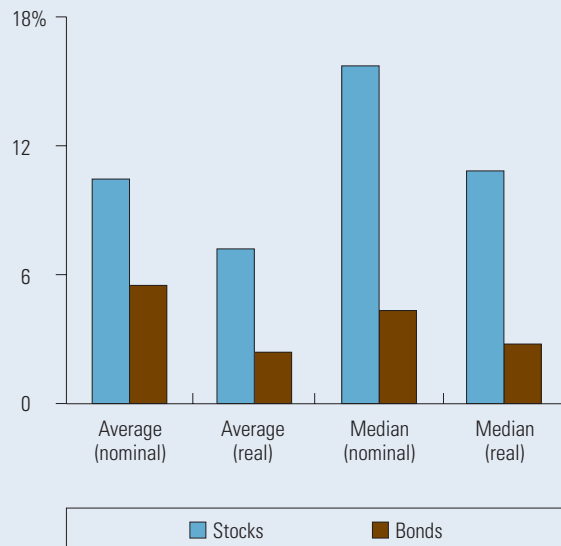
| If the \$10,000 is treated as: | Federal income tax | State* income tax | Total tax | Percentage |
|--------------------------------|--------------------|-------------------|-----------|------------|
| A qualified dividend | \$1,500 | \$300 | \$1,800 | 18% |
| Sale proceeds (capital gain %) | | | | |
| 0% | \$ 0 | \$ 0 | \$ 0 | 0% |
| 10% | 150 | 30 | 180 | 2 |
| 30% | 450 | 90 | 540 | 5 |
| 50% | 750 | 150 | 900 | 9 |

*Assumed to be 3%. Actual tax rates vary from state to state.

Source: Vanguard Investment Counseling & Research.

As you can see, if the \$10,000 consisted of a qualified dividend, the investor would pay \$1,800 in tax. If the \$10,000 was produced by a stock sale, the investor's tax liability would range from zero (which assumes there was no capital gain) to \$1,800 (which assumes that the stock cost the investor zero to acquire). For most investors, using lot accounting, the majority of tax on the cash flows under total return would fall between 0% and 2%, versus 18% for qualified dividends.

Figure 1. Asset class returns: 1926–2006



Note: Stock returns are based on the S&P 500 Index from 1926 to 1970, the Dow Jones Wilshire 5000 Index from 1971 through April 22, 2005, and the MSCI US Broad Market Index thereafter. Bond returns are based on the S&P High Grade Corporate Index from 1926 to 1968, the Citigroup High Grade Index from 1969 to 1972, the Lehman Brothers Long-Term AA Corporate Index from 1973 to 1975, and the Lehman U.S. Aggregate Bond Index thereafter.

Source: Vanguard Investment Counseling & Research.

The benefits of following a total-return approach

If an investor's primary goal is to maximize after-tax return, then Vanguard recommends that the investor consider placing tax-managed or equity index funds or ETFs in taxable accounts and placing taxable bond funds (along with actively managed equity funds, if desired) inside tax-deferred accounts.⁴ Once assets are situated in this manner, then following the total-return approach to spending produces several advantages over the income approach. The total-return approach increases the longevity of the portfolio, potentially reduces the number of times that the portfolio needs to be rebalanced, and increases the portfolio's tax-efficiency.

Increasing the longevity of the portfolio. For taxable investors, situating the portfolio as recommended should maximize annual after-tax returns, resulting in higher ending asset balances. In addition, it allows for the shelf space in tax-deferred accounts to be filled with taxable bond funds, which historically have had higher yields than municipal bond funds—providing a higher and more certain return premium. The compounding of these return differences over time is likely to increase the longevity of the portfolio.

Reducing the number of times that the portfolio needs to be rebalanced. An investor who places equity funds in taxable accounts and bond funds in tax-deferred accounts, and who also follows the recommended order of spending described earlier, will draw on the stock allocation for annual spending before turning to the bond holdings. Historically, as illustrated in Figure 1, stocks have had higher average annual returns than bonds in both nominal and real (inflation-adjusted) terms.

As a result, an investor's stock holdings are likelier than his or her bond holdings to outgrow their assigned proportion of the portfolio over time. By spending from stock holdings, the investor will keep the portfolio closer to its target asset allocation. This in turn will not only reduce the frequency of required rebalancing but also help control the portfolio's risk level.

Increasing the portfolio's tax-efficiency. Situating assets as recommended above also benefits taxable investors by enhancing tax-efficiency in several ways:

- Placing income-producing assets in tax-deferred accounts minimizes the annual taxes due on the portfolio.
- When the investor draws upon the taxable assets, the capital appreciation of those assets is taxed at the 15% capital gains tax rate rather than at ordinary income tax rates (currently a maximum of 35%). Stocks typically provide more capital appreciation than bonds, so it is preferable to hold equities in taxable accounts.

4 For a full discussion, see *Asset Location for Taxable Investors*, Jaconetti, 2007.

- Upon the death of the owner, the taxable assets that remain in the portfolio and go to heirs would receive a step-up in cost basis. Here again, because equities are expected to provide more appreciation than bonds, it is usually more advantageous to receive a step-up in basis on this asset class.

Please note that the recommended strategy is based on historical and anticipated market relationships along with current, historical, and anticipated future tax laws. Naturally, investors should revisit their financial plans on a regular basis to adjust to changes in market conditions and/or tax laws. We recommend that you consult a tax or financial advisor about your individual situation.

Conclusion

In conclusion, the total-return approach to spending is identical to the income approach for investors whose portfolios generate enough cash flow to meet their spending needs. For those investors who need more cash flow than their portfolios yield, the total-return approach is the preferred method. Compared with the income-only approach, the total-return approach is likelier to increase the longevity of the portfolio, increase its tax-efficiency, and reduce the number of times that the portfolio needs to be rebalanced. In addition, for most investors, a total-return approach can produce the same cash flow as an income-only approach with no decrease in return and a lower tax liability.

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Appendix

Recommended spending levels for various time horizons

Vanguard's general spending recommendation for investors entering retirement is to plan on withdrawing 4% to 5% of their initial portfolio balance, adjusted for inflation every year thereafter. This recommendation is intended to produce a stable income stream that will keep pace with inflation while maintaining a high probability that the portfolio will not be depleted. The recommendation is based on research that examined outcomes for various hypothetical portfolios over a 30-year time horizon, using actual historical returns for the major asset classes.

While this spending rule can be broadly applied, every investor's circumstances include unique factors that can affect his or her optimal spending rate. Several of the most important factors are outlined below.

Time horizon. The first factor is how long the investor expects to be taking money from the portfolio. For most people, an estimate can be made on the basis of the investor's current health and anticipated longevity, based on statistics and family history. One can use an estimate of 95–100, not an unlikely age range given today's longer life expectancies. Or, for statistical reference, the Internal Revenue Service life expectancy tables can be a good place to start.

Asset allocation. As previously discussed, asset allocation is one of the primary determinants of returns and return variability in a broadly diversified portfolio. Each investor should choose an allocation based on his or her unique goals and objectives, time horizon, risk tolerance, and investment experience.

Desired certainty of outcome. The final factor is the level of certainty the investor requires that the portfolio will not be depleted in his or her lifetime. The more certainty required, the lower the level of initial spending should be.

Tables A and B offer general spending guidelines based on:

- Time horizons ranging from 10 to 40 years.

Spending rates with probable portfolio outcomes

A. If the goal is a 75% probability of not depleting the portfolio

| Planning horizon (years) | Gross withdrawal rate (%) | | | | | | |
|--------------------------|---------------------------|------|------|------|------|------|------|
| | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
| Conservative portfolio | 10.50 | 7.25 | 5.50 | 4.50 | 4.00 | 3.50 | 3.50 |
| Moderate portfolio | 11.50 | 8.75 | 6.75 | 5.75 | 5.25 | 4.75 | 4.75 |
| Aggressive portfolio | 12.00 | 8.50 | 7.00 | 6.25 | 5.75 | 5.50 | 5.25 |

B. If the goal is an 85% probability of not depleting the portfolio

| Planning horizon (years) | Gross withdrawal rate (%) | | | | | | |
|--------------------------|---------------------------|------|------|------|------|------|------|
| | 10 | 15 | 20 | 25 | 30 | 35 | 40 |
| Conservative portfolio | 10.00 | 6.75 | 5.25 | 4.25 | 3.75 | 3.50 | 3.25 |
| Moderate portfolio | 10.50 | 7.25 | 6.00 | 5.25 | 4.75 | 4.50 | 4.25 |
| Aggressive portfolio | 10.25 | 7.25 | 6.00 | 5.50 | 5.25 | 5.00 | 4.75 |

Note: Asset outcomes are determined using a proprietary real-path analysis, which assumes that the investor begins investing at a specific date in history (for example, 1930 or 2000) and then applies the actual returns and inflation rates for each subsequent year to the investor's cash flow. Once the current date has been reached, the calculation begins to apply historical data, starting in 1926, in an uninterrupted loop that continues until either the assets are depleted or the planning horizon has been attained.

Source: Vanguard Investment Counseling & Research.

- Various risk tolerances: Conservative—30% or less of the portfolio invested in stocks. Moderate—40% to 60% of the portfolio in stocks. Aggressive—70% or more of the portfolio in stocks.
- Two success rates, with "success" meaning that the portfolio is not depleted by the end of the planning horizon.

The tables can be read as follows: A 70-year-old investor with a 25-year time horizon whose portfolio is moderately invested could spend 5.75% of the initial balance (increasing the withdrawal in subsequent years by a percentage equal to the inflation rate) if he or she would prefer a 75% chance of not running out

Inflation-adjusted ending balances for hypothetical \$1 million portfolios

C. Time horizon: 10 years

| | Initial spending percentage | Ending balance (rounded to nearest hundred) | | |
|------------------------|-----------------------------|---|-------------------|-----------|
| | | Best | Worst | Median |
| Conservative portfolio | 10.00% | \$1,293,600 | Ran out in year 9 | \$258,600 |
| Moderate portfolio | 10.50 | 1,311,000 | Ran out in year 8 | 415,100 |
| Aggressive portfolio | 10.25 | 1,831,500 | Ran out in year 8 | 612,700 |

D. Time horizon: 20 years

| | Initial spending percentage | Ending balance (rounded to nearest hundred) | | |
|------------------------|-----------------------------|---|--------------------|------------|
| | | Best | Worst | Median |
| Conservative portfolio | 5.25% | \$2,822,400 | Ran out in year 17 | \$ 547,700 |
| Moderate portfolio | 6.00 | 3,288,300 | Ran out in year 16 | 954,300 |
| Aggressive portfolio | 6.00 | 5,036,700 | Ran out in year 16 | 1,556,300 |

E. Time horizon: 30 years

| | Initial spending percentage | Ending balance (rounded to nearest hundred) | | |
|------------------------|-----------------------------|---|--------------------|------------|
| | | Best | Worst | Median |
| Conservative portfolio | 3.75% | \$ 5,623,300 | Ran out in year 27 | \$ 830,500 |
| Moderate portfolio | 4.75 | 7,091,400 | Ran out in year 21 | 1,201,200 |
| Aggressive portfolio | 5.25 | 10,880,500 | Ran out in year 19 | 2,641,600 |

Source: Vanguard Investment Counseling & Research.

This hypothetical illustration does not represent returns on any particular investment.

of money prior to the planning horizon. If, on the other hand, the investor would be more comfortable with an 85% chance, he or she should limit the annual withdrawal to 5.25% of the initial balance (again, with annual increases to match inflation). As the tables show, there is a direct relationship between the gross withdrawal rate and the probability of depleting the portfolio prior to the end of the planning horizon.

The analysis also indicates what the ending balance could be under various circumstances. This figure can vary greatly based on the pattern of withdrawals and the timing of market returns. **Tables C, D, and E** show the range of possible outcomes for conservative, moderate, and aggressive portfolios assuming an 85% success rate.

As you can see, even when this investor plans for an 85% probability of success, the ending portfolio values can vary widely. In some “best” cases, the balance actually ends higher than it started, while in the “worst” cases, the portfolio runs out of money well before the end of the planning period. The more certainty an investor requires regarding the range of outcomes, the lower the initial recommended spending percentage.

In conclusion, there is no “one size fits all” spending rate for investors in the distribution phase of retirement. Each investor needs to select an asset allocation and withdrawal rate that offers the best balance between annual spending goals and the possible long-term outcomes for the overall portfolio.



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