Asset Allocation Issues for Retirement Income

# Introduction to Asset Allocation

The proper asset allocation for those who need retirement income has traditionally been viewed as being significantly different than that of the pre-retirement accumulator. While those in the accumulation phase focus on the long-term capital appreciation prospects of equity investments, those in the distribution phase of their portfolio tend to focus on the ability to generate income from the portfolio.

This focus on income often led to a portfolio designed primarily or exclusively of income-producing investments, such as bonds, preferred stocks, high-dividend-paying stocks, certificates of deposit, and even just cash in a checking or savings account. Fixed income investments could be structured to provide a relatively stable flow of income, meeting the basic income needs of many retirees.

However, the needs of today’s retirees looking at a prospective retirement distribution phase that could extend for 20 years, 30 years, or even longer, puts a significant strain on this traditional approach, and demands the consideration of a different approach to handling the generation of cash flows in retirement.

# Problems with the Traditional Model

Because of the implicit stability of income-producing assets and their associated cash flows, the traditional model itself was viewed as being very “safe” and secure. However, in the context of a multi-decade retirement, the traditional model faces many significant risks, including most notably:

* Reinvestment risk
* Purchasing power (inflation) risk

Reinvestment Risk

Interest rates change over time in response to economic conditions. Over a short time period, an individual can reduce or eliminate the impact of changing interest rates by structuring fixed income investments to provide the requisite cash flows at the specific time they are needed (e.g., with a bond ladder strategy (see Chapter 17)). For instance, if an individual needs $6,000/year for the next 5 years, he can invest $100,000 into a CD that yields 6%, and thereby ensure that he will receive $6,000/year in income, regardless of whether interest rates

Asset Allocation Issues for Retirement Income

subsequently change. There are various techniques, such as a ladder strategy, which can “lock-in” a given rate of income for a finite and relatively limited period of time.

Over a multi-decade retirement period, however, it is significantly more difficult to acquire a sufficient range of fixed income investments to produce all of the required cash flows over the time period. This is difficult, not only because of the challenge that each investment needs to provide the precise cash flow at the right time period, but also because of the uncertainty inherent in planning for needs over multiple decades. Cash flow needs can change with a health event, the death or disability of a spouse, a shift in activities due to the long-term impact of declining health, or merely because an individual changes her mind about spending preferences. Consequently, a multi-decade retirement period requires considerable flexibility in planning spending and cash flows. Yet this itself reduces the ability to provide for all future cash flows with certainty. It is difficult to buy a fixed income investment to produce a certain cash flow 28 years in the future, not knowing if that is the precise amount that will be needed, and facing the risk that a longer-term investment may experience more significant fluctuations in price in response to interest rate and economic changes in the meantime.[[1]](#endnote-1)

Consequently, retirees who follow the traditional model will typically buy short- or intermediate-term fixed income investments, with the plan of renewing them in the future. The problem, though, is that as interest rates change over time, the amount necessary to invest to procure a certain cash flow can change significantly. For instance, in the late 1990’s, a one-year certificate of deposit (CD) could yield as much as 6%, requiring only $100,000 to produce a cash flow of $6,000/year. However, just a few years later, the Federal Reserve significantly lowered interest rates, and one-year CDs yielded as little as 1%. In that environment, the same investor would need a whopping $600,000, instead of only $100,000, to maintain income. If the investor had only her original $100,000 to reinvest, income would have dropped from $6,000 to only $1,000, a decrease in income of 83.3% in only a few years!

This reinvestment risk – the possibility that when the time comes to reinvest in the future, similar interest rates or yields will no longer be available – can create a significant amount of risk for a multi-decade retirement plan. If it turns out that interest rates are significantly lower when a retiree needs to renew fixed income investments, the impact on available income can be significant.

Asset Allocation Issues for Retirement Income

Purchasing Power (Inflation) Risk

The greatest risk to a multi-decade retirement period is the inexorable impact of inflation on spending needs. At an inflation rate of only 3%, a retiree spending $50,000/year will need $67,200 [$50,000 x (1 + 3%)10] to produce the same inflation-adjusted spending after 10 years. This need increases to $90,300 [$50,000 x (1 + 3%)20] after 20 years, and is a whopping $121,350 [$50,000 x (1 + 3%)30] to produce an inflation-adjusted $50,000/year after 30 years! Viewed in the reverse, the retiree who started with $50,000 will find that that amount of income can purchase only $37,200 [$50,000 / (1 + 3%)10] worth of goods after 10 years, only $27,700 [$50,000 / (1 + 3%)20] after 20 years, and only $20,600 [$50,000 / (1 + 3%)30] after 30 years. That’s a decline in purchasing power of nearly 60%!

The impact of inflation makes it impossible to merely purchase fixed income investments to produce retirement income, without at least some allowance to account for the future impact of inflation. The natural resolution to this issue is to simply spend a portion of the principal each year, to make up for the loss in purchasing power. However, this withdrawal of principal will decrease the amount of principal available to generate future income, and with additional inflation adjustments the decline in principal can accelerate rapidly. For example, Figure 6.1 assumes that a retiree simply invests in a safe fixed income investment that yields a 5% annual return, while inflation increases the costs of the standard of living by 3% annually. Given the retiree’s initial balance of $1,000,000, the 5% annual investment return yields an initial spending amount of $50,000. As can be seen, the rising necessity of spending depletes the available principal, and the rate of decline increases as the reduced balance produces less and less income to fund the required spending amount. By merely attempting to maintain a current standard of living, a strategy of spending only the income and using safe investments actually depletes the entire account balance in less than 30 years!

Asset Allocation Issues for Retirement Income

|  |
| --- |
| Legend |
|  | Balance (from 2nd column) |
| y axis – Dollars | Income (from 3rd column) |
| x axis – Year (from 1st column) | Spending (from 4th column) |
|  |
| **Year** | **Balance** | **5% Income** | **3% Spending** | **Final Balance** |
| 1 | 1,000,000 | 50,000 | 50,000 | 1,000,000 |
| 2 | 1,000,000 | 50,000 | 51,500 | 998,500 |
| 3 | 998,500 | 49,925 | 53,045 | 995,380 |
| 4 | 995,380 | 49,769 | 54,636 | 990,513 |
| 5 | 990,513 | 49,526 | 56,275 | 983,763 |
| 6 | 983,763 | 49,188 | 57,964 | 974,987 |
| 7 | 974,987 | 48,749 | 59,703 | 964,034 |
| 8 | 964,034 | 48,202 | 61,494 | 950,742 |
| 9 | 950,742 | 47,537 | 63,339 | 934,941 |
| 10 | 934,941 | 46,747 | 65,239 | 916,449 |
| 11 | 916,449 | 45,822 | 67,196 | 895,076 |
| 12 | 895,076 | 44,754 | 69,212 | 870,618 |
| 13 | 870,618 | 43,531 | 71,288 | 842,861 |
| 14 | 842,861 | 42,143 | 73,427 | 811,577 |
| 15 | 811,577 | 40,579 | 75,629 | 776,526 |

Asset Allocation Issues for Retirement Income

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | Balance | 5% Income | 3% Spending | Final Balance |
| 16 | 776,526 | 38,823 | 77,898 | 737,454 |
| 17 | 737,454 | 36,873 | 80,235 | 694,092 |
| 18 | 694,092 | 34,705 | 82,642 | 646,154 |
| 19 | 646,154 | 32,308 | 85,122 | 593,340 |
| 20 | 593,340 | 29,667 | 87,675 | 535,332 |
| 21 | 535,332 | 26,767 | 90,306 | 471,793 |
| 22 | 471,793 | 23,590 | 93,015 | 402,367 |
| 23 | 402,367 | 20,118 | 95,805 | 326,681 |
| 24 | 326,681 | 16,334 | 98,679 | 244,335 |
| 25 | 244,335 | 12,217 | 101,640 | 154,912 |
| 26 | 154,912 | 7,746 | 104,689 | 57,969 |
| 27 | 57,969 | 2,898 | 60,868 | 0 |
| 28 | 0 | 0 | 0 | 0 |
| 29 | 0 | 0 | 0 | 0 |
| 30 | 0 | 0 | 0 | 0 |

As Figure 1 indicates, merely counting on a plan of “spend the income, save the principal” is often not feasible for a long-term retirement time horizon.

The uncertainty of interest rate risk means that for a multi-decade retirement time horizon, the solution cannot be as simple as merely purchasing fixed income investments to provide cash flows for the entire time period. But even more problematic is the inexorable impact of inflation, forcing an individual to need more and more income simply to maintain the same current real level of spending.

Some retirees may still be able to follow this strategy, if they have a sufficient base of assets that they can use only a portion of their assets to produce all of their needed cash flows. This allows the remaining portion of the assets (and the growth thereon) to provide a reserve that can be used for future inflation needs and other unanticipated expenditures.

However, most retirees will not have sufficient resources to carry such a significant reserve for their retirement. In addition, many retirees who do have sufficient assets will still prefer to find a way to spend more of their income, rather than simply leaving a large portion in reserve for future needs.

Asset Allocation Issues for Retirement Income

Consequently, the best alternative solution to the fixed income challenges of the traditional model is to seek out different assets and asset classes that provide higher returns. Most commonly, the higher return asset class will be some form of equity (stock).[[2]](#endnote-2)

# Asset Allocation Solutions for Long-Term Retirement Horizons

Although the solution of “invest in assets with higher returns” by buying equities may seem relatively straightforward, in reality it creates a whole alternative series of challenges that must be met and risks which must be accepted. At their core, most of the challenges are a result of the fact that the returns of most other higher-returning asset classes are significantly less predictable and certain, at least over any short- to intermediate-term time period. Of course, the risk of return uncertainty is itself a major factor in why other asset classes provide a higher return – the premium of return they receive can often be attributed directly to the higher level of risk that returns will not be what are needed at the time they are needed.

The challenges and issues to address when incorporating additional asset classes like equities into a portfolio – the focus for the rest of this chapter – include:

* Uncertainty of returns
* Uncertainty of the order of returns
* Creating “income” from non-income-producing assets
* Determining how much to invest in equities
* Diversification
* Balancing retirement income and legacy goals
* Asset location

Uncertainty of Returns

The first and foremost risk of incorporating an asset class like equities into a retirement portfolio is that the returns themselves are uncertain, particularly over short- to intermediate-term time periods. In addition to the fact that equities experience great uncertainty of returns over any particular year, bull and bear markets can occur over multi-year periods. Beyond that, longer-term so-called “secular” bull and bear markets can occur over periods as long as 10 to 20 years.[[3]](#endnote-3) See Figure 2.

Asset Allocation Issues for Retirement Income

|  |  |  |
| --- | --- | --- |
| Period | Worst | Best |
| Year(s) | Return | Year(s) | Return |
| 1 year | 1931 | -43.9% | 1933 | 52.9% |
| 5 Year | 1928-1932 | -13.0% | 1995-1999 | 28.6% |
| 10 Year | 1929-1938 | -1.3% | 1949-1958 | 19.9% |
| 20 Year | 1929-1948 | 2.8% | 1980-1999 | 17.9% |
| Calculations based on S&P 500 total return data from globalfindata.com |

While the worst periods generally include the late 1920s and the 1930s, there is still a great deal of volatility in the stock market. Many of the best periods included the 1990s, with total returns reaching 37.6% for 1995. However, total returns for the early 2000s were very low, reaching -22.1% for 2002. Indeed, the S&P 500 index fell over 49% from March 24, 2000 to October 9, 2002, and took until May 30, 2007 to return to its previous level. The summer of 2007 saw numerous big swings in stock prices, sometimes on a daily basis.

Consequently, it is possible that the returns of equities may not be higher than their fixed income alternative for any particular retiree for a number of years. This can not only make equities less desirable for the years in which it underperforms fixed income, but the uncertainty of returns can literally turn out to make the retirement portfolio *less* sustainable in some situations where returns are particularly adverse.

This forces the retiree to weigh the trade-off between the uncertainty of returns for the expectation of a higher average return. Over longer time periods, returns tend to be more stable and higher than their fixed income alternatives, supporting the integration of equities into a retirement portfolio. However, in many cases it will require this longer period of time for the higher average returns of equities to actually create an increased amount of retirement income. In the meantime, the rises and falls of equity returns from year to year results in significantly less certainty than a comparable fixed income investment.

Uncertainty of the Order of Returns

Beyond the uncertainty of returns and the risk that returns will not actually be as high as anticipated, there is also an uncertainty about the order of returns, even if the overall return over the entire time period is the same.

Asset Allocation Issues for Retirement Income

If there are no cash flows in or out of the portfolio, the order of returns doesn’t matter. A portfolio that goes down 20% in one year, and goes up 20% in the subsequent year, will finish with the same amount of final wealth if the returns are reversed – either way, 0.80 x 1.20 = 0.96 and so does 1.20 x 0.80 = 0.96, or $96,000 for an original $100,000 investment.

However, the results change when there are cash flows. For an individual who is adding to the portfolio, it is most desirable for declines to occur in the early years, with higher returns coming later so that the subsequent deposits can enjoy the good years. For an individual who is withdrawing, though, an early decline can be very damaging, even if the overall return is the same across the entire time period.

|  |  |  |
| --- | --- | --- |
| Year | Deposits | Withdrawals |
| Early Good Return | Early Bad Return | Early Good Return | Early Bad Return |
| Start | $100,000 | $100,000 | $100,000 | $100,000 |
| Return in year 1 | +20% | -20% | +20% | -20% |
| Balance at end of year 1 | $120,000 | $80,000 | $120,000 | $80,000 |
| Deposit/Withdrawal | +$10,000 | +$10,000 | -$10,000 | -$10,000 |
| Balance at start of year 2 | $130,000 | $90,000 | $110,000 | $70,000 |
| Return in year 2 | -20% | +20% | -20% | +20% |
| Balance at end of year 2 | $104,000 | $108,000 | $88,000 | $84,000 |

As can be seen in Figure 3, for the individual who is making deposits, having poor returns in the early year is actually more favorable, because it allows the deposit to enjoy a return of +20% (+$2,000) instead of -20% (-$2,000), yielding a net difference of $4,000. However, for the individual that is in the withdrawal phase, the opposite result occurs – bad returns in the early years result in a lower final wealth amount than bad returns in the later years.

Asset Allocation Issues for Retirement Income

Creating “Income” From Non-income-producing Assets

A common practical challenge of incorporating equities into a retirement portfolio is identifying how exactly to create the necessary retirement cash flows. With a traditional portfolio, the requisite withdrawal amounts for spending are generated by the interest and/or dividends from the investment assets. The traditional portfolio itself is often designed specifically around acquiring income-producing assets with a sufficient yield to generate the requisite income cash flows.

On the other hand, when a portfolio contains a significant amount of equities, it will often be impossible to generate sufficient interest and dividends to provide for the requisite income cash flows. For example, Figure 4 shows the impact on generating basic income cash flows when a portfolio shifts from being entirely in income-producing assets with an average cash yield of 5% to a blend that also includes equities that have only an average dividend of 1.5%.

|  |  |  |
| --- | --- | --- |
|  | Income-only portfolio | Partial equity portfolio |
| Fixed income (5% yield) | $1,000,000 | $500,000 |
| Equities (1.5% yield) | $0 | $500,000 |
| Total cash flow | $50,000 | $32,500 |

In this case, shifting 50% of the portfolio from fixed income to equities may have increased the average total return of the portfolio (due to the anticipated capital appreciation of the equities over time), but it decreased the direct income cash flows by 35% from $50,000 to only $32,500.

If an investor in Figure 4 shifted from the income-only portfolio to the partial equity portfolio, and actually intended to spend/withdraw $50,000/year from the portfolio, the remaining $17,500 of cash distributions from the portfolio must be generated some other way from the partial equity portfolio. This would necessitate the systematic sale of assets from the portfolio to generate the requisite cash, such as a portion of the appreciating equities.

Generating cash distributions from the portfolio with the sale of assets is different than the traditional portfolio that generates cash flow income solely from the interest and dividends. But it is not necessarily problematic. In fact, if in a particular year the equities portion of the portfolio actually appreciated by 6.5% (attributable to the higher capital appreciation potential of equities), the portfolio may in fact have a higher final account balance, as seen in Figure 5.

Asset Allocation Issues for Retirement Income

|  |  |  |  |
| --- | --- | --- | --- |
|  | Beginning Balance | Final Balance | Total Income |
| Fixed income (5% yield) | $500,000 | $500,000 | $25,000 (interest) |
| Equities (1.5% yield 6.5% appreciation) | $500,000 | $515,000 (after $17,500 sale) | $25,000 ($7,500 dividends$17,500 (sales) |
| Total | $1,000,000 | $1,015,000 | $50,000 |

As seen in Figure 5, the inclusion of equities with a higher average *total* return than fixed income leaves a higher account balance at the end of the year for future income generation. However, it did in reality necessitate a sale of equities. This represents an additional aspect of complexity for the total return blended portfolio, as part of the trade-off for the higher potential income generation over the duration of the time horizon. Of course, it is notable that there is also a possibility that returns in any particular year may be lower than fixed income yields or even negative; the final account balance of the blended portfolio may not be higher every year than its fixed income-only counterpart, even if it finishes higher on average.

Determining How Much to Invest in Equities

Given that an investor wishes to include equities in a portfolio, it still remains to be determined what amount (or percentage) of the portfolio should actually be invested in those equities. As discussed earlier, it can be highly desirable to include equities in a retirement portfolio to help generate sufficient total returns to both provide for income and maintain purchasing power. But how much is enough? Can there be too much?

In fact, it is entirely possible to have “too much” in equities, such that additional exposure does little to improve the probability of success, and may actually harm the retiree’s ability to safely sustain retirement withdrawals. Consequently, most retirees must find the appropriate balance between enough exposure to higher return asset classes to increase the ability to maintain purchasing power, but not so much that the higher volatility places undue risks. In addition, it is also notable that exposure to risk assets should also always remain within the constraints of the retiree’s risk tolerance.

In the past, a standard rule of thumb in determining equity exposure was to subtract the retiree’s age from 100, with the resulting amount invested in risk assets such as equities. For example, a 65-year-old would invest 100 – 65 = 35% in equities. As the

Asset Allocation Issues for Retirement Income

average life expectancy of a 65-year-old retiree has grown and the time horizon has increased, this rule has shifted to a “rule of 110” instead; thus, the same 65-year-old retiree would be recommended a portfolio 45% in equities (110 – 65 = 45).

However, these rules of thumb can substantially misstate the optimal equity exposure for a prospective retiree, compared to making the determination with more sophisticated current techniques, such as the use of sustainable withdrawal rates or stochastic modeling . The reason that the rules of thumb are often problematic is that they fail to make the full connection between an individual’s available assets and their actual need or desire for spending amounts. Consequently, the rules of thumb may lead a retiree to invest in more equities than may be necessary (introducing an unnecessary risk of failure) in some instances. In other cases, using the rule of thumb may distract from the fact that an individual actually needs to be more aggressive than the rule of thumb to accomplish their particular goals, or may otherwise need to adjust the spending goal downwards to fit within a tolerable level of portfolio risk.

Diversification

The preceding discussion of equity exposure generally assumes that the retiree is investing into a diversified equity position, and is subject only to systematic (market) risk; a well-diversified portfolio should virtually eliminate any unsystematic risk of individual companies (see Chapter 4 for a further discussion of risk).

Consequently, retirees should be wary of having an undiversified portfolio that includes a significant amount of unsystematic risk. For those that are in the accumulation phase, introducing unsystematic risk can increase volatility that provides additional risk, but also may provide additional reward (as evidenced by both the success of Microsoft investors and the disaster of Enron investors). However, for a retiree in the distribution phase, controlling risk becomes significantly more important, as there is generally little or no flexibility to respond to an adverse investment result if there will be no further earnings from employment to generate additional/replacement savings.

Asset Allocation Issues for Retirement Income

In addition, retirees can further diversify their risk by maintaining exposure to multiple asset classes, further spreading the impact of any particular asset class’s decline and reducing the risk of an unrecoverable loss. It is notable that most of the discussion of using sustainable withdrawal strategies or stochastic modeling is predicated on a reasonably diversified portfolio that does not incorporate undue risks (or that at least properly models the additional risk involved).

Balancing Retirement Income and Legacy Goals

Beyond simply trying to find the optimal asset allocation for a prospective retiree’s own retirement income period, many retirees must also find a balance between their retirement income needs during life and their legacy goals after death.

For instance, a retiree may be interested in generating only $30,000/year of income from a $1,000,000 portfolio, but may also be interested in ultimately growing that money to leave $750,000 to each of two children at death. Thus, the retiree must balance the optimal asset allocation for generating $30,000/year safely, with the need for portfolio growth that would be required to increase the value of the portfolio to $1,500,000 (so that $750,000 can flow to each of two children at death).

In some situations, a retiree will have little flexibility to plan for legacy goals, because the entire portfolio asset base may need to be focused solely on retirement income during life, simply to sustain the target retirement spending amounts.

However, in reality, many retirement portfolios will involve an aspect of legacy planning. This occurs because a retiree will (typically) not know what her remaining life expectancy is and, consequently, must perpetually plan for the possibility that retirement income needs will remain for many years to come. Unless an immediate annuity is used (see Chapter 9), the need to perpetually provide for the possibility of additional retirement years will inevitably leave some remaining asset base that will still be available at death.

For those who have more assets than are needed merely to create the desired retirement income, finding this balance can be even more challenging. In such cases, a portion of remaining assets may truly never be needed by the retiree, and consequently the retiree may wish to invest those assets differently on behalf of legacy heirs, with the anticipation that the purpose and associated time horizon of the funds is based more on the needs of the heirs than the needs of the retiree. This may result in a virtual segmentation of the assets, where a portion are invested in a manner that best satisfies the need for retirement income, and the remaining assets are invested separately to accomplish legacy goals.

Asset Allocation Issues for Retirement Income

Asset Location

Given that a retiree will likely have a blend of various asset classes with different risk/return tradeoffs and different tax treatment, an increasingly important question is in which of the retiree’s accounts these various assets should be held. Many retirees have assets in both taxable investment accounts, and tax-deferred retirement accounts, and consequently have the opportunity to choose whether to buy equities and fixed income evenly in each account, or to allocate one asset class to one account type and another asset class to the other account type.

Recent research[[4]](#endnote-4) has suggested that the optimal solution for maximizing after-tax final wealth is to focus on allocating higher-return assets that are tax-inefficient (i.e., that tend to generate returns taxed at higher rates and/or tend to create a great deal of taxable income annually) to tax-deferred accounts, allocating highly tax-efficient investments to taxable accounts, and allow other assets to be placed around these higher impact assets. For instance, this may result in an investor allocating a high-turnover mutual fund that generates a large amount of short-term capital gains in an IRA account, placing a series of individual equities that will generate long-term capital gains and qualified dividends in a taxable account, and placing any remaining bond positions in either account based on the remaining dollars available.

Consequently, when evaluating the asset allocation needs for retirees, it is important to also understand the tax efficiency (or lack thereof) associated with each particular investment security, to ensure that inefficient assets are placed in tax-deferred accounts and that efficient assets are placed in taxable accounts. To the extent that most retirees will have at least some amount of investment assets in each of several account types, this type of planning is a necessarily ancillary extension of choosing a proper asset allocation. However, due to the fact that nearly every retiree will have a different mix of available account types and the associated dollars in each account, such planning must be done on a client-by-client basis.

Summary

Most retirees will not be able to rely on the traditional approach of simply acquiring pure fixed-income-only assets to fund their retirement goals. Instead, to manage both reinvestment risk and purchasing power risk, retirees will need to purchase a blend of income-producing assets with more stable values, and higher return asset classes like equities that will also experience greater year-to-year volatility. Including higher return assets can expose the retiree to significant uncertainty in both annual returns and the order of returns, which may be helpful or damaging to the retiree’s pursuit of her

Asset Allocation Issues for Retirement Income

retirement income goals. Ultimately, retirees will need to determine how much to invest in higher return asset classes like equities, in a diversified manner, while balancing retirement income and other legacy goals. This will require a process to systematically sell assets to generate necessary withdrawals if income-producing assets alone do not generate sufficient cash flow; at the same time, the retiree will also need to focus on which types of accounts to hold each of the various asset classes and investment securities.

1. See the chapter on measuring yield, including a discussion of duration, in the *Tools & Techniques of Investment Planning*. [↑](#endnote-ref-1)
2. Other asset classes, such as alternative investments like commodities or hedge funds, may also be incorporated. However, the underlying issues of most non-fixed-income asset classes are similar in the context of retirement income planning, so the discussion here focuses primarily on incorporating equities into a retirement portfolio. [↑](#endnote-ref-2)
3. For further reading on Secular Bull and Bear Markets, see *Unexpected Returns: Understanding Secular Stock Market Cycles* by Easterling. [↑](#endnote-ref-3)
4. Daryanani and Cordaro, “Asset Location: A Generic Framework for Maximizing After-Tax Wealth,” *Journal of Financial Planning*, January 2005. [↑](#endnote-ref-4)