Mill Creek
Capital Advisors, LLC

MCCA Perspectives

Spending from Portfolios – January 2019

Introduction

Most investors and their investment portfolios can be loosely defined using just a limited set of categories. Portfolios are usually owned by/managed on behalf of individuals or institutions. They are structured to take low, moderate, or high investment risks. And they are managed with or without explicitly taking taxes into consideration. In our experience, one combination of characteristics (e.g., a risk-taking taxable individual account; a moderate risk non-taxable institution) is no more prevalent than another.

Another key defining portfolio characteristic: whether an investor needs to spend from it on a routine and consistent basis. Types of investors that typically fall into the spending category include retirees, endowments, and foundations. Most such investors have a need not just for current distributions – call it annual income – but also for on-going and rising cashflows across their expected lifetimes (individuals) or in perpetuity (institutions). Many institutions, for example, have investment policies and/or tax code requirements that target 5% or so annual portfolio spending. And many individuals are advised to abide by the “4% Rule” (i.e., to cap annual spending at 4% of portfolio value) to best guard against outliving their assets by spending too liberally from their portfolios.

For most investors spending from portfolio assets, investment theory and industry practice is to rely on a total return spending approach: using both portfolio income *and* principal to fund routine portfolio withdrawals. The reason why: combinations of bond coupon interest (presently, about 3%) and equity cash dividends (an average yield of about 2%) alone may not be enough to meet these investors’ spending needs. But wanting to preserve capital, some investors look for ways to maximize current portfolio income. Such an approach, however, can be short-sighted because it ignores how to best grow such income across a long-term investment horizon.

This paper explores the important sources and roles of portfolio income generated on broadly diversified investment portfolios in meeting most – but rarely all – of investors’ cash flow requirements. It summarizes recent trends in portfolio income generation and projects potential future sources of portfolio income across a near-term (2019-2028) horizon. As such, the analysis moves beyond the typical “Monte Carlo Simulation” to illustrate how modest growth in annual portfolio income (from equity dividends and bond interest payment) can be expected to mitigate periodic withdrawals of investment principal.[1]

Sources of Income and Spending, 2009-2018

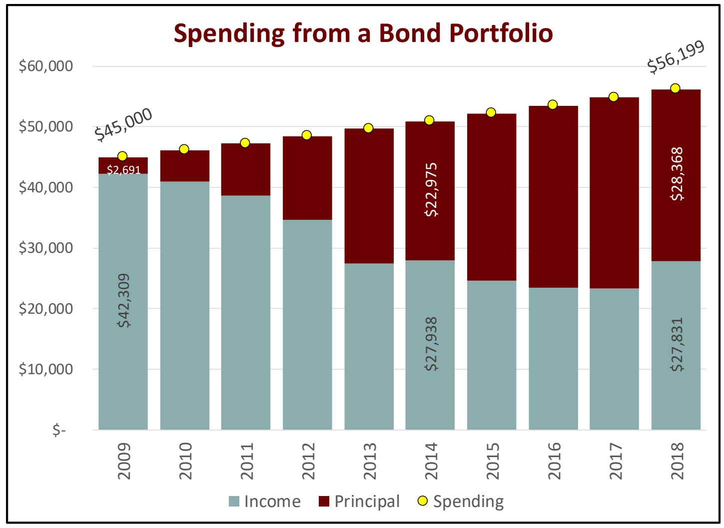
We chose the 10-year period starting January 1, 2009 as a baseline for illustrating how the income generated on portfolios of taxable bonds, of global equities, and on a blend of the two asset classes can change across a 10-year spending horizon. We choose this period for two reasons: recency, and because it was marked by a period of falling income on bond portfolios. During this period, investors’ portfolios benefited not only from rising stock markets (reducing the long-run financial impact of spending from principal) but also from above-average annual increases in equity cash dividends.

[1] Monte Carlo simulations project investment account balances across near- and long-term investment horizons, using assumptions about spending, risks, and returns to show a broad range of potential portfolio values at various points in time.

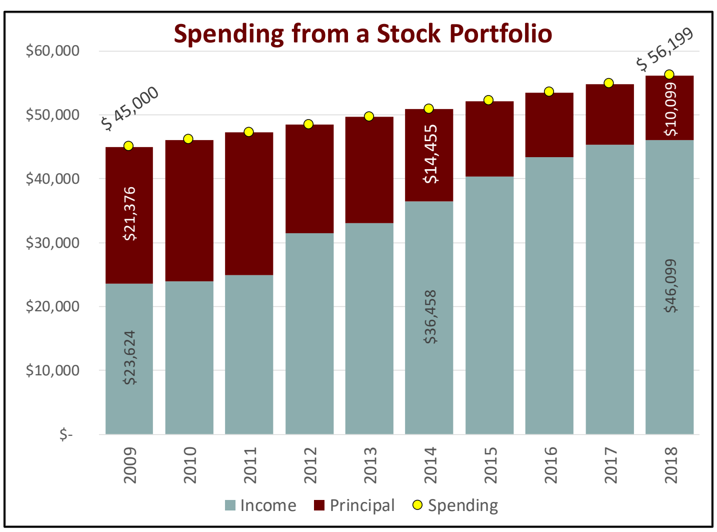
The accompanying charts show the year-by-year income generated by, and withdrawals from, bond, stock, and balanced portfolios based on the following assumptions[2]:

- A $1 million initial portfolio value, with an initial annual withdrawal equal to 4.5% of assets ($45,000) that increases +2.5% per year to keep up with anticipated inflation and totals about $512,000 across 10 years.
- Withdrawals made first from interest income and cash dividends, and then from the sale of assets at market value prices to make-up for any income shortfalls versus annual withdrawal targets.

As shown at right, falling bond market interest rates resulted in steadily declining income on a bond-only portfolio from 2009-2018; point-to-point, income declined at a -4.3% annualized rate (from $42,300 in 2009 to $27,800 in 2018). Such portfolio income covered all but $2,700 of targeted spending in 2009; by 2018, it was running nearly $17,000 lower than unadjusted spending needs and meeting only half of inflation-adjusted spending. Selling bonds to meet such annual shortfalls would have trimmed the portfolio's overall bond holdings by roughly 18% and the market value of its remaining total assets to around $850,000 by 2018[3].



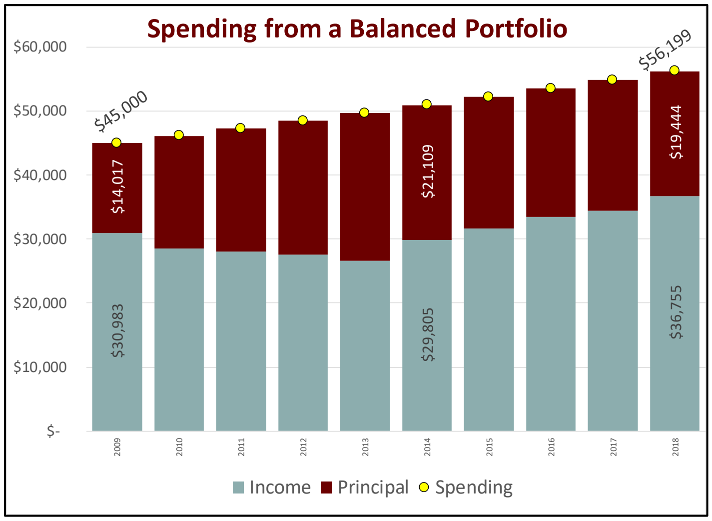
Income on a stock-only portfolio nearly doubled across this period thanks to rising dividend payouts, increasing annual dividends from about $24,000 to over $46,000. With income on such a portfolio also falling short of target spending (more so in the early years than toward the end of the period), raising cash by selling stocks to meet annual shortfalls was also required. However, a period of both strong and consistently rising stock market prices meant the investor could easily sustain such activity; sales would have reduced total portfolio holdings by about 9% by 2018 but the value of remaining shares would have appreciated to over $3 million.



Few investors in a position of needing steady-to-rising portfolio income would risk investing 100% of portfolio assets in equities given the possibility of a -20% or greater decline of principal in a bear market. A balanced

[2] Historical outcomes based on dividend distributions and share prices of Vanguard Total Bond Index Fund (bonds), Vanguard Total Stock Market Index Fund (stocks), and Vanguard Balanced Index Fund (balanced)

[3] Selling a portion of the portfolio's investment holdings to fund income shortfalls can become a self-perpetuating cycle, with reduced portfolio holdings potentially producing lower portfolio income and increasing the need to sell additional assets.



portfolio approach that somewhat limits periodic price risks while providing both good current portfolio income and the prospect of rising income comports better with such investors' longer-term needs. In this example, a balanced portfolio (roughly 60% bonds, 40% stocks) experienced lower income shortfalls versus an all- stock portfolio early-on and lower shortfalls versus the bond-only portfolio toward period-end. By 2018, out of necessity it would have liquidated about 12% of its original holdings. However, given rising prices on the stock market portion of its investments, the overall portfolio would then be worth about $1.9 million.

Comparison of Long-Term Spending Outcomes

	Cumulative Portfolio Withdrawals			Portfolio at Year 10	
Portfolio	Income	Principal	Total	Value	Holdings
Stocks	$ 348,525	$ 155,627	$ 504,152	$3,079,297	91%
Balanced	$ 307,855	$ 196,297	$ 504,152	$1,925,262	88%
Bonds	$ 311,312	$ 192,840	$ 504,152	$ 851,630	82%

Holdings: Remaining shares as percentage of initial investment

The timing of when withdrawals begin – and what transpires in capital markets immediately thereafter – can have a marked effect on absolute and relative portfolio outcomes. For example, withdrawals begun from a balanced portfolio just one year earlier (in 2008 as global equity markets began a sharp -42% decline) would have produced a somewhat less favorable financial picture 10 years later than the example shown. But courtesy of the subsequent bull market, it would also have easily supported planned spending and still preserved 75% of assets to support future spending.

Comparison of Balanced Portfolio Spending Outcomes

Portfolio	Cumulative Portfolio Withdrawals			Portfolio at Year 10	
Withdrawal Period	Income	Principal	Total	Value	Holdings
12/2007 to 12/2017	$ 214,332	$ 289,820	$ 504,152	$1,178,593	75%
12/1999 to 12/2009	$ 257,880	$ 246,272	$ 504,152	$ 710,005	74%

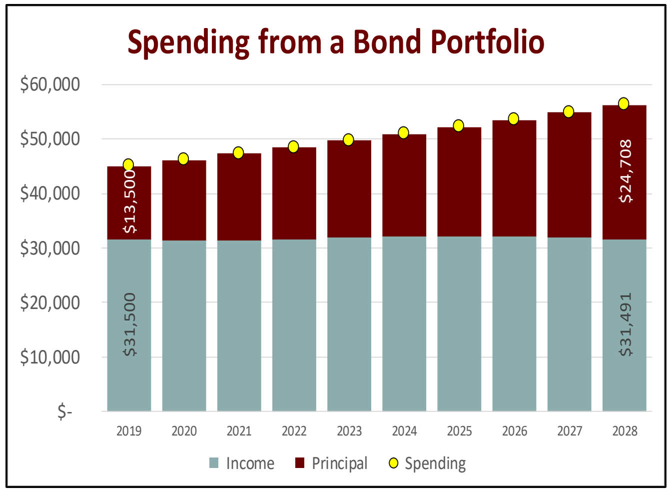
Likewise drawing the same stream of annual income from a balanced portfolio starting as the Dot Com era bull market ended and running through the end of the Great Recession (i.e., the 10-year period 2000-2009) would certainly have been scary at times but nevertheless not been permanently debilitating to the portfolio.

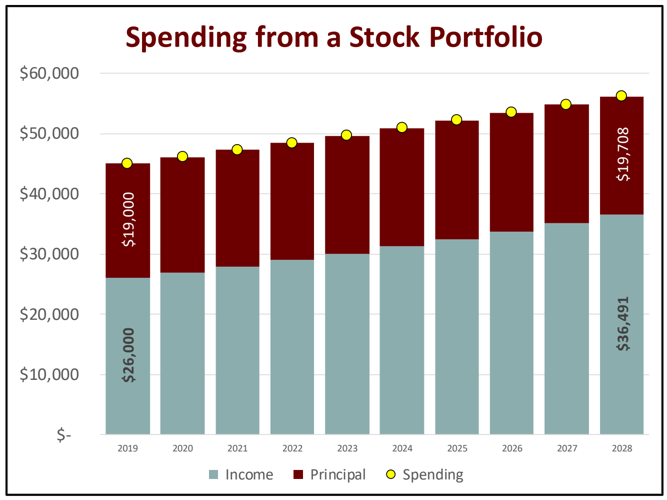
And lastly, 20 years into a program of drawing against portfolio income and principal annually, an investor could have cumulatively withdrawn more ($1.1 million) than a balanced portfolio's initial principal value between 1998-2017 and would most likely be able to sustain spending a further 15-20 years given current bond and stock market yields despite much inflated (versus those of 1998) annual spending needs.

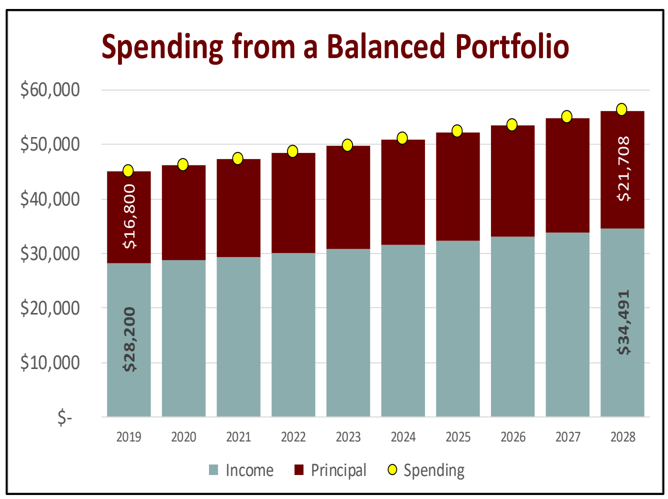
Long-Term Withdrawal Program, 1998-2017

	Cumulative Portfolio Withdrawals			Portfolio at Year 20	
	Income	Principal	Total	Value	Holdings
Balanced Fund	$ 623,560	$ 525,950	$1,149,510	$1,393,090	64%

Sources of Income and Spending, 2019-2028







We are currently deep into the economic and capital markets cycle that produced the exceptional returns on investments in stocks, but mostly declining yields and falling income on bonds, illustrated above. Although it is impossible to precisely predict future capital market returns and total portfolio income, our analysis of a hypothetical $1 million portfolio across the next 10 years produced similar cumulative drawdowns of principal (to make-up for shortfalls in portfolio income) as the recent past.

Rising bond market yields (i.e., the taxable bond market now yields over 3.50%, versus only 2.00% in mid-2016) means that bond market portfolios are now generating a somewhat higher stream of annual income than in recent years. As lower coupon bonds reach maturity and higher coupon bonds find their way into portfolios, we project that bond portfolio income will rise at least through 2021. Withdrawals from bond portfolio principal balances, therefore, should be lower than they were across the last half of the 10-year scenario ending in 2018.

Though cash dividends will likely continue to increase on stocks, we believe that the pace with which these payments are increased will slow in comparison to the past 10 years. Accordingly, overall shortfalls of *portfolio income relative to spending needs on a 100%* equity portfolio will become somewhat greater in the next 10 years, necessitating on balance somewhat larger average draws against portfolio principal.

As was the case for the 10-year period ending in 2018, our forward-looking analysis projects that investors drawing against portfolio assets to meet specific (and growing) spending needs will again be well-served to own a portfolio comprised of both stocks and bonds. Such a portfolio can be expected to produce a stream of income that has some predictability as well leaving open an opportunity for long-term growth.

Assuming asset class price returns and rates of portfolio income exactly meet our projections, a comparison of hypothetical portfolio outcomes after 10 years does not look markedly different than outcomes across other 10-year historical periods.[4] There is, of course, a risk that stock price increases across a 10-year investment horizon fall short of their long-term historical averages. In a “worst case” (i.e., 95th percentile) outcome for stocks, the terminal value of portfolios comprised entirely/primarily of stocks would be much lower than more conservatively positioned (e.g., more bonds than stocks) portfolios.

Comparison of Prospective Long-Term Spending Outcomes

	Cumulative Portfolio Withdrawals			Projections at Year 10	
Portfolio	Income	Principal	Total	Value	Holdings
Stocks	$308,927	$195,225	$ 504,152	$1,420,108	85%
Balanced	$317,106	$187,046	$ 504,152	$1,185,853	84%
Bonds	$312,198	$191,954	$ 504,152	$ 834,472	82%
Balanced, Worst Case	$308,095	$196,057	$ 504,152	$ 779,091	80%
Stocks, Worst Case	$302,088	$202,064	$ 504,152	$ 742,171	81%

** worst case examples: 95th percentile of outcomes based on 10-year historical price volatility*

Summary and Conclusions

As discussed above, our research into historical portfolio outcomes and analysis of prospective portfolio outcomes supports the following conclusions:

- A “total returns” based approach (drawing against both portfolio income and principal) to fund current and future needs supports reasonable levels of spending across an extended period.

- A steady stream of interest income on bond investments can help reduce net draws of principal during equity bear markets.

- A rising stream of dividend income on equity investments can help to produce rising portfolio income and help reduce net draws of principal when bond income declines.

- Although prospective portfolio returns across the next 10 years may trail those of the past 10 years (e.g., annualized future total returns of + 6.0% on a balanced portfolio versus +7.3% across the 10-year period ended September 30, 2018), portfolios will likely sustain reasonable and growing withdrawals.

- Investors should not seek to push withdrawals much beyond the conventional 4-5% of assets annual rule-of-thumb unless their horizon does not extend much beyond 10-15 years. Otherwise, the value of assets could decline to as little as 45-60% of their initial value one decade into a program of routine and growing cash withdrawals.

Comparison of Long-Term Outcomes by Withdrawal Rate

Withdrawal	Projected Market Values, Yr 10			"Worst Case Outcomes"	
Rate	Stocks	Balanced	Bonds	Balanced	Stocks
4.0%	$1,499,626	$1,259,951	$900,439	$ 844,133	$ 806,596
4.5%	**$1,420,108**	**$1,185,853**	**$834,472**	**$ 779,091**	**$ 742,171**
5.0%	$1,340,590	$1,111,756	$768,504	$ 714,049	$ 677,746
6.0%	$1,181,554	$ 963,560	$636,569	$ 583,965	$ 548,896
7.0%	$1,022,518	$ 815,365	$504,634	$ 453,881	$ 420,046

** worst case examples: 95th percentile of outcomes based on 10-year historical price volatility*

[4] Analysis based on Mill Creek Capital Advisors’ capital market return estimates for the 10-year period ending December 2028

Disclosures

Client Portfolio Performance/Benchmarks: The asset value data is provided by an independent third party. In most cases, portfolio performance is also calculated by an independent third party. Please compare your quarterly review report to your custodial statement. If you fail to receive your custodial statement, please notify MCCA. You may notice differences in the values reported on your quarterly review report versus the values reported on your custodial statement. There may be occasional differences in value, based on the pricing vendor used by the custodian and the portfolio management system that provides the data for the quarterly reports. Any non MCCA platform assets that the client has requested to be included in a value or performance reconciliation are based on unaudited data that is provided to MCCA by the client and may not be able to be confirmed. Details of these calculations and other manager information are available upon request. All information contained in this presentation is confidential and only intended for qualified MCCA clients. The information is only intended for its recipients and is not to be forwarded without the consent of MCCA. Information that you provided about your capital available for investment, your other investments, and the goal of this investment portfolio are key to the asset allocation recommendations and projections presented in this presentation. Unless otherwise noted, all client portfolio performance figures are calculated gross of investment advisory fees. If contained in the presentation, portfolio expected returns and volatility statistics are based on historical data and may not reflect current market conditions. **Past performance is no assurance of future results.**

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