

## How to Evaluate Spending when Designing an Investment Program

By Claude Perrier

At Harpswell, we help our clients meet their financial goals with a comprehensive approach for designing customized investment plans. We utilize traditional analytical tools, rely on our expertise and judgment to establish reasonable expectations, and develop understandable programs that are in our clients' best interests.

Our process is designed to develop diversified portfolios that are expected to produce reasonable returns with associated risk levels that are consistent with our clients' profiles. More often than not, spending is a consideration which makes the planning process more complex. Investors must decide what level of spending is right for them; taking into account financial needs, the impact on portfolio growth, and sustainability.

A particular challenge throughout this process for many of our clients, both individuals and institutions, is a complete understanding of the long-term effects of spending and how portfolio growth is impacted over time. Our private clients are concerned with sustaining spending levels that maintain their lifestyles, while institutions look to continued long-term support of related programs and operations.

At Harpswell, we've designed an approach that focuses on the effects of spending and demonstrates the relative impacts resulting from different spending levels. By keeping all other inputs such as portfolio composition and return assumptions constant, we isolate the impact of spending which assists our clients' in determining what levels are right for them. Harpswell's approach has proven valuable to our clients both in the initial planning phase and with periodic updates (annually is recommended) to reflect actual experience and adjustments to maintain consistency with stated goals.

To illustrate our approach, we've prepared several examples that demonstrate how we analyze the effects of spending and help our clients make better decisions.

## Impact of Varied Spending Levels based on Historic Returns

In the first example, we look back in time using historical returns to determine how spending would have affected portfolio growth (Table 1). For the sake of simplicity, two assets classes were used, large domestic stocks and core bonds with no inflation assumed. Our sample portfolio has moderate risk with a 60% stock and 40% core bond allocation. We start with a \$10 million portfolio and illustrate what impacts 1%, 3% and 5% spending levels would have against ending values versus a “No Spending” approach.

Historical Spending Analysis - Table 1									
Starting Portfolio - \$10 Million									
Time Period	No Spending		1% Spending Level		3% Spending Level		5% Spending Level		
	10 Years	20 Years	10 Years	20 Years	10 Years	20 Years	10 Years	20 Years	
Ending Assets	\$ 18.4	\$ 39.8	\$ 16.7	\$ 32.6	\$ 13.7	\$ 22.0	\$ 11.3	\$ 14.9	
Difference			\$ (1.7)	\$ (7.2)	\$ (4.7)	\$ (17.8)	\$ (7.1)	\$ (24.9)	
Total Spending	N/A	N/A	\$ 1.2	\$ 3.9	\$ 3.2	\$ 9.3	\$ 4.8	\$ 12.5	
<sup>1</sup> Reduction in Value per \$MM Spent			\$ (1.4)	\$ (1.9)	\$ (1.5)	\$ (1.9)	\$ (1.5)	\$ (2.0)	

10 Year Historical Returns - 60% S&P 500 Index / 40% Barclays Aggregate Index blend from 1/1/2007 through 12/31/2016. Blend is rebalanced quarterly.  
 20 Year Historical Returns - 60% S&P 500 Index / 40% Barclays Aggregate Index blend from 1/1/1997 through 12/31/2016. Blend is rebalanced quarterly.  
 No adjustments have been made for taxes or inflation and spending dollars vary over time while percentages stay constant. Balances are shown in \$ millions.  
 Spending Assumption - spending occurs monthly based on 1/12 of the stated percentage applied to the previous month's ending balance  
<sup>1</sup>Reduction in Value - per unit of value lost per unit of spending. For every dollar spent, the number of dollars lost in value (Difference / Total Spending)

**Table 1** shows that ending asset values under a No Spending approach would have been \$18.4 million after 10 years and \$39.8 million for 20 years. At 1% spending, ending assets are \$1.7 and \$7.2 million lower, respectively. Total spending dollars for 10 and 20 years were \$1.2 and \$3.9 million. In other words, for every dollar spent, ending assets were lower by \$1.4 after 10 years. Over 20 years, the reduction was \$1.9 for every dollar spent.

Reduction in Value due to Spending for the 3% and 5% levels remain consistent with 1% spending, although absolute dollars spent and value lost were larger. In all cases, ending values remain above \$10 million in nominal dollars but fall short in real dollars (adjusted for inflation) for the 5% case.

This is a useful analysis in providing clients with the opportunity to understand what would have happened in the past given various spending choices and how asset levels are affected in the long term.

### Impact of Varied Spending Levels based on Projected Returns

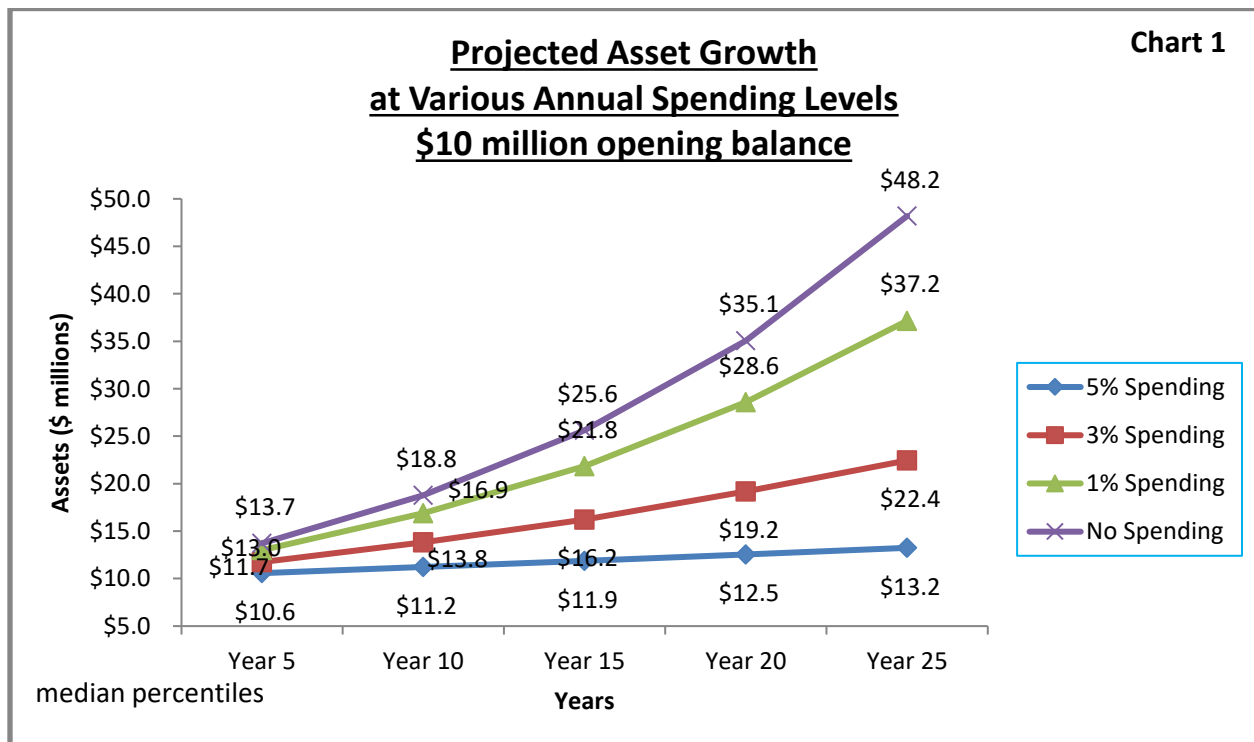
Example 2 presents forward looking projections utilizing Harpswell’s capital market assumptions (projected returns) and analytical models. Again, we focus on two assets classes, domestic stocks and core bonds and assume no inflation.

As in example 1, this example is based on a moderate risk, diversified portfolio (60% Stock / 40% Core Bonds) with initial assets of \$10 million. Assets are projected to grow based on projected returns. Apart from spending, all other assumptions remain constant for all time periods.

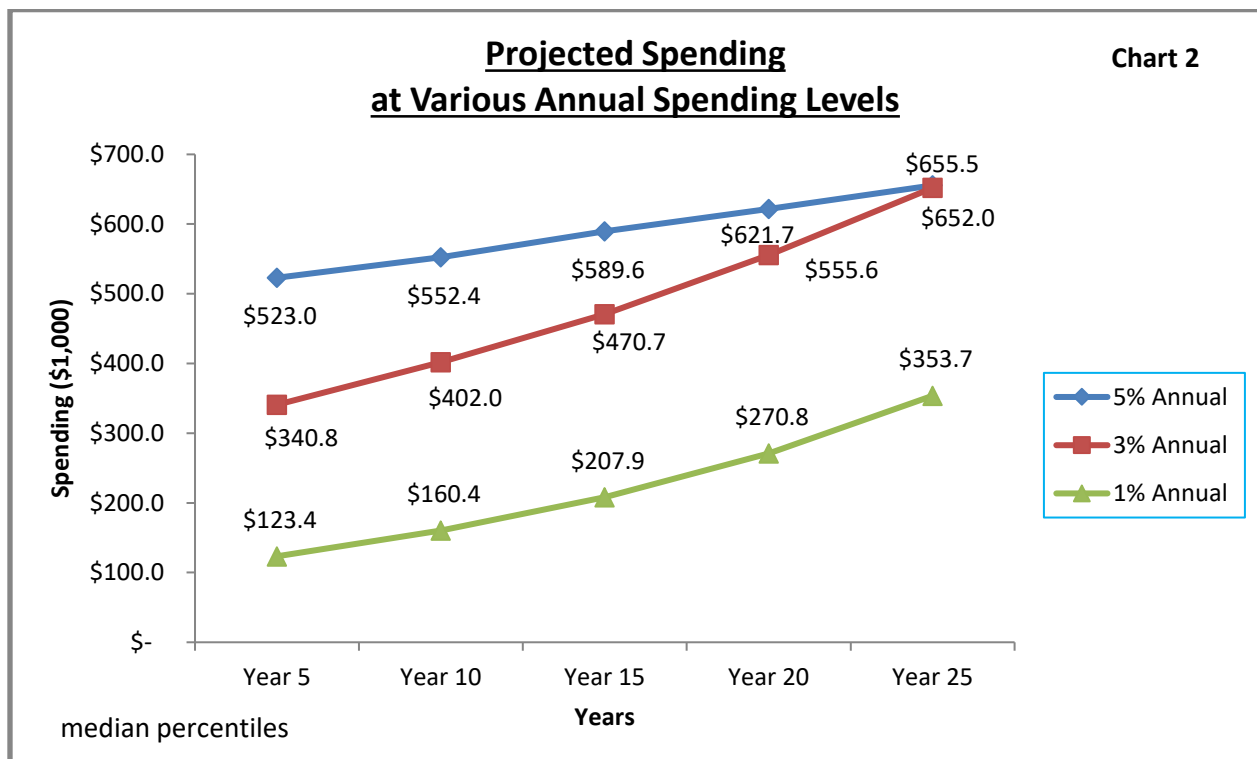
As in the historical analysis, spending is set at three levels (1%, 3% & 5%) along with No Spending for comparison purposes. Annual spending is based on the opening asset balance for each year. The projections are presented in five year increments going out twenty five years and the results present the median or most likely outcomes. In practice, it’s important to also consider a variety of outcomes, best and worst cases, to better understand results given a wide range of market conditions.

#### Results

In **Chart 1**, we see that spending has a dramatic effect on asset growth, consistent with the historical analysis. Without spending, assets are projected to increase nearly fivefold over twenty five years. At the 1% level, assets are projected to nearly quadruple. Increasing spending to 3% still results in assets more than doubling, but 40% lower than the 1% level. At 5% spending, asset levels are projected to increase minimally, by 30%, but with a loss of purchasing power when considering inflation.



**Chart 2** presents projected dollars available for spending for each year shown given the three levels in the analysis. For the 1% & 3% levels, absolute spending dollars increase over time as the underlying assets grow while spending dollars at the 5% level increase much more modestly. In fact, asset growth is so impaired at 5% that available spending dollars at the 3% level are projected to be greater after Year 25.



This example illustrates an important point. Although it's understood that spending will reduce asset growth over time, the magnitude of the decrease is more significant than most investors realize. **Chart 1** shows that increasing spending levels from 1% to 3% will result in a \$14.8 million reduction over twenty five years. At 5%, there is minimal asset growth and if markets experience an extended downturn such as 2007-2008, assets could decline dramatically. Every client is different so there is no specific spending level that is right in all cases. What is important is to understand how spending impacts portfolio growth, lifestyle and sustainability in order to make the best choices over time.

**Table 2** compares the historical results shown in Table 1 to projected results.

Projected Spending Analysis - Table 2									
Starting Portfolio - \$10 Million									
Time Period	No Spending		1% Spending Level		3% Spending Level		5% Spending Level		
	10 Years	20 Years	10 Years	20 Years	10 Years	20 Years	10 Years	20 Years	
Ending Assets	\$ 18.8	\$ 35.1	\$ 16.9	\$ 28.6	\$ 13.8	\$ 19.2	\$ 11.2	\$ 12.5	
Difference			\$ (1.9)	\$ (6.5)	\$ (5.0)	\$ (15.9)	\$ (7.6)	\$ (22.5)	
Total Spending	N/A	N/A	\$ 1.3	\$ 3.5	\$ 3.5	\$ 8.3	\$ 5.3	\$ 11.2	
<sup>1</sup> Reduction in Value per \$MM Spent			\$ (1.5)	\$ (1.9)	\$ (1.4)	\$ (1.9)	\$ (1.4)	\$ (2.0)	

Projected Returns are based on a 60% Lg Domestic Equity / 40% Core Fixed Income blend based on Harpswell's Capital Market Assumptions  
 No adjustments have been made for taxes or inflation and spending dollars vary over time while percentages stay constant. Balances are shown in \$ millions.  
 Spending Assumption - spending occurs at the beginning of each year based on the opening balance of assets  
<sup>1</sup>Reduction in Value - per unit of value lost per unit of spending. For every dollar spent, the number of dollars lost in value (Difference / Total Spending)

In comparing the two Tables, the 10 Year results were very similar but begin diverging at 20 Years with respect to Ending Assets and Total Spending. What is worth noting is that Reduction in Value Due to Spending remains relatively constant on a per dollar basis. This is probably due the fact that the examples used spending percentages applied against changing asset balances. When assets increased or declined over time, dollars available for spending moved in tandem, maintaining a proportional relationship. This would not be the case if fixed dollar amounts were spent without regard to fluctuating asset balances.

The takeaway here is that projections for asset growth and spending can provide reasonable estimates for investors during the planning process in setting spending targets and goals for asset growth over time. However, it's also apparent that with longer time frames, estimates become less reliable. It's important to recognize that this type of analysis requires periodic updating (annually at a minimum) to increase the likelihood that estimates remain reasonable, that goals are being met, and to determine if adjustments are necessary in spending habits or portfolio construction.

In summary, this discussion has focused on a simple two asset class example but the principles and approach apply to more complicated and diverse portfolios as well. Spending is not always a simple percent applied against an opening balance. Spending can be based on moving averages, fixed amounts that vary over time or inflation adjusted levels. We've worked with a variety of clients over time with differing requirements but have always found this approach to be valuable in setting reasonable expectations and goals.

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If you have any questions or would like to discuss this topic further, we invite you to reach out to the author: Claude R. Perrier, [CRP@HarpSwelladvisors.com](mailto:CRP@HarpSwelladvisors.com) | 207.926.1346.



Claude leads Harpswell's research efforts for financial planning and modeling and works with both families and foundations to help bring clarity to board and family decisions regarding risk, distributions, sustainability, and portfolio analysis.

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