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# Is 5% the right return target for institutional investors?

Vanguard research

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**Executive Summary.** For many institutional investors, a 5% return has become the standard investment objective.<sup>1</sup> Historically, a traditional 60/40 stock/bond portfolio would seem to have easily reached this target on a nominal basis (gross of inflation), with a return of 8.3%, and even on a real basis (net of inflation), with a return of 5.0%.<sup>2</sup> Yet since the 1930s there have been several extended stretches where a traditional 60/40 portfolio has failed to achieve a 5% real return. In fact, if viewed on a rolling 12-month basis, the prospect of a 60/40 stock/bond portfolio achieving a 5% real return has been essentially a coin flip at 53%.<sup>3</sup> This history, along with the low yields currently available on bonds, has caused some institutional investors to question whether trying to achieve a consistent 5% real return is realistic.

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1 Indeed, since 1976 private foundations in the United States have been required under Section 4942 of the federal tax code to spend 5% a year in order to maintain their tax-exempt status.

2 For the 81 years 1930 to 2010. (See Figure 1, on page 3.)

3 For the period 1930 to 2010 there were 961 different 12-month periods. A 60% U.S. stock and 40% U.S. bond portfolio produced a real return greater than 5% in 512 of the periods, or 53% of the time. Data were based on the historical stock and bond returns shown in Figure 1.

In this paper we consider what investors can do to maximize the probability of achieving success, and whether a 5% real return is a viable target. We find that there is no asset allocation mix alone that would have provided a consistent 5% real return to investors. Indeed, even adding alternative investments does not change this outcome. Instead we find that an integrated approach based on diversified asset management, modest spending rates, and multiple sources of revenue provides investors with the greatest prospect for success. In the end, we find that a consistent 5% real return is an ambitious target, and that it is prudent for institutional investors to consider spending rates well below that figure.

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### Historical stock and bond analysis

On the surface, it would seem that holding either stocks or bonds over the long term would have provided investors with more than a 5% return. Indeed, as **Figure 1** illustrates, the long-term nominal return has been 9.4% for stocks and 5.6% for bonds. As a result, over the 81 years from 1930 to 2010, a traditional 60/40 stock/bond portfolio would have provided an investor with a return of 8.3%. But what matters to institutions interested in perpetuating their efforts are not nominal (i.e., gross) returns but real (net of inflation) returns, because without considering the impact of inflation investors are susceptible to losing actual purchasing power.

From 1930 to 2010 the real return on a 60/40 stock/bond portfolio was exactly 5.0%, but in four of the eight decades returns were below this long-term average. Similarly, using a rolling 12-month measure, the odds of an investor meeting or exceeding the 5% real return target were no better than 53%. Indeed, bonds alone were rarely able to achieve a 5% real return, producing a long-term

average real return of only 2.3%. As a result, institutions with ongoing spending needs are faced with the difficult question of how to sustain operations in the face of inconsistent returns and historically low real bond yields.

### Historical diversification analysis

The decidedly mixed results shown in **Figure 1** prompted many investors to consider diversifying their portfolios to improve results. The second phase of our asset analysis expanded the investment set beyond U.S. stocks and bonds to include international stocks, real estate, commodities, Treasury bonds, credit bonds, and hedge funds.<sup>4</sup>

For this analysis, we added an additional asset class or investment individually to the base 60/40 stock/bond portfolio to determine how much each would have improved the results, substituting it for a portion of the allocation to U.S. stocks or bonds or both. We found that while diversifying a portfolio did help dampen volatility, it did not significantly improve the returns achieved from a traditional U.S.

*Notes on risk: All investments are subject to risk. Investments in bonds are subject to interest rate, credit, and inflation risk. Foreign investing involves additional risks, including currency fluctuations and political uncertainty. Investments that concentrate on a relatively narrow market sector face the risk of higher share-price volatility. Diversification does not ensure a profit or protect against a loss in a declining market. Past performance is not a guarantee of future results. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.*

<sup>4</sup> We conducted this analysis over the period 1991–2010 to ensure that all comparisons covered the same time frame. Data for several of the additional investments do not extend back much further.

**Figure 1.** Achieving a 5% return

Historical stock and bond returns, 1930–2010

From	To	Nominal			Inflation	Real		
		U.S. stocks	U.S. bonds	60–40 portfolio		U.S. stocks	U.S. bonds	60–40 portfolio
Jan. 1930	Dec. 1939	-0.1%	6.9%	4.3%	-2.0%	2.1%	9.1%	6.5%
Jan. 1940	Dec. 1949	9.1%	2.9%	6.9%	5.4%	3.5%	-2.5%	1.4%
Jan. 1950	Dec. 1959	19.3%	0.2%	11.5%	2.2%	16.8%	-2.0%	9.1%
Jan. 1960	Dec. 1969	7.8%	1.6%	5.5%	2.5%	5.2%	-0.9%	2.9%
Jan. 1970	Dec. 1979	5.9%	7.2%	6.6%	7.4%	-1.5%	-0.2%	-0.7%
Jan. 1980	Dec. 1989	16.9%	12.4%	15.5%	5.1%	11.3%	7.0%	9.9%
Jan. 1990	Dec. 1999	17.6%	7.7%	13.8%	2.9%	14.2%	4.6%	10.5%
Jan. 2000	Dec. 2009	-0.2%	6.3%	2.7%	2.5%	-2.7%	3.7%	0.2%
Jan. 1930	Dec. 2010	9.4%	5.6%	8.3%	3.2%	6.0%	2.3%	5.0%

Notes: Red boxes note returns of less than 5% for that period. The full period includes 81 years.

Sources: U.S. stocks: Standard & Poor’s 90 Index from 1930 to March 3, 1957; Standard & Poor’s 500 Index from March 4, 1957, to 1974; Wilshire 5000 Index from 1975 to April 22, 2005; and MSCI US Broad Market Index thereafter. U.S. bonds: Standard & Poor’s High Grade Corporate Index from 1930 to 1968; Citigroup High Grade Index from 1969 to 1972; Lehman U.S. Credit Aa Index from 1973 to 1975; and Barclays Capital U.S. Aggregate Bond Index thereafter.

60/40 stock/bond portfolio. **Figure 2**, on page 4, demonstrates these findings, showing each of the different portfolios as a pie chart and calculating the probability of successfully achieving a 5% real return on a rolling 12-month basis. The first three portfolios substitute a portion of the stock portfolio, the next three portfolios replace a portion of the bond portfolio, and the final two portfolios substitute a combination of both stocks and bonds. In each instance we found no discernible difference in returns. And although the overall probability of success was higher for this truncated (1991–2010) period than for the longer (1930–2010) history, there was still no consistent success, with all of the options producing a 5% real return or better approximately 60% of the time.

Indeed, even the addition of alternative investments did little to alter the level of success; a 20% allocation to hedge funds did not improve the

results. This may come as a surprise, given the broad publicity hedge funds and other alternative investments have received; however, to the extent that private investments are treated similarly to public investments, where an average of all possible investments is used as a proxy for investing in a specific area, our analysis indicates that they provided no additional benefit.<sup>5</sup>

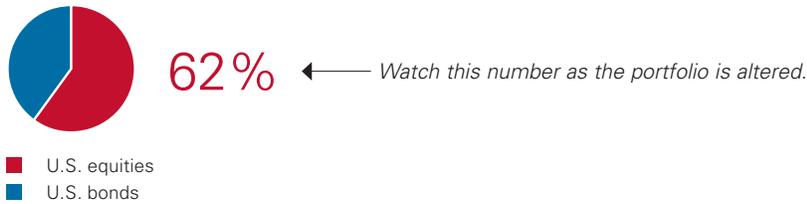
Including private equity did not alter the outcome either. As Kaplan and Schoar (2005) demonstrated, average net returns for private equity were similar—no better, no worse—than those for the public equity markets. Private equity funds do exhibit significant levels of heterogeneity, but this diversity of outcomes does not, in and of itself, result in stronger returns.<sup>6</sup>

5 We conducted the hedge fund analysis by using the Lipper TASS Hedge Fund Database. We considered all available hedge funds, excluding those with backfilled data or a track record of less than three years, giving us a total of 4,720 funds. We calculated the return for each hedge fund in each year between 1991 and 2010. For those funds that stopped reporting during this period, we substituted a 60/40 stock/bond portfolio. The portfolio allocations for portfolios using hedge funds were 50% stocks, 30% bonds, and 20% hedge funds, with an average portfolio return of 8.9%. For a more detailed discussion of hedge funds, see Bhardwaj (2010).

6 For more on private equity, see Shanahan et al. (2010).

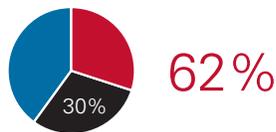
**Figure 2.** The probability of achieving a consistent 5% real return (1991–2010)

The baseline example (a 60% U.S. equity/40% U.S. bond portfolio)

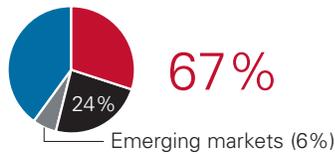


Exchanging U.S. equities for...

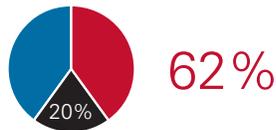
EAFE



EAFE and emerging markets



REITs

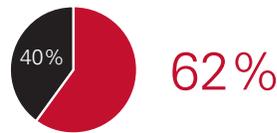


Exchanging all U.S. bonds for...

Treasury bills



Credit

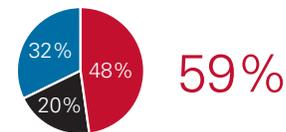


High yield

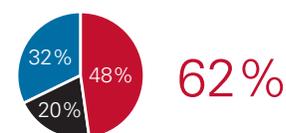


Exchanging some of both for...

Commodities



Hedge funds



Sources: U.S. stocks: Wilshire 5000 Index from 1991 to April 22, 2005, and MSCI US Broad Market Index thereafter. U.S. bonds: Barclays Capital U.S. Aggregate Bond Index. International developed stocks: MSCI EAFE Index (Gross). International emerging stocks: MSCI Emerging Markets Index (Gross). REITs: FTSE NAREIT Equity REIT Index. Treasury bonds: Barclays Capital U.S. Total Treasury Index. Credit bonds: Barclays Capital U.S. Total Credit Index. High-yield bonds: Barclays Capital U.S. High Yield Bond Index. Commodities: S&P GSCI Commodity Index. Hedge funds: Lipper TASS Hedge Fund Database.

Others might suggest that rather than adding additional investments one by one, we could have optimized multiple asset classes to identify a better solution, but recent historical returns alone are not a reliable basis for forecasting returns and lead to highly skewed and often faulty results (Kinniry, 2007).

### The dilemma and solution

If asset returns on their own have not consistently achieved a 5% real return, where does this leave nonprofit institutions? If we step back for a moment and consider that the impact of an endowment or foundation is the combination of two things—the

amount of its corpus (a proxy for future impact) and the amount it spends (a measure of past and current impact)—then we realize that a solution lies in adjusting the three key levers all institutions have within their control: spending rates, revenue sources, and asset management.

### Spending options

We began our analysis by examining the historical impact of four different spending rules. Many institutions historically have used a spending rule calculated as a fixed percentage of assets. The appeal of this approach is that it is straightforward

**Figure 3.** Spending rule definitions

Fixed percentage	Smoothed percentage	Hybrid	Flexible
Under the fixed-percentage rule, spending is determined at the end of each year by applying a fixed percentage to the prior year's ending assets. The spending amount is held constant for the next 12 months.	Under the smoothed percentage rule, spending is determined at the end of each year by applying a fixed percentage to the average assets over the prior three years. The spending amount is held constant for the next 12 months.	Under the hybrid rule, 60% of spending is determined from the three-year smoothing rule and 40% is based on the prior year's spending, adjusted for inflation. The spending amount is held constant for the next 12 months. The Yale endowment uses a similar spending rule.	Under the flexible rule, spending is divided equally into discretionary and nondiscretionary spending. Nondiscretionary spending is always met, and discretionary spending is increased, decreased, or held constant according to market performance. The spending amount is held constant for the next 12 months.

Source: Vanguard.

and easy to understand. The challenge of a fixed spending rule is that it is subject to the volatility of the underlying assets. Many institutions have looked to improve this option by smoothing out the year-to-year volatility, using a three-year average as the basis for their spending calculations. Others have taken to using a hybrid approach in which both asset size and prior spending are used to calculate the spending basis. A new potential option for institutional investors would be to use a flexible spending rule that has two categories for spending, nondiscretionary and discretionary. Such a rule would provide investors with some level of discernment over the discretionary portion of their expenditures each year. See **Figure 3** for a more detailed description of each rule.

We examined each spending rule at three different spending rates—5.0%, 4.5%, and 4.0%—to see the impact on a \$100 million endowment over the 51 years ended 2010 (see **Figure 4**, on page 6).<sup>7</sup> For each spending rule we calculated the ending corpus, the aggregate dollars spent, and the total investment power. *Investment power* is represented by a single figure that measures the cumulative impact of a spending rule by combining both the dollars spent (current impact) and the ending corpus value (future impact).

Our analysis underscores two key findings. First, a flexible spending rule provided institutions with the most investment power, and second, lower spending rates significantly improved the chance of success. Examining the 5.0% spending panel in **Figure 4** reveals that during the period 1960 to 2010, a fixed percentage, hybrid, or smoothed spending rule would have resulted in a loss of corpus on a real basis (–\$149 million, –\$116 million, and –\$105 million, respectively, in 2010 dollars), while a flexible spending rule, for this same period, would have produced a gain of \$141 million (again in 2010 dollars). Why is this?

In a flexible spending policy, an institution would cut or increase spending significantly depending on the most recent trailing asset returns. For this analysis we used a 5% total spending rate with a 50/50 nondiscretionary/discretionary split, although other rates and splits could be used. **Figure 5**, on page 7, illustrates how the flexible spending rule is calculated. The discretionary portion of the spending rule is calculated as the product of a baseline variable spending rate and the variable spending factor. The discretionary spending rate is simply the portion of an organization's annual spending subject to change, in this instance 50% of the overall 5% spending rate, or 2.5%. The discretionary spending

<sup>7</sup> The 1960 \$100 million corpus equates to \$746 million in 2010 dollars when considering the impact of inflation alone.

**Figure 4.** Endowment investment power by spending rule, 1960–2010

With a starting corpus of \$100 million in 1960 (\$746 million in 2010 dollars), this table shows the impact of spending rules and spending rates on an endowment’s investment power.

	2010 corpus balance (in millions)	Aggregate spending (in millions)	Total investment power (in millions)	Investment power relative to 5%	Investment power relative to 4.5%	Spending volatility
<b>5% spending</b>						
Fixed percentage	\$597	\$1,499	\$2,096	—	—	11.6%
Hybrid (60/40)	630	1,499	2,129	—	—	6.0
Smoothed percentage	641	1,513	2,154	—	—	6.9
Flexible	887	1,551	2,438	—	—	43.0
<b>4.5% spending</b>						
Fixed percentage	\$772	\$1,535	\$2,307	10.1%	—	11.6%
Hybrid (60/40)	826	1,535	2,361	10.9	—	5.9
Smoothed percentage	832	1,548	2,379	10.5	—	6.9
Flexible	1,079	1,573	2,653	8.8	—	41.2
<b>4% spending</b>						
Fixed percentage	\$997	\$1,562	\$2,559	22.1%	10.9%	11.7%
Hybrid (60/40)	1,076	1,558	2,634	23.7	11.6	5.9
Smoothed percentage	1,075	1,570	2,645	22.8	11.2	6.9
Flexible	1,338	1,576	2,914	19.5	9.9	38.4

Notes: Red figures are those 2010 corpus balances that would have been below the 2010 inflation-adjusted beginning balance. Adjusted only for inflation, \$100 million in 1960 would have increased to \$746 million in 2010. Aggregate spending is the total dollars spent over the period. Total investment power is the corpus balance and aggregate spending combined. Some totals are affected by rounding.

Sources: U.S. stocks: Standard & Poor’s 500 Index from 1960 to 1974; Wilshire 5000 Index from 1975 to April 22, 2005; and MSCI US Broad Market Index thereafter. U.S. bonds: Standard & Poor’s High Grade Corporate Index from 1960 to 1968; Citigroup High Grade Index from 1969 to 1972; Lehman U.S. Credit Aa Index from 1973 to 1975; and Barclays Capital U.S. Aggregate Bond Index thereafter.

factor is the rate at which the baseline is adjusted, based on the previous year’s asset growth. The product of the two functions (baseline x factor) equals the discretionary spending amount.

A flexible spending rule requires that an institution make an adjustment once a year when it calculates the trailing 12-month asset change and augments discretionary spending. The effect of this action is to limit spending when returns have been most significantly reduced and to increase spending when returns have been most favorable. The rule acts as a stop-loss provision on the downside and a momentum provision on the upside. When losses are significant, the variable spending factor is

reduced to zero. Conversely, when asset gains are repeated year over year, discretionary spending would be compounded and could grow significantly.

The annual historical impact of each of the four spending rules is illustrated in **Figure 6**, on page 8, which shows the shifts in spending for each rule. In our analysis we found that the flexible spending rule would have produced the most variability year over year. The chart helps visualize the degree to which spending is adjusted under the flexible spending rule. As calculated in Figure 4 for a 5% spending rate, the volatility for a flexible spending rate would have been approximately 31 to 37 percentage points higher than for any of the other spending rules. As

**Figure 5.** Flexible spending in action (hypothetical example)

With a highly flexible spending policy, an institution cuts or increases spending significantly depending on the most recent trailing asset levels. For this analysis, we used a 50/50 split of 5% spending, creating a fixed spending amount of 2.5% and a baseline discretionary spending amount of 2.5%. The discretionary spending is adjusted in relation to market conditions.

Spending formula:

$$\text{Fixed spending} + \text{Discretionary spending} = \text{Total spending}$$

$$\text{Fixed spending} + (\text{Baseline variable spending} \times \text{Variable spending factor}) = \text{Total spending}$$

An example:

$$2.5\% + (2.5\% \times 0.5) = 3.8\%$$

The variable spending factor is determined by the year-over-year change in assets.

Year-over-year change in assets	Baseline variable spending	Variable spending factor	Discretionary spending	Total spending
20% or more	2.5%	1.20	3.0%	5.5%
1% to 19%	2.5%	1.00	2.5%	5.0%
Zero to -5%	2.5%	0.50	1.3%	3.8%
-6% to -10%	2.5%	0.25	0.6%	3.1%
-11% or more	2.5%	0.00	0.0%	2.5%

Source: Vanguard.

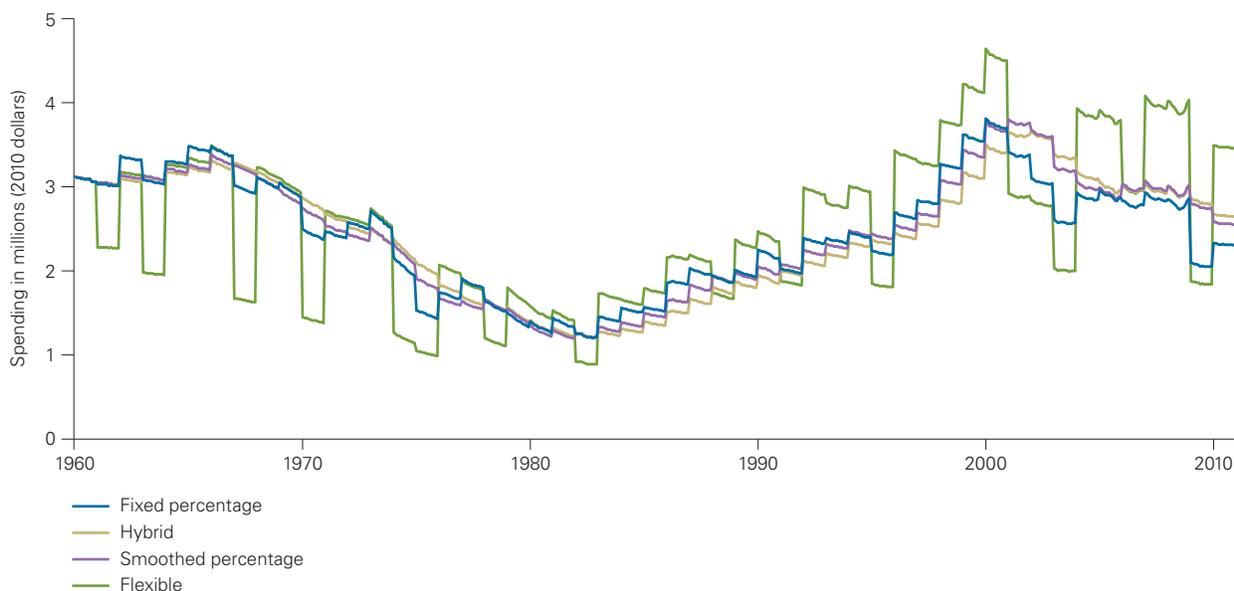
shown in Figure 6, the discretionary component of spending under the flexible approach can amplify spending volatility from year to year depending on a portfolio's performance. So while flexible spending proved to be useful, it comes with a high level of volatility, which could make it challenging for some institutions to implement.

Our analysis also showed that regardless of which spending rule an investor selected, simply reducing the overall level of spending had a significant impact. Adjusting the spending rate just one-half percentage point from 5.0% to 4.5% would have made a noticeable difference, improving investment power across each spending rule by approximately 10%. Reducing spending even further, to 4.0%, continued the strong positive pattern, increasing results by about 20% or more over a 5.0% spending rate.

It's interesting to note that, over time, lower spending rates actually produced higher overall spending. Lower spending rates led to higher saving rates, which, in turn, compounded into stronger long-term corpus growth. The effects of this chain reaction over the 51 years studied were remarkable, with a reduction of only 1 percentage point in spending (moving from 5.0% to 4.0%) producing between 50% and 67% larger corpus balances depending on the type of spending rule employed. (See Figure 4.)

In the end, we found that saving even a modest amount on a continued basis had a tremendous impact over time. Our analysis highlights that there are two noticeable ways institutions can implement reduced spending patterns: either by imposing a lower constant spending rate or building in a flexible spending pattern that imposes a stop-loss function. The key to both approaches is that they

**Figure 6.** Spending rule expenditure patterns, 1960–2010



Note: Spending amounts are shown using monthly data.

Sources: U.S. stocks: Standard & Poor's 500 Index from 1960 to 1974; Wilshire 5000 Index from 1975 to April 22, 2005; and MSCI US Broad Market Index thereafter. U.S. bonds: Standard & Poor's High Grade Corporate Index from 1960 to 1968; Citigroup High Grade Index from 1969 to 1972; Lehman U.S. Credit Aa Index from 1973 to 1975; and Barclays Capital U.S. Aggregate Bond Index thereafter.

structure spending to be consistently less than revenues, thereby creating a surplus that is compounded over time and leads to higher future spending amounts.

### Revenue options

Maintaining multiple revenue sources can help reduce some of the risks institutions face when they are dependent on endowments to fund operations. Dependence can exist in one of two distinct forms—when spending is a high percentage of the overall endowment corpus or when endowment contributions are a high percentage of the operating budget. Institutions are most vulnerable when they face both these forms of dependence, but as **Figure 7** illustrates, a figure too large in either instance can leave the institution vulnerable because asset returns vary widely from year to year.

As a result, in those instances where an institution has either a high spending rate or a high contribution rate, it is prudent to maintain ongoing contributions from sources outside the endowment, such as fees, tuition, or fund-raising, to balance the potential

inconsistency of asset returns. As it turns out, nonendowment revenue may be easiest to raise when endowment returns themselves are stronger, as rising markets increase the value of all portfolios. As a result, the trigger for pursuing alternative revenue sources should not be whether the endowment has recently suffered a setback but rather whether the institution can more easily garner the revenue.

### Asset management

Another innovative way to potentially address income volatility is to establish a target liability. Nonprofit organizations are established to support a designated cause, but unlike pension plans, they are not typically structured with a distinct liability. Although some organizations are required to have a minimum spending rate, many are not, leaving them free to determine their own rate of spending. For a variety of reasons, many organizations have historically chosen to attempt to maximize asset growth and distribute earnings using a relative expenditure measure. In this approach, volatility is taken on in pursuit of long-term growth. The

**Figure 7.** Endowment spending and contribution balance

		Endowment contribution as percentage of spending budget	
		Low	High
Spending as percentage of endowment	High	Risk of asset impairment (potential spending exceeds asset income)	Danger
	Low	Safety	Risk of asset impairment (potential need to supplement operating budget with capital)

Source: Vanguard.

challenge is that although the by-product of volatility might be long-term growth in assets, it may also disrupt the continuity of spending.

To manage this concern, investors can consider dividing their budgets into two parts and establishing a set, not relative, target. One pool of funds (core assets) would contribute to the ongoing operating budget, and the other (surplus assets) would be used as a buffer.

Expenditures are based on the core asset pool only and are determined as a fixed dollar amount. Investment returns from the core asset pool are targeted to meet this fixed dollar spending target, but if there are any annual deficits the difference is made up from the surplus fund. Likewise, when the core fund investment returns exceed the spending target dollar amount, the extra funds are banked to the surplus fund. As a result, by splitting the assets into two pools and establishing a fixed return target, an institution can create a more predictable spending pattern. The trade-off is that it must be willing to accept slightly less in annual expenditures, at least initially.

## Conclusion

We began this paper by posing the question: Is a 5% real return the right target for institutional investors? We found by analyzing historical asset returns and considering several spending rules that a 5% real return has historically been a very difficult target to achieve. Recent market conditions further compound this challenge.

We found that there is no specific asset allocation that would have continually enabled investors to meet the 5% target. Adding alternative investments did not change these results. Instead we found that what affects investors the most is spending. Both the type of spending rule and overall spending rate are crucial to an investor's success.

As a result, while we recommend that investors take an integrated approach to solving this challenge that includes holding a diversified portfolio and establishing multiple revenue streams, it is lower spending rates that have the greatest positive impact on investors.

Asset returns are unpredictable and are affected by a dizzying array of exogenous factors. Having multiple revenue sources can help, but additional revenue can be hard to raise and difficult to collect. In the end, it is only spending over which the investor has total control.

It is for these reasons that we recommend that investors keep their spending low—4% is a reasonable starting point, and less is even better—so that savings can compound year over year into a larger corpus, which has historically led to more overall spending and, ultimately, had a greater impact.

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