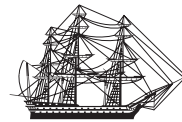


# Endowment and Foundation Spending Guidelines

Vanguard Investment Counseling & Research



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## Executive summary

Endowments and foundations face many challenges when deciding how to allocate their resources. One of the most difficult is choosing a spending policy that will best balance their two competing goals: maintaining the level of current spending, and growing or preserving the endowment in order to support future spending. This report discusses several common spending policies along with the factors to be considered in making this important decision.

## Common spending policies

Some institutions are required by law to spend a certain amount annually, such as 5% of the portfolio balance; others have more discretion in selecting a spending policy. Many such policies have been devised, but this report focuses on four of the most common:

- Dollar amount grown by inflation.
- Percentage of portfolio with a smoothing term.
- Percentage of portfolio with a ceiling and a floor.
- Hybrid—a combination of *dollar amount grown by inflation* and one of the *percentage of portfolio* policies.

On the following pages are brief descriptions of these policies, followed by a case study that illustrates their application.

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**Table 1. Trade-off between short-term spending stability and long-term spending stability/asset growth**

	Short-term spending stability	Long-term spending stability and asset growth
Dollar amount grown by inflation	1	4
Percentage of portfolio with smooth term	4	1
Percentage of portfolio with ceiling and floor	2	3
Hybrid	3	2

### Dollar amount grown by inflation

Under the *dollar amount grown by inflation* policy, a dollar amount of spending is calculated in the initial year on the basis of need or other criteria. (The amount is usually expressed as a percentage of the initial portfolio value.) The spending amount for each subsequent year is then determined by multiplying the prior year's spending by an inflation factor—typically the change in the Consumer Price Index (CPI) or another cost inflation index.

This policy aims to provide a stable amount of inflation-adjusted spending each year. If all goes well, this spending pattern can greatly assist with budgeting over time. However, while such policies typically produce stable year-to-year spending levels in the short term, difficulties can arise over the long term. The policy makes no provision for adjusting spending downward when market returns have been

poor. This means that all potentially necessary reductions in spending must occur in the future, rather than the present.

### Percentage of portfolio with smoothing term

As the name implies, a *percentage of portfolio* policy bases annual spending on a stated portion of the portfolio value at the end of the prior year.

A *smoothing term* modifies this to a percentage of the average ending balances over a number of years. For example, if the smoothing term is three years, each year's spending is equal to a percentage of the average ending balance for the prior three years.

As a result, spending levels vary based on investment returns. This can make budgeting more difficult in the short run (although the existence of a smoothing term can dampen the volatility somewhat). On the other hand, spending is automatically cut back when the markets have been doing poorly, and automatically increased after periods when the markets have done well. Thus, poor investment returns are at least partially offset by reductions in current spending. This helps to preserve the endowment value and thereby sustain future spending. As a result, over the longer term, the *percentage of portfolio with smoothing term* policy provides the most consistent spending levels.

**Table 2. Case study**

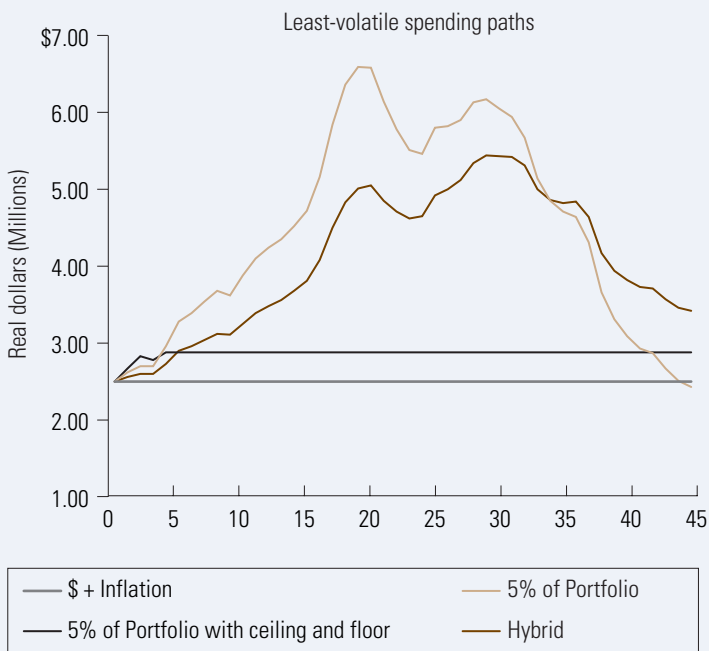
#### Portfolio assumptions:

Initial endowment value:	\$50 million
Asset allocation:	60% stocks, 40% bonds
Time horizon:	45 years

#### Policy assumptions:

Dollar amount grown by inflation	5% of initial portfolio balance (\$2.5 million) grown by inflation annually
Percentage of portfolio with smoothing term	5% of three-year average portfolio balance
Percentage of portfolio with ceiling and floor	5% of three-year average portfolio balance with a 15% real spending floor and ceiling
Hybrid: Combination of dollar amount grown by inflation and percentage of portfolio with smoothing term	Annual spending equal to 50% of historical spending plus 50% of (5% of three-year average portfolio)

Figure 1. “Best Case” scenario



Source: Vanguard Investment Counseling & Research.

### Percentage of portfolio with ceiling and floor

This policy is similar to the method described above, with one variation—rather than using a smoothing term, the amount of spending is held within a fixed range. For example, if a 15% ceiling and a 15% floor were selected, the annual spending amount would always be between 85% and 115% of the initial dollar amount, adjusted for inflation. If the initial spending (based on a percentage of the portfolio) was \$100, then the annual spending going forward would not fall below \$85 or rise above \$115 adjusted for inflation (unless the corpus is exhausted).

As a result, although spending will vary from year to year based on the markets, it is not allowed to go beyond a set range as long as assets remain—a fact that can assist with budgeting. In addition, in good

market years, this policy can result in a surplus of return to be reinvested in the portfolio, creating some flexibility that may allow higher spending in bad years. Keep in mind, however, that while the policy provides for some downward adjustment to spending in poor markets, the adjustments may not significantly reduce the potential for a significant decline in corpus (principal). Such declines could require reductions in spending in the future beyond the spending “floor.”

### Hybrid: Combination of dollar amount grown by inflation and percentage of portfolio

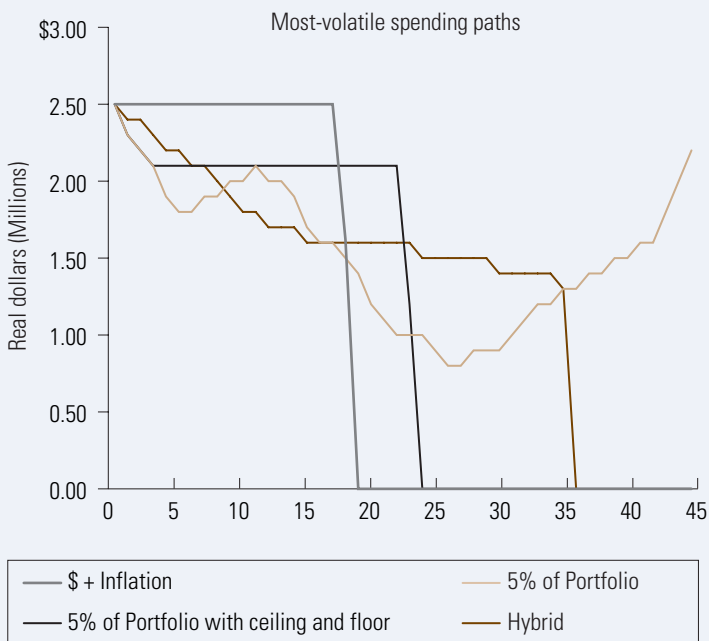
Under this hybrid policy, the level of annual spending is determined by combining a fixed percentage of the *dollar amount grown by inflation* spending figure with a fixed percentage of the *percentage of portfolio* spending figure. For example, the policy may combine 40% of the prior year’s spending amount grown by inflation with 60% of the amount determined by calculating percentage of portfolio with three-year smoothing. As a result, a portion of the spending varies based on the markets, and a portion is predictable, which makes budgeting easier. Under this policy, there is some downward adjustment to spending when markets have been poor (*percentage of portfolio* portion). (Note, however, that the existence of a hard “floor” on spending again results in a risk that the corpus could be exhausted in extreme circumstances.)

Each endowment and foundation needs to evaluate its objectives and select the spending policy that will best help meet its goals. Table 1 shows our (subjective) ranking of the four methods as they relate to short-term spending stability and long-term spending stability/asset growth. The table highlights the trade-off between short-term and long-term benefits.

Endowments and foundations that place a strong emphasis on short-term spending stability, leaving little room for fluctuations in spending from year to year, face a greater chance that future spending will have to be significantly reduced.<sup>1</sup>

<sup>1</sup> Assuming a level of spending that generates the possibility of exhaustion. Almost all spending rates currently in use produce some chance that, given certain circumstances, withdrawals will not be sustainable. Based on the historical data we used, initial spending rates as low as 3.25% of the starting balance could not be maintained in all 45 historical paths.

Figure 2. "Worst Case" scenario



Source: Vanguard Investment Counseling & Research.

### Case study

The following case study illustrates the four spending policies. Table 2 on page 2 lists the assumptions for the study.

We analyzed each policy along 45 historical return paths using data from 1960 through 2004 ("looping" returns when reaching the end of available data). Because limiting spending volatility is important to endowments and foundations, we identified a "best case" and a "worst case" return path for each policy. The "best case" was the path with the lowest average deviation in spending below the initial spending target (which was \$2.5 million, or 5% of the endowment). The "worst case" was the path with the greatest average spending deviation below the initial target. Figures 1 and 2 chart the results (in real dollars).

Among the "best case" scenarios, the greatest spending stability was provided by the *dollar amount grown by inflation* policy, which produced a constant level of \$2.5 million (in real terms) a year. The next most stable spending was provided by *5%/ceiling and floor*. The most volatile "best case" was produced by the *5%/smoothing term* policy. On the other hand, the results for the "worst case" scenario were almost exactly the opposite. Spending dropped to zero first (in less than 20 years) for the *dollar amount grown by inflation* policy, then for *5%/ceiling and floor*, and then for the hybrid policy. But the *5%/smoothing term* policy was able to maintain some level of spending throughout the entire 45 years.

Figure 3 shows the range of downside spending volatility displayed by each policy over all 45 return paths.<sup>2</sup> As you can see, the *dollar amount grown by inflation* policy shows the highest range of downside volatility: Average deviation below the target over the 45 paths ranged from a high of \$1.52 million to a low of \$0 (along a fortunate path in which spending levels never had to change). The average deviation below target across all time paths was \$530,000 (0.53 in Figure 3).

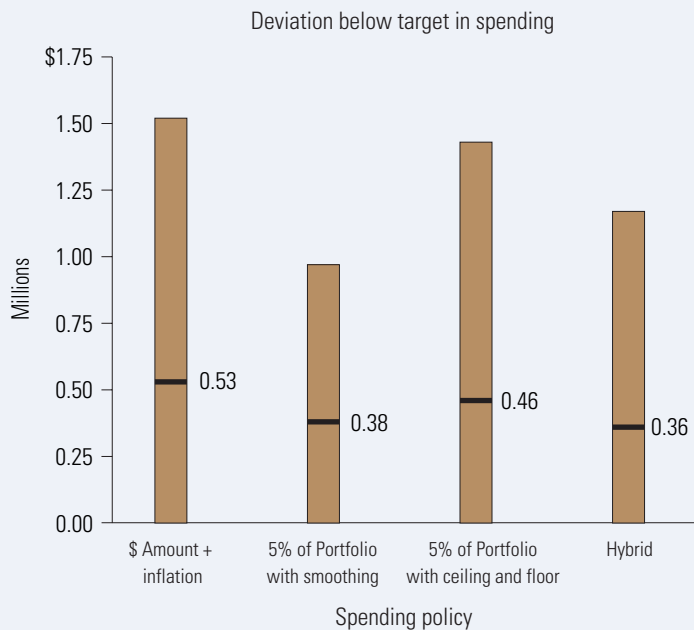
In contrast to this, the *5%/smoothing term* spending policy provided the tightest range of deviations below target and the second-lowest level of average shortfalls (0.38). As Figure 3 shows, none of the strategies eliminated the potential for downside volatility in the set of scenarios examined.

Each endowment and foundation must determine the extent to which it can accept volatility in its near-term spending. This decision should take into account many factors, such as the level of annual contributions, the accessibility of additional funds, the degree of flexibility in annual commitments, and overall risk tolerance.

Two other factors that can make the decision particularly challenging are the changing levels of both revenue and liability streams.

<sup>2</sup> Volatility is measured as the average absolute deviation of spending below the initial level of \$2.5 million over the 45 time paths for each method.

Figure 3. Volatility in spending



Source: Vanguard Investment Counseling & Research.

## Managing changing liabilities and revenue

### Liabilities

Another important consideration in selecting a spending policy is the growth rate to use for liabilities. The liability stream depends on the mission of the institution and may or may not be linked to a traditional growth rate, such as the change in the CPI. Assessing liability growth is important, because increases in liabilities work like asset returns in reverse (or to put it another way, adverse investment returns are similar to adverse cost increases). Like a negative spell in the markets, a surge in liabilities can jeopardize the corpus of the portfolio. As a result, any correlation between liabilities and investment performance should be factored into the asset allocation decision.<sup>3</sup>

### Revenues

A final consideration when selecting a spending policy is the expected level and volatility of future revenues or contributions. This expected income is an asset similar to any other, and "returns" (i.e., future revenues) can deviate from expectations. In years when contributions fall short of expectations, spending commitments may require that additional funds be taken from the portfolio. If such shortfalls happen frequently enough, the long-term viability of the portfolio may be jeopardized.

Therefore, the correlation between contributions and investment performance should be factored into the asset-allocation decision. When stocks are performing well, institutions may receive higher contributions than expected; when stocks perform poorly, the reverse may occur. If such a correlation exists, holding stocks in the portfolio may be riskier to the institution's spending plans than if there were no relation between revenues and the market. Endowments and foundations typically can address this risk by making minor changes in their asset allocation to reflect the strength of the correlation.<sup>4</sup>

### Best practices

*Flexibility* is the one word that best describes a solid spending policy. Rigid spending rules cannot eliminate investment volatility; they simply push it into the future. Spending policies insensitive to returns *are* risky, inasmuch as they rely on the assumption that the portfolio will recover before the endowment level reaches a crisis point (at which time much more dramatic reductions in spending would be necessary). Hedging that assumption, at least in part, by accepting some reduction in current spending is an appropriate response to market volatility.

<sup>3</sup> For more on this topic, see Donald G. Bennyhoff, 2005: *Preserving a Portfolio's Real Value: Is There an Optimal Strategy?* Valley Forge, Pa.: Investment Counseling & Research, The Vanguard Group, 20 p.

<sup>4</sup> For a technical treatment of this issue, see Robert C. Merton, 1993: *Optimal Investment Strategies for University Endowment Funds*. In *Studies of Supply and Demand in Higher Education*, Charles Clotfelter and Michael Rothschild (ed.). Chicago, Ill.: University of Chicago Press.

If prudent, returns-based reductions in current spending are a reasonable, acceptable part of a spending policy, then prudent, returns-based *increases* in spending are also reasonable when investment returns are more favorable.

If the portfolio is to include volatile investments that are expected to produce high average returns, then administrators must either accept continuous, relatively smaller changes in spending or else run the risk of having to make abrupt and significantly larger adjustments later. The more an institution can tolerate some short-term fluctuations in spending, the more likely it is to achieve its longer-term goals.

## Conclusion

In conclusion, our analysis illustrates that there is no optimal, “one size fits all” spending policy for endowments and foundations. Which policy should be implemented depends on what is most important to the institution. There is an inherent tradeoff between maintaining constant spending levels and achieving long-term asset growth to support future spending. The right spending policy should meet the needs of both current beneficiaries and future ones.

## Appendix

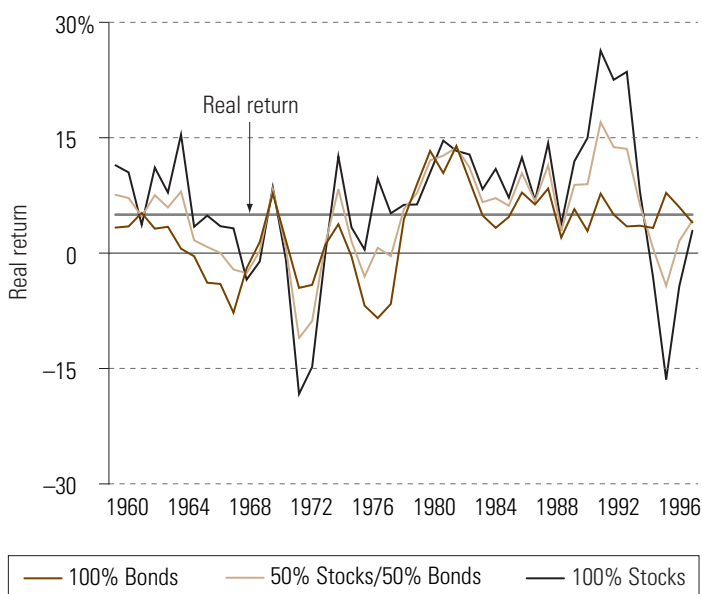
### Is 5% net spending sustainable based on historical real returns?

One of the most common spending policies used by institutions is 5% of the annual portfolio balance with a three-year smoothing term. Under this policy, the portfolio must achieve investment returns above 5% each year (or annualized over three years) simply to sustain its principal, other factors being equal. Based on historical returns, is this level of return a realistic expectation?

Figure 4 graphs the real annual returns (assuming three-year smoothing) from 1960 to 2004 for three hypothetical portfolios. One is 100% bonds, the second is 50% stocks/50% bonds, and the third is 100% stocks. As you can see, the real returns for all three portfolios often fall below 5%. In fact, the 100% bond portfolio provides a real return below 5% in 67% of the years between 1960 and 2004. The 50%/50% portfolio does so in 44% of the years, and even the 100% stock portfolio fails to produce a 5% return in 40% of the years.

So what does this mean? The results demonstrate once again that flexibility in annual spending is extremely important. Because there may be many years in which investment returns fall short of 5%, excess funds in good years should be reinvested to help offset poor investment returns in the future. This is one way in which endowments and foundations can attempt to maintain 5% net annual spending far into the future.

Figure 4. Three-year rolling real returns, 1960–2004



This illustration is hypothetical and does not represent the return on any particular investment. Calculations are based on returns from these indexes: for stocks, the Standard & Poor's 500 Index (1960–1970) and the Dow Jones Wilshire 5000 Composite Index (1971–2004); for bonds, the S&P High Grade Corporate Index (1960–1968), the Citigroup High-Grade Index (1969–1975), and the Lehman Brothers Aggregate Bond Index (1976–2004). Past performance is not a guarantee of future results.

Source: Vanguard Investment Counseling & Research.



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