A Dynamic Approach to Spending That Addresses Underwater Endowments

A dynamic spending approach significantly reduces underwater risk across all time horizons relative to a traditional spending policy.

TIAA Endowment & Philanthropic Services

Given recent market volatility and growing concerns around the possibility of a sustained low-return environment, the governance spotlight is now on both investment performance and spending policy, particularly the potential for underwater endowments.

The concept of underwater endowments rests at the intersection of investment returns and spending needs. Generally speaking, an endowment fund is considered "underwater" if its current market value is below its original funding amount.

Underwater endowments can impact all nonprofits that receive restricted donations, but it can be particularly problematic for colleges and universities that rely heavily on endowed assets to fund operational programs such as scholarships and faculty chairs. Recent market downturns have demonstrated how a drop in endowment spending can severely derail an institution's near-term operations, while at the same time negatively impacting its long-term strategic plans. Members of the board of trustees and investment committee, investment staff, and partner fiduciaries should always be evaluating which policies and procedures best position their institution for success in both the short and the long term. We believe that policies regarding underwater endowments are particularly deserving of renewed focus today as portfolios are struggling to meet long-term return targets.

The most obvious reasons that endowments fall underwater are excessive spending and poor investment returns. In this paper, we focus on the influence of spending and aim to identify a policy that reduces the risk of endowments falling underwater. The most vulnerable time for an individual donor endowment is the period right after the donation when a combination of spending and/or negative investment performance can cause the endowment to go underwater.

We, of course, believe in the importance of sound investment management, asset class diversification, and alpha creation as tools to generate returns strong enough to result in endowments that grow over time. However, financial markets are out of an institution's control and times of depressed investment returns are a certainty. In contrast, institutions can exert direct control over the spending side of the equation. We believe that implementing a prudent spending policy that dynamically adjusts to endowment values, while maintaining a long-term horizon, is the most reliable framework for avoiding the pitfalls of underwater endowments.

History

The options available to institutions with underwater endowments have evolved alongside some key regulatory developments, most notably the Uniform Management of Institutional Funds Act (UMIFA) and the Uniform Prudent Management of Institutional Funds Act (UPMIFA). UPMIFA was developed as a replacement for UMIFA, an act introduced in 1972 and eventually implemented by 47 states. UMIFA centered on the historical dollar value (HDV) concept. Although each state adopted variations of the legislation, the acts generally required institutions to stop or reduce spending from an endowment fund once it had fallen below its HDV.

The goal of protecting endowment corpus was commendable, but the repercussions of this limitation were felt severely during the 2007–2008 market downturn. During that time, institutions with young endowment funds that fell underwater were forced to meet their revenue needs from other sources, such as dipping into unrestricted reserves, asking donors for permission to spend from their underwater endowments, asking donors for more funds, or by cutting spending and failing to meet certain funding needs. These undesirable options were faced by all endowments that had to cope with the fluctuations in their invested funds, but the onus fell disproportionately on institutions with large amounts of new endowed gifts that had not had time to mature.

UPMIFA was developed partially in reaction to these events and was designed to give nonprofits more flexibility in managing their spending in environments of fluctuating endowment valuations. Representing a meaningful alteration to endowment law, UPMIFA was ratified in 2006 and has now been adopted by the District of Columbia and all states except Pennsylvania. UPMIFA eliminated the HDV policy, thereby removing the requirement that only income be distributed from endowments that fall underwater. It was replaced with a "prudence" standard that requires institutions to act "with the care that an ordinarily prudent person in a like situation would exercise under similar circumstances."[1] In effect, UPMIFA allows institutions to take a long-term approach to spending (just as they have adopted a long-term approach to investing), as it emphasizes the desire to maintain if not growth the purchasing power of the fund and not just preserve the nominal value of the contributed principal.[2]

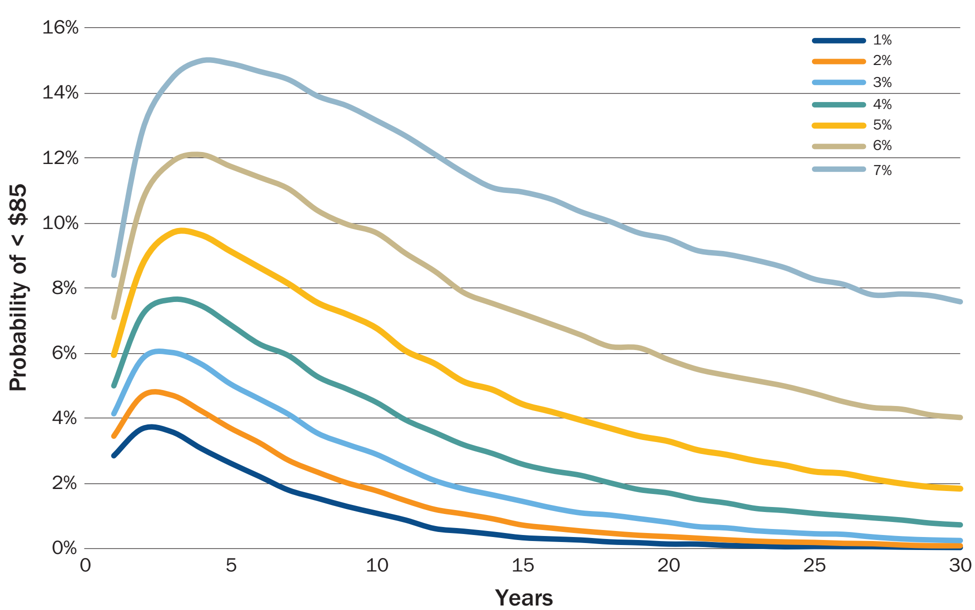
The intent of UPMIFA, however, is not to encourage unlimited spending, but rather to prompt institutions to craft a prudent long-term spending policy that can withstand short-term fluctuations in endowment values. What is a prudent policy varies from one institution to another, and the choice of policy requires sound judgment, an eye for the long term, a comprehensive understanding of the financial needs and goals of the institution, along with collaboration among an institution's staff, board of trustees, and investment committee.

Underwater Risks with Constant Spending Rates

We have conducted an analysis that provides insight into the general factors that lead to an endowment going underwater in an attempt to identify a spending approach that is less at risk for generating underwater endowments. For this study, we considered a typical endowment portfolio that consists of 70% equities and 30% bonds and assumes 1% combined alpha on top of the passive policy returns.[3] We use Monte Carlo simulation to integrate our expected return assumptions, alpha, and spending. To simplify the analysis, we focused on scenarios using fixed payout rates as percentages of the most recent year's ending endowment portfolio values, such as 5%. "Underwater" occurs when an endowment drops below its original gift value. If at any time the nominal value of the endowment falls below 85% of the initial value, possibly as a result of continuous negative investment returns and/or high spending, the endowment stops making payouts. Otherwise, the endowment makes a payout equal to the preset payout rate times the prior year's ending NAV.[4]

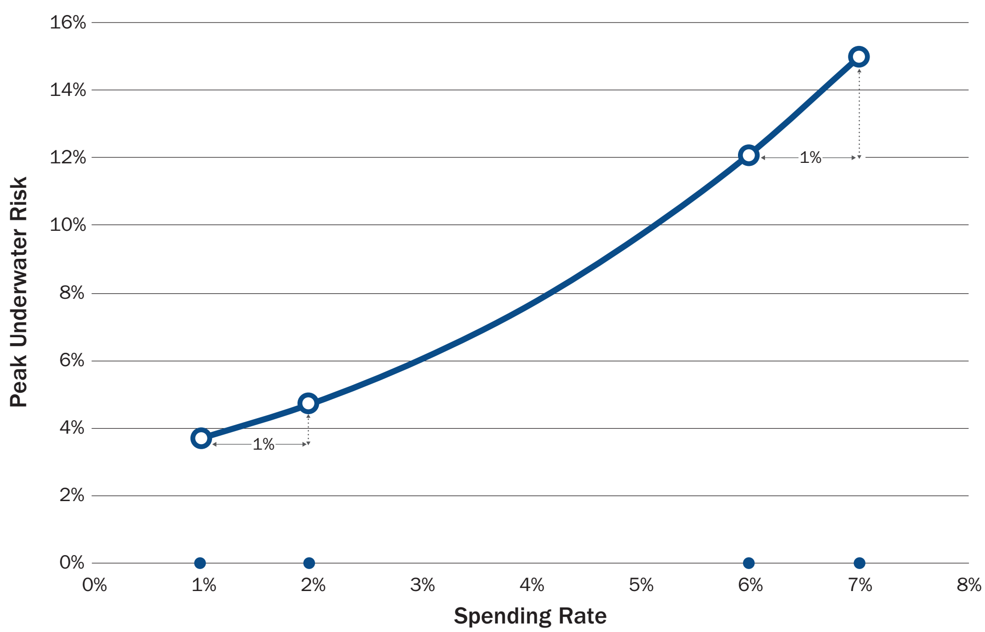
Underwater risk is defined as the probability of an endowment failing to make the payouts because its value drops below the threshold. Assume at the end of year 0, the endowment receives a $100 gift subject to the underwater policy described above and starts making payouts at the end of year 1.[5] A common policy is to apply a consistent spending rate to the endowment over each year of its life. The typical spending rate is between 4% and 6%; it varies based on the nature and needs of the institution. **Figure 1** shows how the underwater risk evolves over time at these different spending rates.[6]

Figure 1: Underwater Risks at Constant Spending Rates



Underwater risk initially increases and then decreases as the portfolio is able to compound and eventually outrun spending, reaching its highest level within a few years of initial investing. The higher the spending rate, the later the peak risk occurs, as it takes longer for the portfolio to outgrow a higher spending rate. Meanwhile, underwater risk increases nonlinearly as the spending rate increases (**Figure 2**). In other words, at higher spending rates, a further 1% increase in spending leads to a bigger incremental increase in underwater risk. This nonlinear relationship between underwater risk and spending rates leads to our proposal of a dynamic program: spend less when the portfolio value is lower and spend more when it is higher.

Figure 2: Peak Underwater Risk vs. Spending Rate



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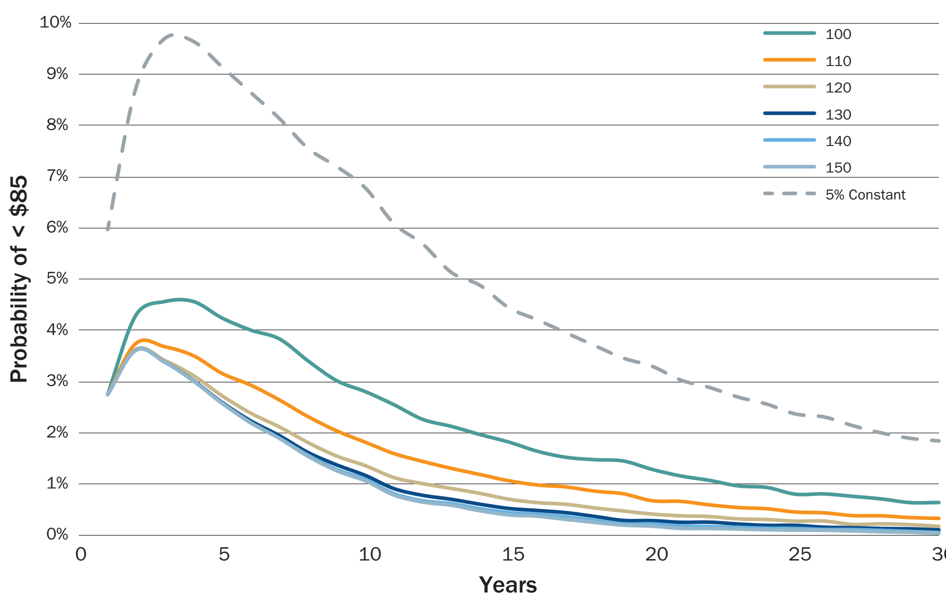
A Proposed Dynamic Spending Approach

The solution we propose alternates between a low spending rate and a higher spending rate based on the endowment's asset value. If the asset value is higher than a certain buffer level, say $110,[7] the endowment pays out 5%. If it is less than or equal to the $110 buffer level but higher than or equal to the underwater threshold of $85, the endowment pays out 1%. If the endowment drops below the underwater threshold $85, it stops making payouts as required by the underwater policy.[8]

In **Figure 3**, we show how underwater risk evolves under this dynamic spending scheme and compare the outcomes with the 5% constant spending case (recall **Figure 1**). We can see that the underwater risk is reduced dramatically under this dynamic spending program over the entire period.

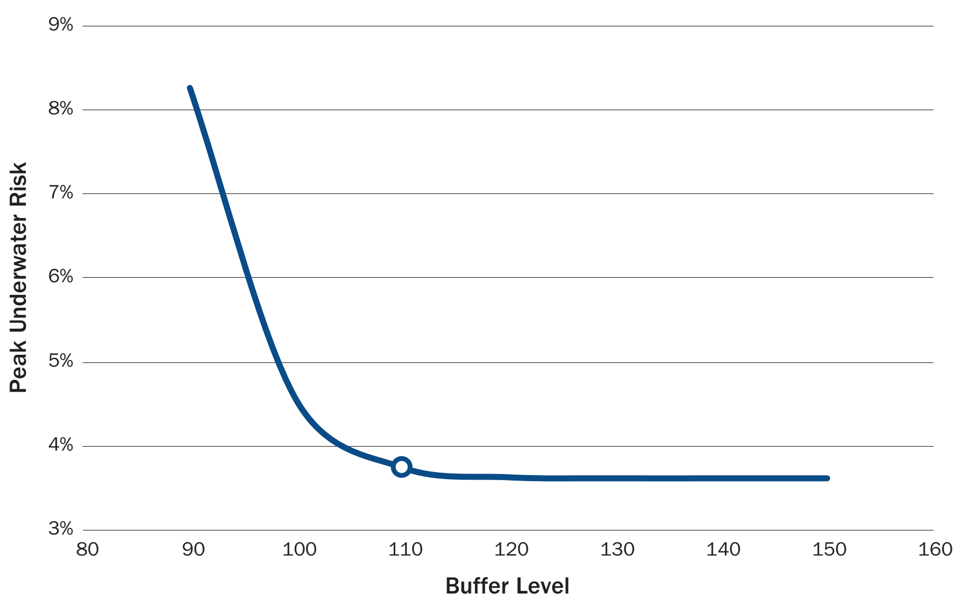
Figure 3: Underwater Risks Using Different Buffer Values



First, the underwater risk is lower in the early years due to the reduced spending rate at 1%. Interestingly, the underwater risk remains much lower than in the constant 5% payout case even after the model switches to the same 5% spending rate. This is because the endowment values now are greater than in the 5% constant spending case (lower spending means higher compounding rates in the early years), and thus the probabilities of asset values falling below $85 are lower under the dynamic spending approach in later years.

We also observe that the differences between the curves become smaller as the buffer levels increase, suggesting decreasing marginal benefits of the buffers, which is confirmed in **Figure 4**. We can see that the decrease in peak underwater risks is negligible beyond a buffer level of $110 (the curve flattens out). In other words, we only need a moderate buffer level of $110 to enjoy most of the reduction in underwater risk.

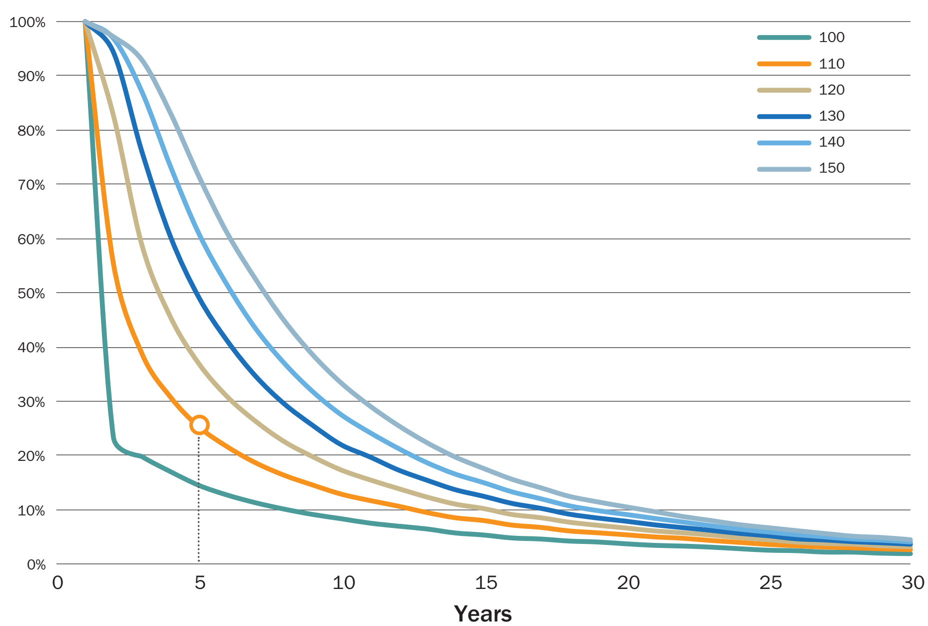
Figure 4: Peak Underwater Risk vs. Buffer Level under Dynamic Spending



In other words, we only need a moderate buffer level of $110 to enjoy most of the reduction in underwater risk.

As a reminder, the reason we are trying to reduce the probability of an endowment going underwater is that it has a direct impact on an institution's ability to fulfill its spending obligations and meet its institutional goals. Therefore, connecting the proposed dynamic spending program with actual payouts is essential for making this analysis relevant. Most importantly, under this dynamic spending approach, the probability of a low payout decreases dramatically as the portfolio grows over time.[9] In year 5, with the $110 buffer, there is a 25% chance of the endowment paying 1% (**Figure 5**) and a 4% chance of it being underwater with a 0% payout (recall **Figure 3**). The remaining 71% represents the likelihood of the endowment paying 5% at year 5. Together, these probabilities imply an effective mean payout rate of 3.8%, which is lower than the 4.5% effective mean payout for the constant spending case.[10]

Figure 5: Probability of Low Payout



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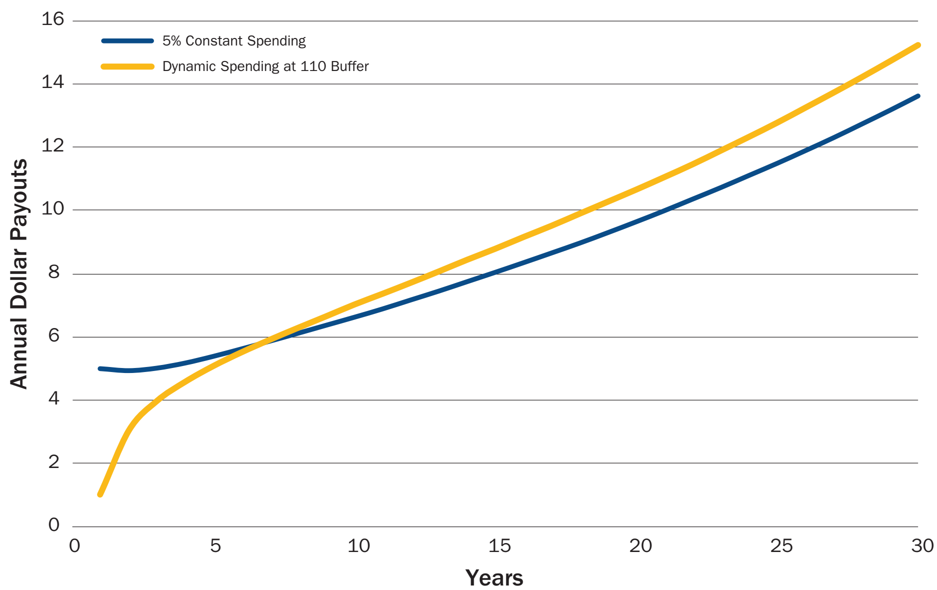
However, the payout rate only tells half the story. A more important measure is the absolute dollar amount of the payouts each year. In these terms, the dynamic spending scheme on average pays out $5.1 at year 5, compared to $5.4 for the constant spending case. The difference is only $0.3 or 30 basis points of the original $100 gift value. Notably, if one extends the analysis over a longer time period, the average dollar payout under the dynamic spending approach exceeds the constant spending approach every year beyond year 7 (**Figure 6**). We believe this long-run differential provides a meaningful financial benefit to the institution.

Figure 6: Constant Spending vs. Dynamic Spending



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Conclusion

Core to the philosophy of endowment management is the obligation to balance short-term spending needs with the desire to provide long-term intergenerational equity. Endowed gifts and underwater policies should be managed with an eye toward the long term. Underwater endowments are undesirable as they increase the uncertainty of available endowment spending in the short term and can lead to structurally lower spending in the long term. The obvious goal is, therefore, to reduce the probability of having endowment funds go underwater.

We have proposed a variable spending approach that allows an endowment to grow in value while also fulfilling its spending requirements. Our dynamic approach aims to create a return cushion by drawing less on the endowment in the early years, before applying a higher spending rate once the endowment hits a fairly moderate buffer of $110.

If an endowment encounters a market downturn in its early years, the modest pace of spending will still provide some capital support to the institution, but it will not magnify the fund's investment losses. Furthermore, if the endowment dips below the $85 threshold, then spending is halted in an attempt to maintain some of the original principal. In these extreme market events, diversification in the timing of gifts is beneficial so that some endowments can continue their regular payout, while the underwater endowments regrow.

Because of these factors, our dynamic spending approach significantly reduces underwater risk across all time horizons relative to a traditional constant spending policy. In the short run, the lower payout rate when the asset value is below the buffer helps better compound the asset value over time; in the long run, the resulting higher asset base translates into larger dollar payouts, even at the same spending rate used in the constant spending approach. We believe a prudent spending policy that is well implemented is powerful tool for growing an endowment portfolio.

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Endnotes

[1] "UPMIFA's prudence standard is guided by seven factors: 1) duration and preservation of the endowment fund, 2) purposes of the institution and the endowment fund, 3) general economic conditions, 4) possible effect of inflation or deflation, 5) expected total return (income and appreciation of investments), 6) the institution's other resources, and 7) the institution's investment policy.

[2] It is worth noting that the HDV standard was also considered unhelpful for endowments that had experienced long-term investment success, as the original principal amount was no longer an accurate representation of the fund's purchasing power.

[3] Public equities and bonds have nominal expected returns of 7.5% and 4%, respectively, with 16% and 4% volatilities, respectively. The 70% stock/30% bond portfolio with 1% alpha has a total nominal expected return of 7.45%. The correlation between equities and bonds is assumed to be 0.1.

[4] The underwater spending policy described above represents a typical case. Any specific case can be modeled on request.

[5] Following the same logic, if the endowment value falls below $85 at the end of year 1 (beginning of year 2), the endowment will not make a payment at the end of year 2.

[6] The endowment values are after the payouts at each year-end, which are used to decide whether there are going to be payouts the following year.

[7] To be precise mathematically, the condition is expressed as ">110."

[8] Note that we present the $110 buffer level, 1% interim spending rate, and $85 threshold as examples of metrics that satisfy the goals of the proposed dynamic spending approach. These precise metrics should be customized to an institution's specific needs (perhaps a higher interim spend rate might be desired, for instance). Any specific case can be modeled on request.

[9] Recall that the initial portfolio value is $100 at t=0. Because the condition 100>100 does not hold, for the case of a $100 buffer, the first payout at t=1 will be at the low rate.

[10] Roughly speaking, there is a 9% chance of being underwater (with no payouts) at year 5 under the 5% constant spending rate.

Please note that the Monte Carlo modeling presented above is subject to several limitations, including: for simplicity, we use normal distributions for asset class returns and further assume they are independent and identically distributed (other specific distributions with fat tails and serial correlations can be incorporated upon request). Correlations between asset classes will vary from time to time and can be changed and modeled dynamically. In the simulation, spending policy is simplified and based on systematic rules. In reality, it is more complicated and subject to discretionary changes.

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