RiskFirst

Endowments & Foundations

Maintaining The Real Value Of Spending Over Time (in an inflationary environment)

Introduction

We are often asked if it is possible to evaluate the objective of maintaining the real value of an endowment's spending over time (in an inflationary environment) and therefore maintaining mission delivery.

In this paper, we show how PFaroe (Risk First's suite of web-based risk analytical software) can be used to help analyze this objective and help devise asset strategies that optimize mission delivery.

Analysis was completed using PFaroe's deterministic and stochastic projection capabilities using a model portfolio pursuant to an "endowment model" strategy.

All results herein are run using PFaroe's in-built Economic Scenario Generator. The user can override this with their own economic prognosis if desired.

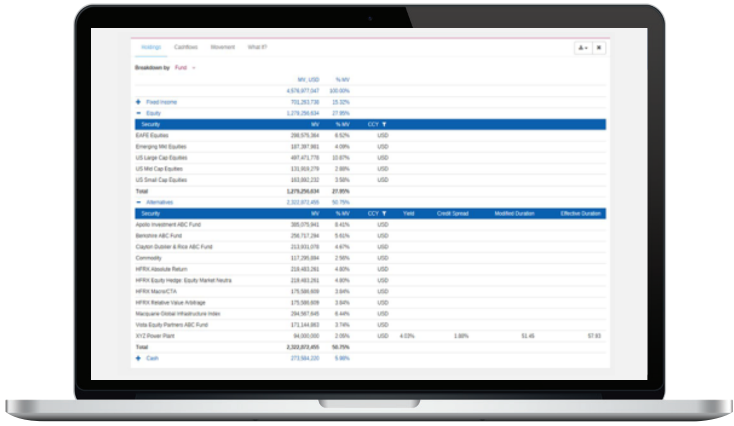
Note that the model portfolio was not altered in any way. Altering the model portfolio and associated assumptions can also be done in PFaroe but these complex iterations are beyond the scope of this paper.

This exercise could be done to see if a more optimal portfolio could be created with the stated objective in mind. In reality, there are multiple objectives for an endowment. PFaroe can be used to examine multiple objectives as the CIO seeks to build an optimal portfolio unique to the particular circumstances of their particular endowment or foundation.

The Analysis

SAMPLE PORTFOLIO

A sample “endowment model” portfolio was loaded into PFaroe for the purposes of running this analysis. Global asset allocation as well as some of the individual fund holdings are shown below. For RiskFirst endowment clients, portfolio’s are typically modelled at the Fund level although there are various approaches as to how we implement this in conjunction with the CIO.

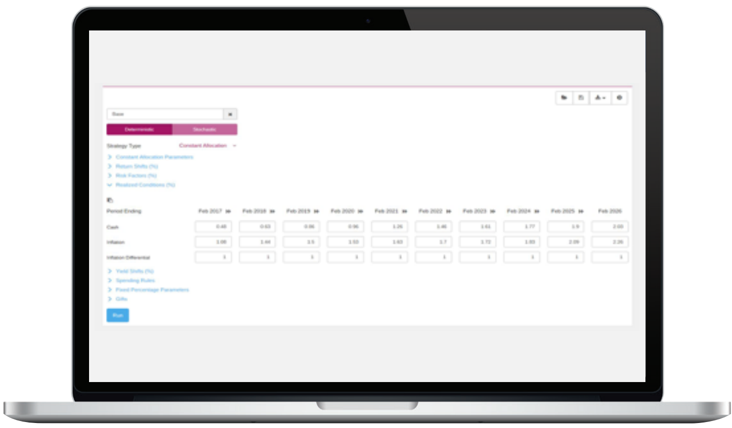


PROJECTION OF NOMINAL SPENDING

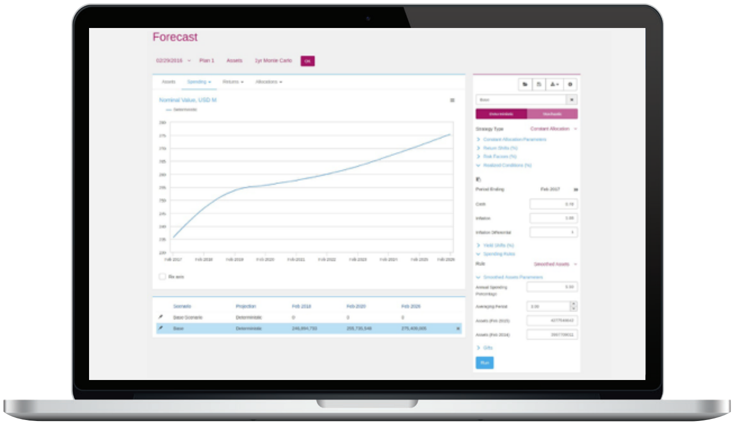
An endowment would like to understand whether it is maintaining the real value of its spending contribution, and to use the analysis for further investigation into what changes in investment strategy could be implemented to increase the probability of achieving this objective.

The first task is to project spending over time both on nominal and real terms.

For real terms, since the organization in this case-study is a school, it has been assumed that it would use HEPI as opposed to regular CPI for revaluation purposes. We have assumed that the former is 1% higher than CPI over the long run (see inflation differential assumption below).



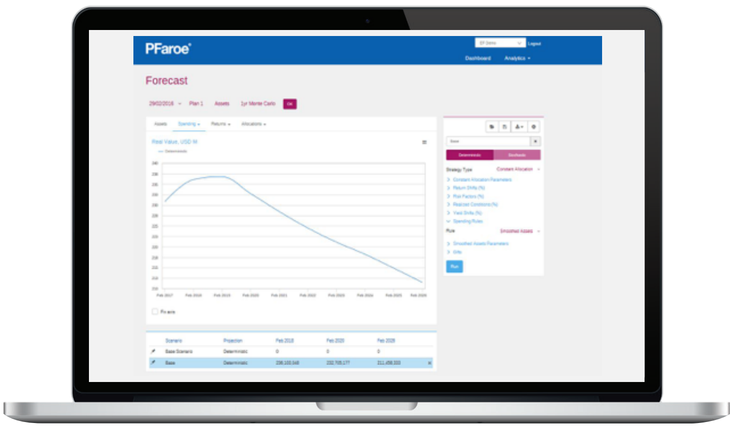
The projection of spending over the next 10 years is provided below, based on the spending formula input on the right-hand side of the chart. The good news is that it increases over time on a nominal basis.



But what about on a real (HEPI adjusted) basis?

PROJECTION OF REAL SPENDING

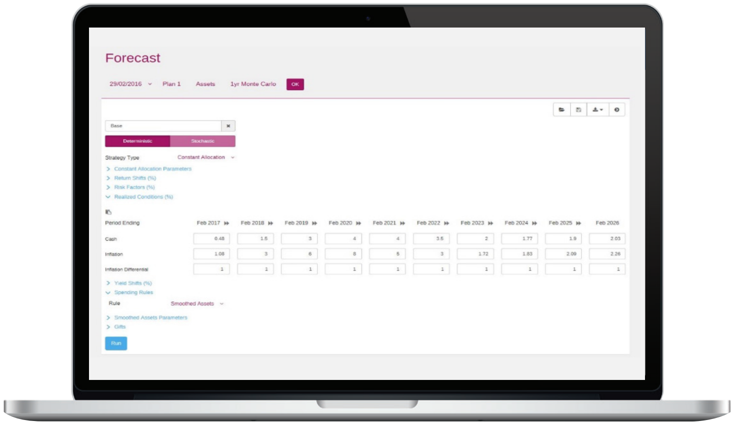
The projection of real spending looks quite different, falling from $231m to $211m by 2026, an approximate reduction in purchasing power of 10%.



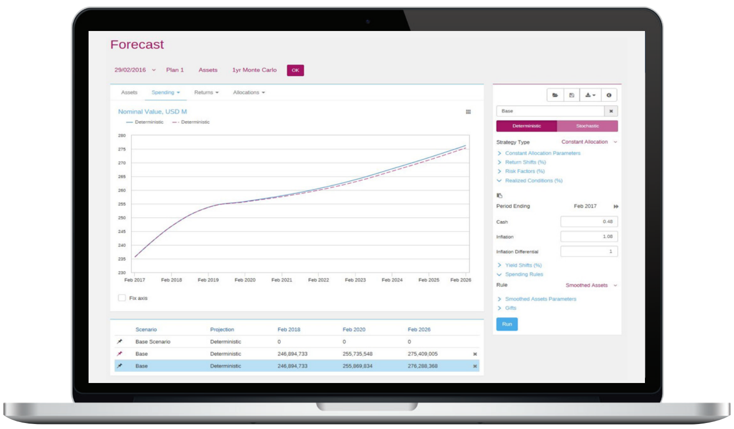
Or put another way, a donation to fund a scholarship in 2017 would only be sufficient to fund 90% of that scholarship in 2026. This begs the question would a donor be better off retaining their gift and supporting the school on an annual basis instead.

THE EFFECTS OF INFLATION

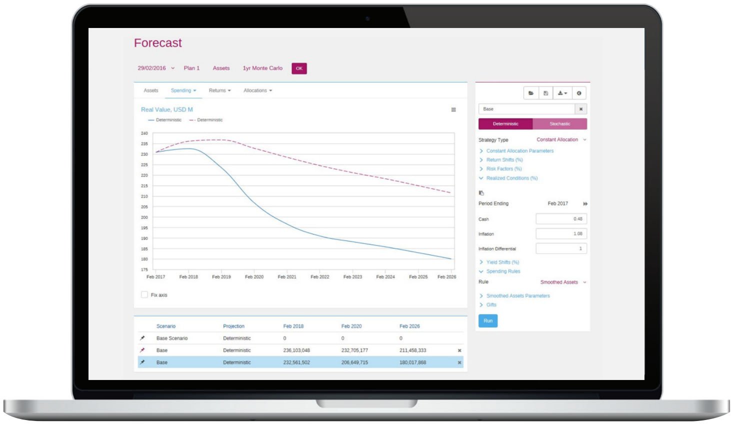
The endowment is concerned that the federal budget and tax reform could be quite inflationary. We therefore devise a stress case where there is a short spike in inflation and resulting increase in interest rates as the Fed tightens in response. After a few years, inflation reverts to normal long-term expectations (see below).



Nominal spending, in fact, increases marginally under the inflation stress scenario (blue line below) as compared to the base case scenario (red dotted line). This is because of the presence of certain inflation-linked assets in the portfolio.



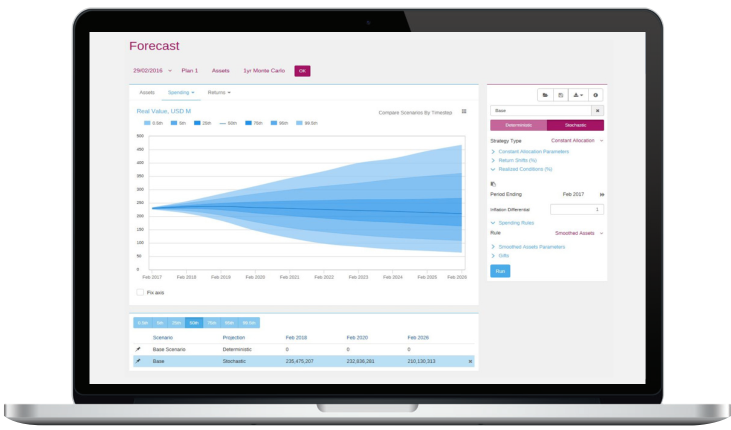
However, the real value of spending takes a large hit (blue line below). By 2026, the real value of spending has reduced to $180mm as compared to $211mm (red line below). Under an inflationary stress scenario, the effectiveness of spending reduces by 22%. If the endowment's contribution to the school budget is a material proportion, this could deal a potentially devastating blow to the school's operations.



A STOCHASTIC PERSPECTIVE

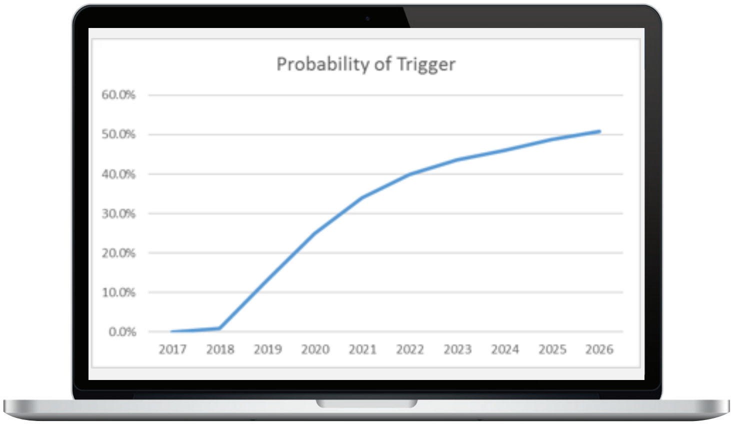
Deterministic projections are relatively easy to explain but have the drawback of showing only one outcome, albeit the mean or median of potential scenarios. A stochastic analysis allows for the assessment of the likelihood of an occurrence. The school's CFO assesses that they could withstand a 10% reduction in the real value of spending before serious cuts would have to be enacted. The school is therefore interested in understanding the likelihood of this event.

Utilizing PFaroe's stochastic projection tool, the forecast range of real spending outcomes is shown below (running 2,000 Monte Carlo scenarios interactively).



Spending currently stands at $235.6mm. A 10% reduction in spending creates a trigger level of $212.1mm in current dollars.

We can calculate the probability of hitting that trigger over time using the stochastic Monte Carlo results (see below).



Conclusion

In response to the above results, a CIO could utilize PFaroe to compute the impact of changes in investment strategy (asset allocation or manager selection) or changes in the spending formula.

This can be done deterministically, or stochastically. In the latter case the goal would be to reduce the probability of hitting the CFO's trigger of a real reduction in spending of 10%.

This analysis can be performed expeditiously using PFaroe. Scenarios can be saved and re-run interactively with investment or finance committees to enhance the efficacy of the CIO and CFO's advice and recommendations.

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