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A Canary in the Payout-Rate Coal Mine

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Introduction

For many endowments and foundations, there remains a dynamic tension between funding the current needs of the institution and funding its future needs. These objectives can include maximizing the current payout to support the institution, minimizing year-to-year fluctuations in the payout in order to provide budget predictability, and preserving the inflation-adjusted value of the endowment or foundation over the long run in order to sustain the institution's mission.

Proponents for increasing current funding often cite immediate needs driven by facilities or current enrollment. Proponents of funding future needs often cite the importance of growing a more substantial endowment or growing scholarships to fund future enrollment. Payout recipients often worry about predictable payout streams, while payout providers worry about protecting the corpus.

This dynamic tension can create a significant amount of discussion and deliberation that is often saturated with qualitative snares and behavioral hazards. While investment committee members should review their institution's spending policy every two or three years, the question remains: How frequently should ad hoc reviews occur during periods of market volatility and uncertainty without overly burdening the committee or the organization?¹

Discussions around the payout rate often reference the bull market the U.S. has been experiencing for over a decade. But what happens when that bull market ends? What happens if,

Key Points

- In this article, we create a capital markets-based indicator to trigger when a discussion about changing portfolio payout rates may be appropriate. Although the payout rate is often a calendar agenda item for foundations and endowments, volatility in capital markets may cause a deluge of ad hoc payout discussions that may decrease the effectiveness of investment committees.
- Recent market performance provides a poor foundation for decisions related to a sustainable payout. The most sustainable portion of the investment return is the portfolio yield. We construct a metric using equity and bond market yields as a quantitative leading indicator of when a payout-rate discussion may be warranted.
- While this methodology might be more of a resource to university-affiliated or public foundations, which have complete discretion over the level of the payout rate, private foundations might find understanding the sustainable payout of a portfolio useful in determining the potential erosion of the corpus caused by an unsustainable payout rate.

like Japan, we experience a market that effectively goes sideways for an extended period of time? This happened in the U.S. during the 1970s. If you were a buy-and-hold investor of the Dow Jones Industrials, buying at the end of 1969 and selling at the end of 1979, the only return you received was the dividend yield.² If such an event was to reoccur, what affect might that have on the corpus of the portfolio?

¹ Family offices and financial planners advising clients face a similar dilemma when estimating how much of a portfolio might reasonably pay out without endangering the corpus.

² The same conclusion could be drawn on other adjacent 10-year periods, such as January 1972 to January 1982.

Although we consider the sustainable yield of the portfolio as a leading signal to triggering or delaying a discussion, it is highly likely that it would be used in concert with other metrics, such as an absolute-return metric, or the long-term moving average return of the portfolio.

Accordingly, we seek to provide a capital markets-based quantitative metric that might be used as a leading indicator to trigger an appropriate ad hoc discussion. To do this, we consider what components of an investment return are more sustainable and what components are less so.

Investment returns consist of both capital gains and income. The rates of capital gains, such as those which have been prevalent in the equity markets for the last decade, are not a sustainable predictor of future investment returns. Prior work in the area of weak-form market efficiency provides evidence of the pitfalls of such an approach. As a result, attempting to use past returns as a trigger for payout discussions offers little promise.³

The most sustainable portion of an investment return, besides the reoccurring investment expense, tends to be the income or yield of the portfolio. The yield of an equity or fixed-income asset portfolio is much more stable than the price level of that asset or portfolio. We examined

the sustainable yield of a portfolio comprised of both equity and fixed-income components using measures that are currently popular with practitioners and academics alike. We show how this sustainable yield may be used to trigger or delay a discussion on whether a payout-rate adjustment is warranted. Although we consider the sustainable yield of the portfolio as a leading signal to triggering or delaying a discussion, it is highly likely that it would be used in concert with other metrics, such as an absolute-return metric, or the long-term moving average return of the portfolio.

We acknowledge that our methodology might be more of a resource to university-affiliated or public foundations, where the institution has complete discretion over the level of the payout rate.⁴ Private foundations must comply with IRS rules to ensure they are active, and are required to make an annual distribution equal to roughly 5% of its prior year's average net asset value. However, even a private foundation might find understanding the sustainable payout of a portfolio useful in determining the potential erosion of the corpus caused by an unsustainable payout rate.

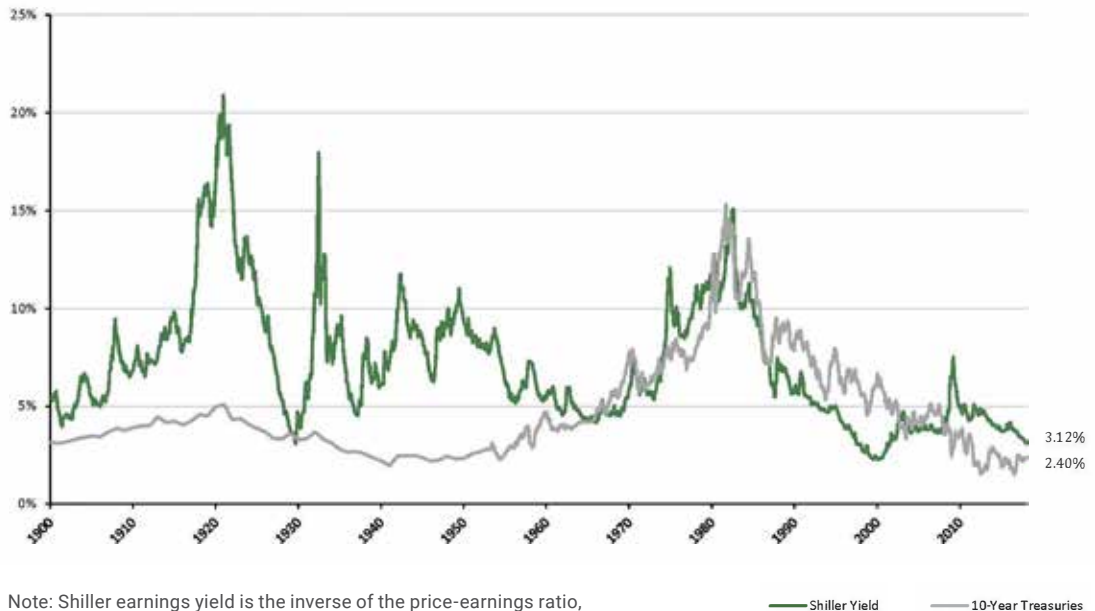
Data and Method

The Shiller P/E Ratio has been a well-respected method for valuing the level of the equity markets (Campbell & Shiller, 1988, 1998, 2001).⁵ The Shiller P/E Ratio takes the price level of the S&P 500 and divides by the average inflation-adjusted earnings for the trailing 10 years for the companies comprising the index. The Schiller P/E ratio has been shown to be a better predictor of the subsequent 10-year performance in the market than other P/E measures (Campbell & Shiller, 1998, 2001). This well-known measure of market valuation was key to the “irrational exuberance” conversations going on at the end of the 1990s.

³ As the sustainability of capital gains is weak, institutions might consider using capital gains to create a reserve fund to aid them in lean years.

⁴ According to Cambridge Associates, a well-known public foundation consultant, the average target payout rate in 2018 for colleges and universities was 4.6%, with target payout rates ranging from a low of 3% to a high of 6.25%. These numbers are similar to the 2018 target payout rates reported by the National Association of College and University Business Officers.

⁵ Due to the acceptance of what has become known as the Shiller P/E model, Robert J. Shiller was awarded the 2013 Nobel Memorial Prize in Economic Sciences.

FIGURE 1 Shiller Earnings Yield (E/P) Versus 10-Year Treasury Yield

Note: Shiller earnings yield is the inverse of the price-earnings ratio, which is calculated using trailing 10-year earnings adjusted for inflation.

The inverse of the Shiller P/E ratio provides an estimate of the real-earnings yield of the companies comprising the S&P 500 index. The Shiller real-earnings yield starting in January 1900 and extending through January 2018 had varied from a low of approximately 2.3% to a high of 20.9%. (See Figure 1.) Over this period, the average real-earnings yield of the S&P 500 index was 7.1%. Examining a more recent period, from January 1988 through January 2018, we had a low of 2.3%, a high of 7.5%, and an average real-earnings yield of 4.3%.

For the fixed-income yield, we used the 10-year Treasury bond. The 10-year Treasury rate was used by former Federal Reserve Secretary Alan Greenspan as the discount factor for equity-market index earnings in his irrational market exuberance discussions. Unlike the earnings yield of the S&P 500, the 10-year Treasury yield is already stated in nominal terms.⁶ Comparing

the earnings yield of the January 1900–January 2018 S&P 500 to the 10-year Treasury yield, we can see the Treasury yield has been much more stable, barring a period of volatility in the 1980s. Through that 118-year period, the 10-year yield averaged 4.7%, with a low of 1.5% and a high of 15.3%. Since January 1988, it has averaged 4.9%, with a low of 1.5% and a high of 9.4%. Although the average earnings yield was much higher than the average Treasury yield from 1900 forward (7.1% vs. 4.9%), we can see that since 1988 the two have been relatively close (4.3% vs. 4.9%), of course keeping in mind that the earnings yield is stated in real terms.⁷

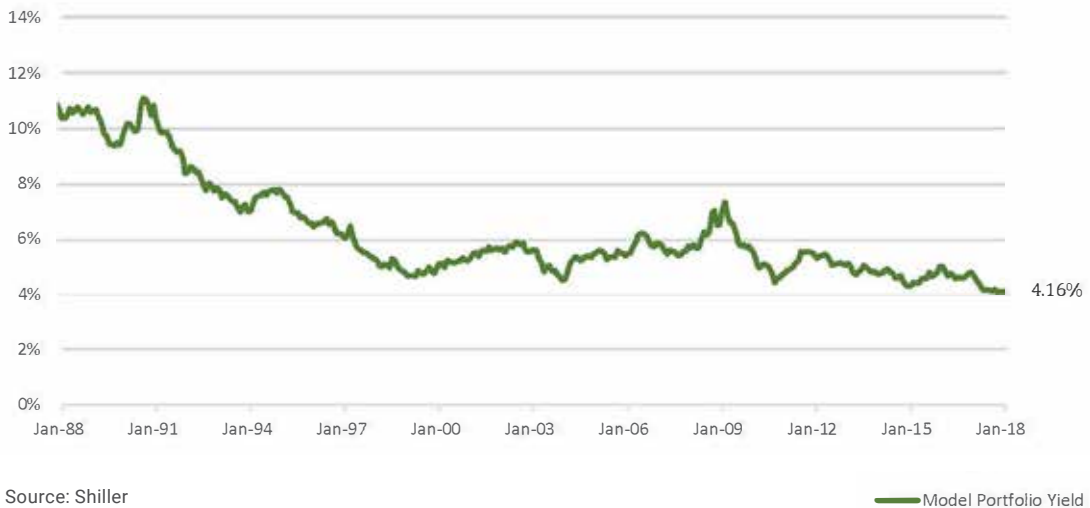
Most foundations and endowments have portfolios containing a mix of equity and fixed income. For our analysis, we constructed a portfolio comprised of 70% equity and 30% fixed income. For the earnings yield of the S&P 500, we added the core consumer price index (CPI) to the real

⁶Data for the analysis can be found at <http://www.econ.yale.edu/~shiller/data.htm>.

⁷Although we chose the 10-year Treasury bond, the Bloomberg Barclays U.S. Aggregate Bond Index may also be a good proxy for the fixed-income component of the portfolio. Over the last few years, the Barclays Aggregate has returned approximately 40 basis points above the 10-year Treasury bond.

FIGURE 2 Model Portfolio Yield

- Nominal yield of a model portfolio that is allocated 70% to equities (S&P 500) and 30% to bonds (10-year U.S. Treasuries)
 - The S&P 500 earnings yield is calculated by using the inverse of the Shiller Cyclically Adjusted Price to Earnings Ratio, which uses the average trailing 10 years of earnings and the current price level of the S&P 500 at the time of observation.
 - Core CPI is added back to the earnings yield to convert it to a nominal yield.
 - The bond yield is the prevailing yield at the time on 10-year U.S. Treasuries.
- The calculation for the nominal yield of the model portfolio for each data point is as follows:
 - $70\% * ((\text{Shiller 10-year earnings per share} / \text{current S\&P 500 price}) + \text{Core CPI}) + 30\% * (\text{10-year U.S. Treasury yield})$



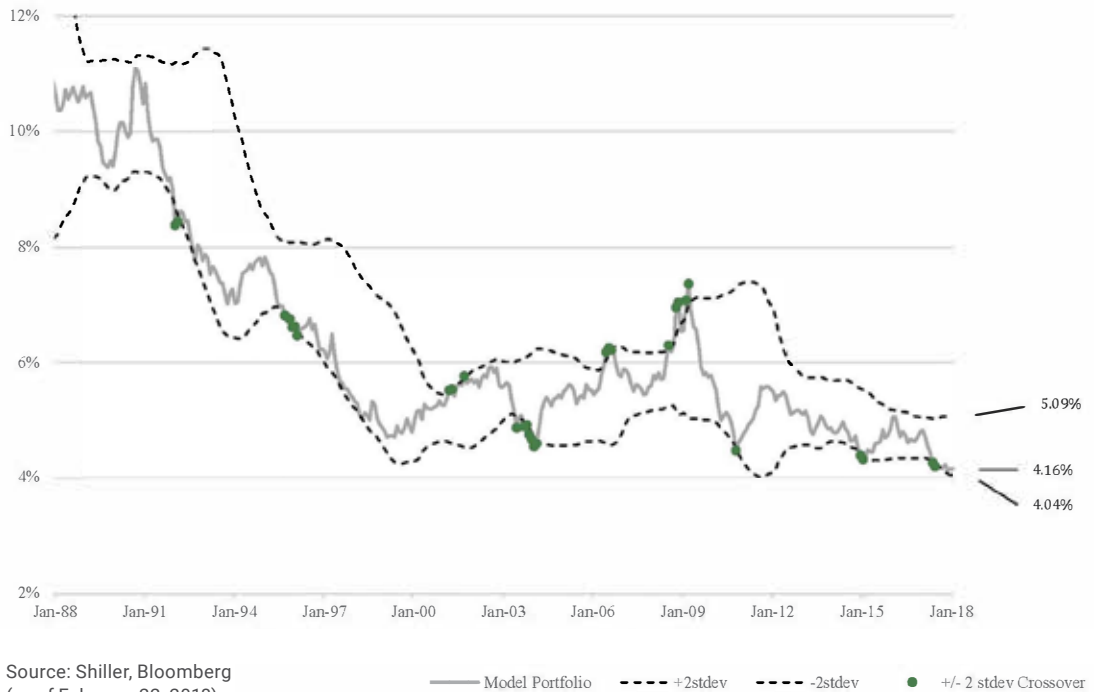
Source: Shiller

earnings yield, turning it into a nominal earnings yield. The 10-year Treasury yield is already in nominal terms. Although payout rates are often stated in real terms, most constituents tend to think in nominal terms, so from our perspective the conversion to nominal yield is desirable. The methodology we propose can easily be modified to more closely fit the needs of a specific portfolio. For example, it can be easily changed from nominal to real yields. Further, if one desires to use a different P/E, such as a 12-month forward-looking P/E, that P/E can be easily substituted.

Looking at the nominal yield of the combined portfolio from January 1988 through January 2018, we can see the diversification effect of the combined portfolio. (See Figure 2.) More

specifically, the combined equity and fixed-income portfolio has less volatility than equity alone, and a higher return than fixed income alone. Over this time period, the average portfolio nominal yield was 6.3%, with a low of 4.1% and a high of 11.1%. Unfortunately, but of no surprise, we can see that we are currently very close to the low portfolio yield over this sample time period.

We acknowledge that some more sophisticated portfolios may contain alternatives. For portfolios containing alternatives, at first glance this approach may seem less applicable. However, as the name suggests, often alternatives are substitutes for something else. For example, absolute-return hedge funds may be a substitute for fixed income, and long/short-equity hedge

FIGURE 3 Model Portfolio Yield: Rolling 36-Month Standard Deviation Bands

funds may be a substitute for equity. Further, private equity may also be considered a substitute for public equity. So these sectors may be combined with either equity or fixed income to use the current approach.⁸

To provide what we consider a range of normal payout rates, given the portfolio yield, we used a rolling 36-month standard deviation. We chose 36 months, as that is the period of time often referenced in most institutional payout-rate computation models. Of course, the time period chosen to calculate the rolling standard deviation can be easily modified to fit the needs of the user. For illustrative purposes, we compared the monthly portfolio yield discussed earlier to the rolling 36-month standard deviation bands of the portfolio yield at plus and minus two standard deviations.

Recall that based upon the empirical rule derived from the standard deviation of a normal distribution, approximately 95% of all expected occurrences will fall within plus and minus two standard deviations of the distribution mean. This leaves only 2.5% in the upper or lower tail of the distribution. In other words, anything falling within the upper or lower tail of the distribution is certainly a rare occurrence.

Results

As a point of reference in analyzing the rolling 36-month standard deviation, although the most recent nominal yield is 4.16%, the most recent 36-month rolling average yield is 4.57%, with a standard deviation of 0.27%. (See Figure 3.) Examining the two standard deviation bands, we have a nominal low yield of 4.04% and a nominal high yield of 5.09%. Payout rates occurring

⁸ For those who prefer a more technical approach, the technology exists at most Wall Street firms to dissect the return attributes of a portfolio containing alternatives and reconstruct it as a portfolio consisting only of publicly traded equity and fixed income with a very high level of fit.

The question becomes this: How much above the sustainable yield is the institution paying out, and for how long is it going to do so? This measure of sustainable yield will allow that premium to be determined on a regular basis.

above and below that band would be an unusual occurrence relative to the current portfolio yield. At the points at which the portfolio yield falls outside of the two standard deviation sustainable yield bands, we can observe that currently the sustainable portfolio yield is outside or at the lower standard deviation band.

Putting this in perspective, an organization or individual taking a payout of under a 4% nominal level might have the ability to enjoy more payout now without threatening the future corpus. On the other hand, an organization or individual taking over a 5% nominal payout can expect to invade the corpus to support the payout. We are not suggesting that a violation of the bands should result in an immediate adjustment of the payout rate, but it does appear to be grounds for a discussion about the payout rate. In practice, a foundation or endowment may want to observe the bands being violated for a number of months or quarters before a discussion on adjusting the payout rate takes place.

Given the decade-long bull market we have experienced, it would be no surprise to find many institutions having a payout rate significantly above the sustainable yield of the portfolio. An organization may feel comfortable paying out not only the sustainable yield, but also some portion of the accumulated capital gains. More specifically, foundations can make a payout above the sustainable payout through using prior capital gains that were in excess of the

sustainable payout, or through fundraising. The question becomes this: How much above the sustainable yield is the institution paying out, and for how long is it going to do so? This measure of sustainable yield will allow that premium to be determined on a regular basis.

For example, has the institution historically been paying out 1.5% above the sustainable portfolio yield? If so, that may be acceptable to the organization given the historically significant bull market that we have been experiencing since 2009. However, if portfolio returns going forward are to become less robust, perhaps even flat or negative, that premium above the sustainable yield may become more of a concern. Assume that an organization had been generating a capital gain premium of 5% above the sustainable yield of the portfolio, and it had been contributing a third of capital gain premium to the payout. If returns are expected to decline to only a 1% capital gain premium relative to the sustainable yield, 30% of a 5% premium above the sustainable yield (1.5%) is certainly going to be greater than 30% of a 1% premium (0.3%). If the decision is made to continue the existing payout in such a low return environment, the corpus can be expected to erode.

We are not suggesting that the sustainable payout of the portfolio would be the only metric considered in a discussion regarding payout rate. It may however be a leading indicator to compliment to other metrics, such as absolute return benchmark or objective and the long-term moving average annual return of the portfolio. Of course, regardless of the metrics used, these decisions must all be made within a reasonable time horizon.

Conclusion

We examined the sustainable component of an investment return as a way to determine when a discussion about long-term payout rates may be beneficial. We formed a quantitative metric to determine the sustainable yield of a portfolio comprised of 70% equity and 30% fixed income. We then added a rolling 36-month two standard deviation band to provide a range of normal

payout rates based upon the sustainable yield of the portfolio.

This evaluation tool is designed to place payout discussions in a proper market context by equipping decision-makers with a capital markets-based leading indicator to evaluate the return implications of current market levels. By evaluating payouts through this lens, organizations can mitigate the risk of embarking on a payout plan that is unsustainable after a period of cyclically strong market performance.

We feel that this methodology not only is easy to understand, but it can also be easily customized to a specific portfolio. This leading indicator may complement existing metrics within the organization that compare portfolio performance to an absolute return objective or the long-term moving average return of the portfolio. Dissecting the payout rate into what components are sustainable and what components are not may allow more effective discussions relative to the payout rate, and the impact that the payout rate has on the growth of the corpus. This may provide a useful reference, in conjunction with other reference points, to trigger or delay discussions regarding payout rate. Further, it also might be a convenient tool to add to a risk dashboard.

Although we have primarily directed our discussion toward endowments and foundations, this methodology could be used by family offices, financial planners, or consultants in determining sustainable rates of payout for any investment portfolio. Extensions of this model might examine varying sample periods, allocations, or band sensitivities.

Acknowledgments

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By evaluating payouts through this lens, organizations can mitigate the risk of embarking on a payout plan that is unsustainable after a period of cyclically strong market performance.

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