Dimensional

PERSPECTIVES

How Targeting Size, Value, and Profitability Can Improve Retirement Outcomes

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May 01, 2023

KEY TAKEAWAYS

- Broadly diversified equity portfolios with a moderate emphasis on size, value, and profitability can help increase retirement assets.
- This investment approach can also sustain retirement income longer and lead to larger bequests.
- The improvement can be achieved at little additional risk compared to market portfolios.

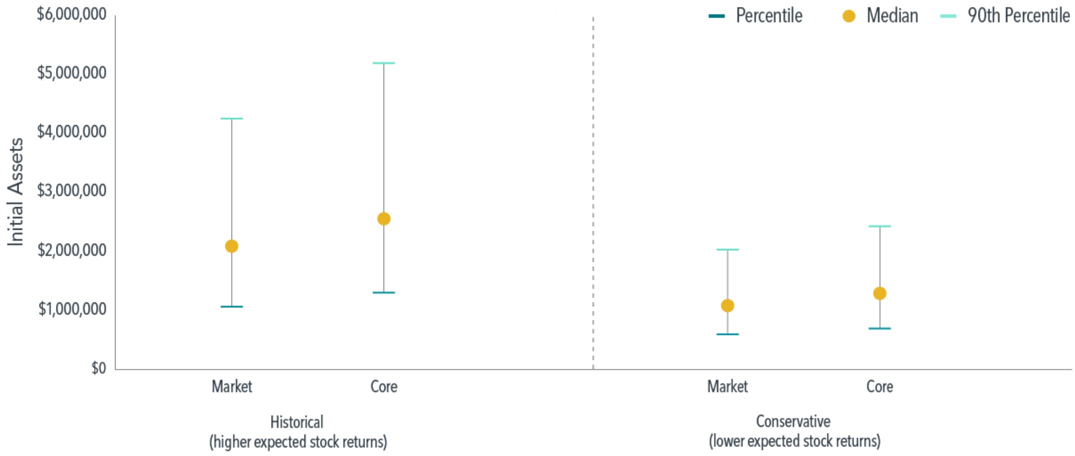
Many retirement investors hold equity portfolios that track broad market indices, either directly or through other investments such as target date funds. Despite their widespread popularity, market portfolios may leave money on the table. Core equity portfolios—low-cost, broadly diversified equity portfolios with a moderate emphasis on the size, value, and profitability premiums—can provide higher expected returns while controlling the risk of underperformance relative to the market.

In new Dimensional research, we examine the benefits of core equity investing for retirement outcomes. The potential benefits can start building up in the accumulation phase. Consider two investors who contribute to a retirement account from age 25 to 65 and follow a conventional target date glide path, in which assets are heavily invested in equities at younger ages and converge to a 50/50 mix of stocks and bonds by age 65. The equity portion is invested either in a core portfolio or the broad market without any emphasis on the premiums. Our results, summarized below, show that an investor in the core portfolio will typically reach 65 with 15%–20% more assets than an investor in the plain market portfolio.

Exhibit 1

Premium Rewards

Distribution of assets at the beginning of retirement as a function of premium exposure in the equity sleeve.



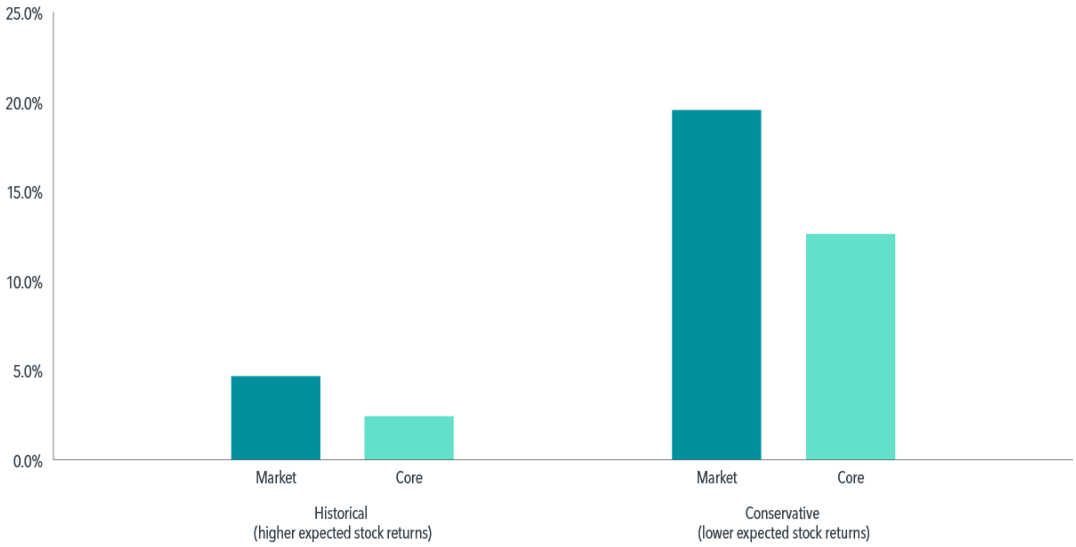
The CRSP Deciles 1–10 Index is a proxy for the market portfolio, the Dimensional US Adjusted Market 1 Index is a proxy for the core portfolio, and five-year Treasury notes are a proxy for bond performance. Results are based on the first of 480 observations (40 years) of 100,000 sequences of 840 bootstrapped monthly, inflation-indexed returns—see the Methodology Appendix for a description of the sample data, data sources, portfolio construction, and spending rules. Assets at the beginning of retirement are based on 480 monthly contributions of $1,042 ($12,500 per year) during the accumulation phase. All numbers are inflation-adjusted using the US consumer price index. Results are based on a portfolio that incorporates equities and fixed income according to a glide path that starts at 100% equities at age 25. The weight in equities is stable until age 45, then linearly declines to 50% by age 65. The historical distribution assumes real expected stock returns of 8.1% vs. 5.0% under the conservative distribution.

The observed benefits of core equity investing continue into retirement. Going back to our example, let's assume that both investors retire with a 50/50 split of stocks and bonds and spend a fixed amount every year. If future stock returns look like past returns, the probability of failure with either portfolio is low (see **Exhibit 1**), but the core portfolio still does better—and, as we show in the paper, also results in a higher average bequest. If future stock returns are lower than in the past, failure rates increase across the board, but so does the potential benefit of core equity, which reduces the average failure rate from 20% to 13%. Here, too, the cost of tracking a market index appears steep; the chance of running out of assets early jumps by 7 percentage points—nearly 54%.

Exhibit 2

Premium Rewards

Failure rates depending on premium exposure in the equity sleeve



The CRSP Deciles 1–10 Index is a proxy for the market portfolio, the Dimensional US Adjusted Market 1 Index is a proxy for the core portfolio, and five-year Treasury notes are a proxy for bond performance. Results are based on a portfolio with a 50/50 split between equities and fixed income. Failure probabilities are based on a 30-year retirement and a 4% spending rule. Simulation results are based on 100,000 sequences of 360 bootstrapped monthly returns adjusted using the US consumer price index. The average inflation-adjusted expected stock return is 8.1% under the historical return distribution and 5.0% under the conservative return distribution. The sample period runs from June 1927 to December 2022. See Methodology Appendix for details.

Of course, these benefits come at the cost of tracking error relative to the market, something that market indexing avoids by definition. However, our results show that, when it comes to avoiding tracking error, the cure may be worse than the disease. The study finds that market indexing results in initial retirement assets that are 15% lower on average relative to the core approach. Would you give up an expected 15% of your retirement assets to avoid all tracking error?

Retirement investing involves long investment horizons, which help improve the reliability of capturing the premiums and magnify the effect of higher expected returns. This makes core equity investing an attractive, practical alternative to market indexing—one that can put retirement investors in a stronger position to reach their goals.

This paper can also be found on SSRN.

4% spending rule

: The 4% rule was developed by William Bengen in the mid-1990s as a rule of thumb designed to help investors choose how much they want to spend annually in retirement.

Accumulation phase

: In the context of retirement investing, the accumulation phase covers all preretirement years.

Bootstrapping

: In the context of the results above, bootstrapping consists of drawing random subsamples from the historical return sample and computing a quantity of interest (e.g., assets at the beginning of retirement) on the subsamples.

Expected return

: Expected payoff of a security (price appreciation + interest/dividend payments) over a given period, divided by the current market price.

Market indexing

: Refers to index funds that track a broad market index like the Russell 3000 or the MSCI ACWI.

Size, value, and profitability premiums

: The size premium refers to the tendency of stocks from issuers with a small market capitalization to overperform those of issuers with a large market capitalization. The value premium refers to the tendency of stocks with low relative prices (stock price divided by an accounting metric such as book value) to outperform. The profitability premium refers to the tendency of stocks of issuers with high relative operating profits (operating profits divided by an accounting metric such as book equity) to outperform.

Tracking error

: The standard deviation of the difference in returns between two portfolios, one of which is typically a benchmark. Essentially, tracking error provides a measure of how much a portfolio deviates from its benchmark.

We consider a hypothetical investor who retires at age 65 and spends until age 95 according to a 4% spending rule. Retirement spending is 4% of the initial balance at retirement. Spending remains constant in inflation-adjusted terms through retirement. The investor withdraws the spending amount at the beginning of each month. The balance then evolves according to portfolio returns. If the balance hits zero, we treat this as a failure.

All the returns used in the simulations are inflation-adjusted using the US consumer price index (CPI).

Portfolio returns are based on a constant, 50/50 split between stocks and bonds. The market portfolio is proxied by the CRSP Deciles 1–10 Index, while the core portfolio is proxied by Dimensional US Adjusted Market 1 Index. Five-year Treasury notes proxy for bond performance. The sample period runs from June 1927 to December 2022.

For each simulated retirement, we draw 30-year (360-month) return histories from our sample. We use block bootstrap with a mean block size of 10 years (120 months) to sample inflation-adjusted annual returns.

We bootstrap returns from the historical distribution and a conservative distribution. The conservative distribution is obtained by subtracting 1.65 times the standard error (1.65 x 1.89% = 3.1%) of the average stock return from the historical average (8.1%). This is equivalent to assuming that the long-run inflation-adjusted equity return is 5.0%, which corresponds to the fifth percentile of the estimated distribution of the average historical return.

Average real historical returns were obtained by dividing CRSP Deciles 1–10 Index returns by monthly inflation according to the formula (1+ CRSP Deciles 1–10 Index return)/(1+CPI growth) – 1. Real monthly returns are then averaged and multiplied by 12 to annualize them.

The projections or other information generated by bootstrapped samples regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Results will vary with each use and over time.

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