

# A BENCHMARK FOR EFFICIENT ASSET ALLOCATION

*July 2017*

Asset allocation is the most important decision in portfolio construction. It aligns investment assets with investment objectives. More than 60 years ago, Harry Markowitz developed modern portfolio theory (MPT) and demonstrated the diversification benefit of combining different assets. For each level of possible return, there is an optimal mix of assets – a portfolio – that offers the lowest risk. Together, these portfolios comprise an efficient frontier. Optimizing investors select a portfolio from the efficient frontier.

Around the same time, other researchers were developing the efficient market theory, which holds that market prices fully reflect all available information. This basic notion has profound implications, including that the market value of a security is the best estimate of its fair value and there is no opportunity for a skilled investor to earn a risk-adjusted excess return. In the 1960s, William Sharpe extended efficient market theory to MPT with the capital asset pricing model (CAPM). If investors optimize their portfolios per MPT and markets are efficient, an efficient equilibrium of asset values is reached. This equilibrium is represented by the market portfolio of all capital assets – the average asset allocation of all investors.<sup>1</sup> It would be the optimal portfolio under CAPM theory, offering the highest expected return per unit of risk. This return-to-risk efficiency ratio is known as the Sharpe ratio, where return and risk (standard deviation) are defined in excess of the risk-free cash return. Investors who want more return would leverage the market portfolio. Investors who want less risk would combine it with cash.

If markets are competitive, the equilibrium global market portfolio of capital assets provides a *theoretically* sound benchmark for asset allocation. The global market portfolio results from an ongoing optimization process,

---

**PETER MLADINA**

Director of Portfolio Research,  
Wealth Management

---

**CHARLES GRANT, CFA**

Senior Analyst, Wealth Management  
Portfolio Research

---

**STEVEN GERMANI, CFA, CFP**

Senior Analyst, Wealth Management  
Portfolio Research

<sup>1</sup> A capital asset has a positive market value and a cost of capital (and thus a positive expected return). Capital assets finance the economy. In contrast, derivatives are not capital assets. Their market values sum to zero.

incorporating the forward-looking return and risk expectations of all investors. Therefore, the global market weights of asset classes contain information investors can use when setting their own asset allocation policy. From this perspective, the global market portfolio can serve as a benchmark for strategic asset allocation just as strategic asset allocation serves as a benchmark for tactical asset allocation. But how efficient has the asset allocation of the global market portfolio been, and is it an *empirically* sound benchmark for asset allocation?

We test the efficiency of the global market portfolio by constructing a proxy that serves as a benchmark to evaluate asset allocation mutual funds. Our proxy for global market equity is the MSCI All Country World Investable Market Index (ACWI IMI).<sup>2</sup> The index represents approximately 99% of the market value of all publicly traded equities, including developed and emerging market stocks, large and small stocks, and growth and value stocks. It also includes sectors commonly considered distinct asset classes, such as listed real estate, infrastructure and natural resources. Our proxy for global market bonds is the Bloomberg Barclays Multiverse Bond Index (Multiverse), a global fixed income index that includes the market values of a broad base of investment-grade and high-yield bonds across maturities from government, corporate and other issuers in both developed and emerging markets.<sup>3</sup>

Hedge funds are not included in the global market portfolio because they own capital assets, and we do not want to double count. Our proxy is missing the market values of investable private equity (and debt) and commercial private real estate. Based on data from Preqin, we estimate that about 3% of the global market portfolio is investable private equity (and debt).<sup>4</sup> And based on Doeswijk *et al* (2014), we estimate that about 4% of the global market portfolio is investable commercial private real estate.<sup>5</sup> These omissions do not affect the results of our efficiency tests of asset allocation mutual funds because the funds do not hold private assets. The global market portfolio of capital assets is largely composed of the combined market values of ACWI IMI and Multiverse, enabling us to reconstruct its monthly returns going back 20 years to 1997.

Exhibit 1 displays the equilibrium mix of global stocks versus global bonds since 1997. As of May 2017, the equilibrium-weighted global market portfolio was 48% global equities and 52% global bonds. The 48% in global equities was approximately 52% U.S. equity, 37% developed ex-U.S. equity and 11% emerging markets equity. Of the 52% in global bonds, approximately 94% was investment-grade and 6% was high-yield. U.S. fixed income comprised about 39% of global bonds. Over the 20-year period, the allocation to global equities

---

The global market portfolio provides a theoretically sound benchmark for asset allocation.

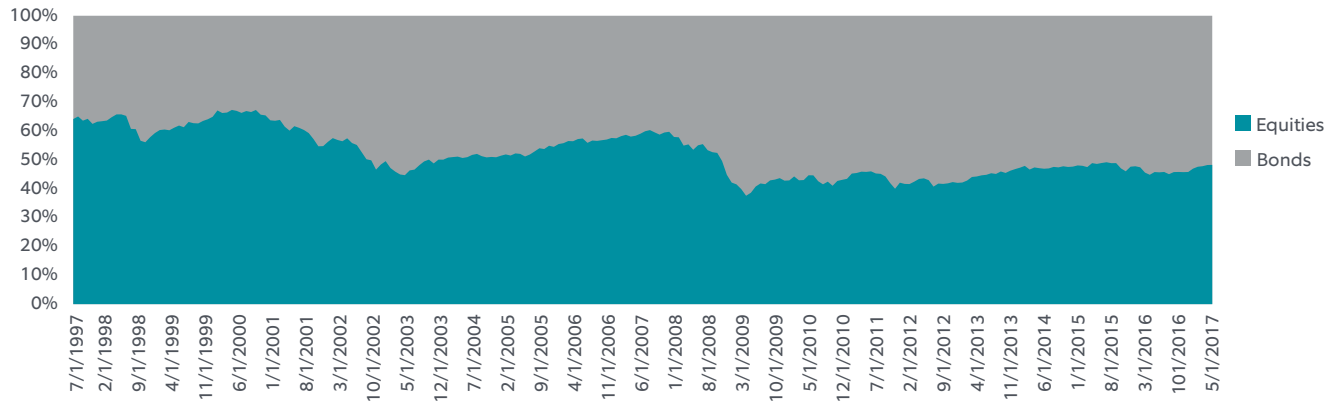
2 ACWI IMI market values are backfilled to 1997 by grossing up ACWI market values, which represent approximately 85% of capitalization-weighted market value.

3 Multiverse market values and returns are backfilled to 1997 using the Bloomberg Barclays Global Aggregate and Global High Yield indices.

4 2017 Preqin Global Private Equity and Venture Capital Report and 2017 Preqin Global Private Debt Report.

5 Doeswijk, Ronald, Trevin Lam, and Laurens Swinkels, "The Global Multi-Asset Portfolio," *Financial Analysts Journal*, 2014.

EXHIBIT 1: STOCKS VS. BONDS IN THE GLOBAL MARKET PORTFOLIO



Source: Northern Trust Research, Morningstar, Barclays.

ranged between 67% and 38%. The allocation changes through time as return and risk expectations evolve and securities are issued and redeemed.

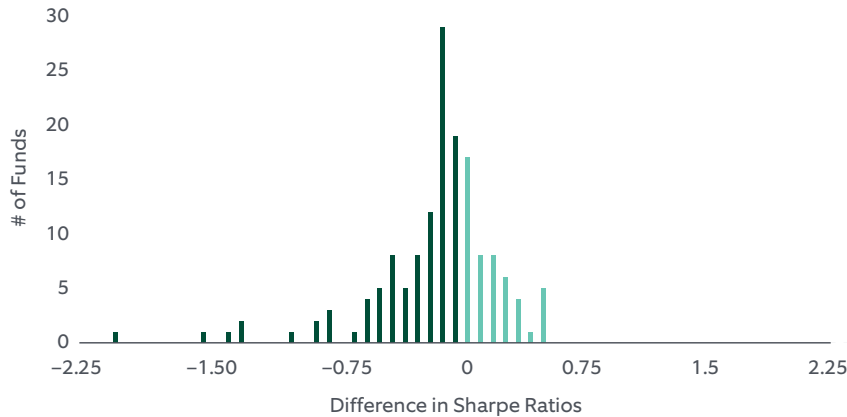
The returns of the global market portfolio represent a global market benchmark. Our efficiency tests compare the Sharpe ratio of the global market benchmark with the Sharpe ratio of each asset allocation fund in Morningstar’s World Allocation category, comparing both over each fund’s unique history. The World Allocation category includes asset allocation funds that can explore the world to allocate across asset classes with broad discretion. We add expense ratios back to the net returns of each fund to better isolate a fund’s asset allocation efficiency. The final sample includes 151 live and dead funds (to reduce survivorship bias) with at least 24 months of gross returns.

Since it is common to hedge the currency risk of foreign bonds (see our research article “Go Global and Diversify”), we created a second version of the global market benchmark using U.S. dollar-hedged returns for foreign bonds. Of the funds in our sample, 65% had a higher correlation to this version of the benchmark. This result is consistent with an intertemporal version of the CAPM, where investors align part of an implicit or explicit multi-period liability with safe fixed income assets denominated in the same currency. We chose the version of the benchmark with the higher correlation to a fund as that fund’s benchmark.

The histogram in Exhibit 2 shows the difference in Sharpe ratios between the global market portfolio and each fund. The difference is negative for 68% of funds, indicating that their asset allocation was less efficient than that of the global market portfolio.

How efficient has the global market portfolio been?

EXHIBIT 2: EFFICIENCY OF THE GLOBAL MARKET PORTFOLIO



Source: Northern Trust Research, Morningstar, Barclays.

The average expense ratio of the funds in our sample is 1.34%, representing the cost of seeking alpha from active asset allocation and security selection decisions. If we repeat the efficiency test using net fund returns, we find that 83% of funds are less efficient than the global market portfolio. This result is notable because the information contained in the global market portfolio is readily available at low cost.

The overall results suggest that the global market portfolio is indeed a sound theoretical and empirical benchmark for asset allocation. The relative weights of asset classes within the global market portfolio can serve as a good starting point to develop a customized asset allocation based on an investor’s unique goals (liabilities) and risk preferences. Consistent with an intertemporal version of the CAPM, the main element of customization should be the alignment of safe fixed income assets with an investor’s unique set of lifetime goals.

The overall results suggest that the global market portfolio is indeed a sound theoretical and empirical benchmark for asset allocation.

© 2017 Northern Trust Corporation. Head Office: 50 South La Salle Street, Chicago, Illinois 60603 U.S.A. Incorporated with limited liability in the U.S. Products and services provided by subsidiaries of Northern Trust Corporation may vary in different markets and are offered in accordance with local regulation.

IMPORTANT INFORMATION. This material is provided for informational purposes only. Information is not intended to be and should not be construed as an offer solicitation or recommendation with respect to any transaction and should not be treated as legal advice investment advice or tax advice. Information is confidential and may not be duplicated in any form or disseminated without the prior consent of Northern Trust.

There are risks involved in investing including possible loss of principal. There is no guarantee that the investment objectives of any fund or strategy will be met. Risk controls and models do not promise any level of performance or guarantee against loss of principal. The opinions expressed herein are those of the author and do not necessarily represent the views of Northern Trust. Northern Trust does not warrant the accuracy or completeness of information contained herein. All material has been obtained from sources believed to be reliable, but the accuracy, completeness and interpretation cannot be guaranteed. Information contained herein is current as of the date appearing in this material only and is subject to change without notice.