



Balancing on the Life
Cycle: *Target-Date Funds
Need Better Diversification*

JUSVIN DHILLON, ANTTI ILMANEN, AND JOHN LIEW

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Overview

In **Balancing on the Life Cycle: Target-Date Funds Need Better Diversification**, published in the Summer 2016 issue of *The Journal of Portfolio Management*, **Jusvin Dhillon, Antti Ilmanen, and John Liew** of AQR Capital Management examine life-cycle funds, which have become an enormous industry in recent years. Such funds offer retail investors a useful option in the quest to save for retirement. However, life-cycle funds do have some drawbacks, and are under-diversified in several key areas. Dhillon and his co-authors evaluate five dimensions of under-diversification and show how to address each issue, resulting in better performance for people who are saving for retirement.

Practical Applications

- **A vast industry.** Life-cycle funds have grown nearly tenfold over the past decade, approaching \$700 billion in assets under management.¹
- **Well-suited for retirement.** As cost-efficient vehicles that can access a broad range of investments, life-cycle funds provide easy investment solutions.
- **There is always room for improvement.** Shortcomings include five major dimensions of under-diversification, but there are clear and effective ways to address the issues involved.

Practical Applications Report

Target-date funds have become an enormous industry in recent years, and they offer retail investors a useful option in the quest to save for retirement. Investors face many challenges in the pursuit of returns, during this extended period of low interest rates. Questions of where and how to seek the best risk-vs-reward balance are on many investors' minds.

At AQR Capital Management, **Jusvin Dhillon, Antti Ilmanen, and John Liew** have thought about such investment problems for a long time. "Target-date funds are a good concept at the core. But they are under-diversified in several meaningful areas," says Dhillon. In life-cycle investing, investors reduce risk as they approach retirement. For younger investors, there is an opportunity to bear more risk and generate returns through more aggressive strategies. As investors grow older, they reduce risk, to ensure their wealth is stable in retirement.

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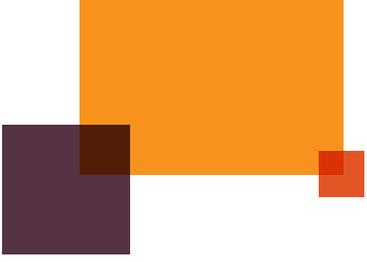
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WISDOM of the AGES: *Life-cycle investing centers on the investor's age with regard to risk and opportunity.*

¹ Bary [2014] quoted these numbers. More recently, BrightScope [2015] estimated that the size of target-date funds (narrowly defined: Investment Act of 1940 funds) has grown to over \$700 billion, whereas a broader definition of target-date assets (which includes collective investment trusts and pooled separate accounts) is closer to \$1.1 trillion and is predicted to exceed \$2 trillion by 2020.



Key Definitions

Life-cycle fund (also called Target-date fund)

A long-term investment strategy, in which the asset allocation mix automatically becomes more conservative as investors approach retirement.

Risk parity

An asset allocation strategy that enhances diversification by balancing risk across major asset classes.

Trend following

A long-short investment strategy that goes long recently rising markets and short recently falling markets.

“The framework is reasonable,” says Liew, “but life-cycle funds are typically concentrated in equities earlier in the cycle and move into bonds over time. With equities comes the risk premium, but is there another way to go?” The team analyzed five ways to improve this popular long-term investment strategy.

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THEMES OF RISK AND REWARD

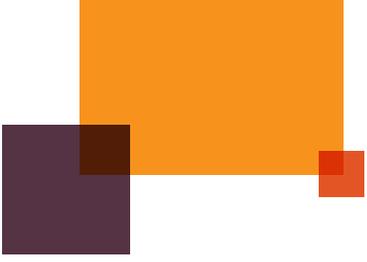
“Life-cycle funds address risk indirectly, by varying asset allocation. But what if we manage risk directly?” asks Dhillon. “Investors may be able to achieve better returns by holding an optimal portfolio, and directly sizing its risk,” he adds.

The team developed a methodology using over 100 years of returns, and studied the standard implementation of several well-known life-cycle strategies. The goal was to see if it would be possible to correct five major shortcomings: home bias, insufficient inflation protection, equity risk concentration, excess sensitivity to volatile periods, and lack of diversification in long/short strategies. Then they tested broadly over a long period and observed what happened. The keys to the improvement lay in expanding to international investments, adding commodities, creating risk-balanced allocations, developing a scheme for dynamic volatility targeting, and including a trend-following component in the mix.

By applying a risk-parity-based life-cycle strategy, it was possible to increase the accumulated savings. “It was a natural process, to keep the core idea, while applying these institutional techniques,” says Liew. “We incorporated real-world assumptions, including the impact of transaction costs, and the risk-parity approach still generated better returns across all cohorts in our study,” he emphasizes.

“Clearly life-cycle funds are a big industry and the goal is good; if investors work to develop an institutional approach, they may be able to enhance their returns and meet their long-term goals even more efficiently.”

—John Liew



FUTURE RESEARCH

Looking ahead, Dhillon, Ilmanen, and Liew are interested in examining investment phenomenon that endure through a range of economic and financial climates. For now, however, they emphasize the value of studying these five techniques for improving life-cycle funds. “Our recommendations are practical and investor-ready. Institutional investors have successfully followed them for many years,” says Dhillon. “If you don’t want to make the full leap, even a small sleeve of these strategies within a fund can capture a portion of the benefit,” he notes.

“Clearly life-cycle funds are a big industry and the goal is good; if investors work to develop an institutional approach, they may be able to enhance their returns and meet their long-term goals even more efficiently,” concludes Liew.

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Jusvin is a vice president on **AQR**'s Global Asset Allocation team, and conducts research on systematic trend-following in commodities and managed futures. Jusvin joined AQR from the University of Chicago, where he earned a BS with a triple major in mathematics, statistics, and economics. He also completed the undergraduate quantitative finance program at Chicago's Booth School of Business. Jusvin's work has been published in *The Journal of Portfolio Management*.



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Antti manages AQR's Portfolio Solutions Group, which advises institutional investors and sovereign wealth funds, and develops the firm's broad investment ideas. Before **AQR**, Antti spent seven years as a senior portfolio manager at Brevan Howard, a macro hedge fund, and a decade in a variety of roles at Salomon Brothers/Citigroup. He began his career as a central bank portfolio manager in Finland.

Antti earned MSc degrees in economics and law from the University of Helsinki and a PhD in finance from the University of Chicago. Over the years, he has advised many institutional investors, including **Norway's Government Pension Fund Global** and the **Government of Singapore Investment Corporation**. Antti has published extensively in finance and investment journals and has received a **Graham and Dodd award** and **Bernstein Fabozzi/Jacobs Levy awards** for his articles. His book *Expected Returns* (Wiley, 2011) is a broad synthesis of the central issues in investing.

Antti recently scored a rare double in winning the best-paper and runner-up award for best articles published in 2012 in *The Journal of Portfolio Management* (co-authored articles "The Death of Diversification Has Been Greatly Exaggerated" and "The Norway Model").



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John is a founder and the head of the Global Asset Allocation team at **AQR**, where he oversees the research, portfolio management, and trading associated with that strategy. Prior to AQR, he worked at Goldman, Sachs & Co. as a portfolio manager in the Asset Management Division where he developed and managed quantitative trading strategies. He began his career at Trout Trading, developing quantitative market-neutral stock-selection strategies.

John has published articles in *The Journal of Portfolio Management* and *Financial Analysts Journal*, and has received the **Bernstein Fabozzi/Jacobs Levy award** and the **Graham and Dodd award** for his articles. John is a member of the University of Chicago's Board of Trustees and sits on the university's investment committee. He earned a BA in economics from the **University of Chicago**, where he was elected a member of Phi Beta Kappa, and went on to earn an MBA and a PhD in finance, also from Chicago.