

Research Review: More on portfolio construction

Ron Bird | University of Technology Sydney | 6 November 2017 | [1.00 CE](#)

This Research Review looks at a paper that addresses one of the most pressing issues facing the financial community – how to construct long-term investment portfolios to best fit the needs of those saving for retirement. It questions the appropriateness of many commonly used techniques. The second paper discussed extends the work of empirical asset pricing models that started with Fama and French, by coming up with a new model which the authors claim is both superior and more robust to those devised previously.

1. Optimal Asset Allocation for Retirement Savings: Deterministic vs. Adaptive Strategies

– Peter A. Forsyth, Kenneth R. Vetzal | 23 June 2017

The authors consider optimal asset allocation for a long-term investor saving for retirement. The investment portfolio they consider consists of a bond index and a stock index. Using multi-period mean variance criteria, they explore two types of strategies – deterministic strategies based only on the time remaining until the anticipated retirement date, and adaptive strategies that also consider the investor's accumulated wealth.

The vast majority of financial products designed for retirement saving currently offered in the US market use deterministic strategies, a prominent example being target date funds. The factors used to determine the specific asset allocations for these products are unclear.

The authors develop methods which give the best possible allocations for deterministic strategies, according to mean-variance criteria.

They also consider optimal adaptive strategies. For both a synthetic market where the stock index is modelled by a jump diffusion process and bootstrap resampling of long-term historical data, the authors find that the optimal adaptive strategy significantly outperforms the optimal deterministic strategy. This suggests that investors are not being well-served by the strategies currently dominating the marketplace.

2. A Factor Portfolio Asset Pricing Model Based on the Optimal Distribution of Risk and Return

– Dixin Zhang, Zhongya Xu & Tongliang An | 2 July 2017

After analysing the relationship and risk type of factors, this paper proposes a new factor pricing model consisting of factor portfolios derived from the optimal distribution of risk and return.

In 16 of the 17 mimicking pricing portfolios, new factor model outperforms the Sharp–Lintner (1964, 1965) CAPM, the Fama–French (1993) three–factor model, the Carhart (1997) four–factor model, the Hou–Xue–Zhang (2015) four–factor model and the Fama–French (2015, 2016) five–factor model.

So far portfolios used for tests are limited and there are no studies investigating robustness of the models. To solve this problem, the authors apply time–series simulation tests and anomaly portfolio reconstruction tests to conduct the robustness tests and GRS tests.

The empirical results confirm that the new factor models are more robust and have higher pricing power than others. The research of this paper is helpful to expand the modern financial pricing theory, and has direct application to financial practice.



[Ron Bird](#) is a Professor at University of Technology Sydney (Sydney).
