

# Author's Accepted Manuscript

Age-Dependent Investing: Optimal Funding and Investment Strategies in Defined Contribution Pension Plans when Members are Rational Life Cycle Financial Planners

David Blake, Douglas Wright, Yumeng Zhang



PII: S0165-1889(13)00216-9  
DOI: <http://dx.doi.org/10.1016/j.jedc.2013.11.001>  
Reference: DYNCON2906

To appear in: *Journal of Economic Dynamics & Control*

Cite this article as: David Blake, Douglas Wright, Yumeng Zhang, Age-Dependent Investing: Optimal Funding and Investment Strategies in Defined Contribution Pension Plans when Members are Rational Life Cycle Financial Planners, *Journal of Economic Dynamics & Control*, <http://dx.doi.org/10.1016/j.jedc.2013.11.001>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting galley proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# Age-Dependent Investing: Optimal Funding and Investment Strategies in Defined Contribution Pension Plans when Members are Rational Life Cycle Financial Planners

David Blake,<sup>+</sup> Douglas Wright\* and Yumeng Zhang<sup>#</sup>

June 2013

## Abstract

A defined contribution pension plan allows consumption to be redistributed from the plan member's working life to retirement in a manner that is consistent with the member's personal preferences. The plan's optimal funding and investment strategies therefore depend on the desired profile of consumption over the lifetime of the member. We investigate these strategies under the assumption that the member is a rational life cycle financial planner and has an Epstein-Zin utility function, which allows a separation between risk aversion and the elasticity of intertemporal substitution. We also take into account the member's human capital during the accumulation phase of the plan and we allow the annuitisation decision to be endogenously determined during the decumulation phase.

We show that the optimal funding strategy involves a contribution rate that is not constant over the life of the plan but is age-dependent and reflects the trade-off between the desire for current versus future consumption, the desire for stable consumption over time, the member's attitude to risk, and changes in the level of human capital over the life cycle. We also show that the optimal investment strategy during the accumulation phase of the plan is 'stochastic lifestyling', with an initial high weight in equity-type investments and a gradual switch into bond-type investments as the retirement date approaches in a way that depends on the realised outcomes for the stochastic processes driving the state variables. The optimal investment strategy during the decumulation phase of the plan is to exchange the bonds held at retirement for life annuities and then to gradually sell the remaining equities and buy more annuities, i.e., a strategy known as 'phased annuitisation'.

Key words: defined contribution pension plan, funding strategy, investment strategy, Epstein-Zin utility, stochastic lifestyling, phased annuitisation, dynamic programming

JEL: G11, G23

---

<sup>+</sup> Professor David Blake, Director of the Pensions Institute, Cass Business School, City University London (email: d.blake@city.ac.uk);

\*Dr. Douglas Wright, Senior Lecturer, Faculty of Actuarial Science and Insurance, Cass Business School, City University London (email: i.d.wright-1@city.ac.uk);

<sup>#</sup> Dr. Yumeng Zhang, Structurer, Solutions Group, Legal & General Investment Management.

The authors would like to thank Andrew Cairns, Kevin Dowd, Stewart Hodges and two anonymous referees for very useful comments on earlier versions of this paper, as well as the Institute and Faculty of Actuaries for sponsoring this study.

متن کامل مقاله

دریافت فوری ←

**ISI**Articles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات