The Impact of Inflation Risk on Financial Planning and Risk-Return Profiles

Stefan Graf*
Ph. D. student, Ulm University
Helmholtzstraße 22, 89081 Ulm, Germany
Phone: +49 731 5031258, fax: +49 731 5031239
s.graf@ifa-ulm.de

Lena Haertel
Ph. D. student, Ulm University
l.haertel@ifa-ulm.de

Dr. Alexander Kling
Institut für Finanz- und Aktuarwissenschaften (ifa) Ulm, Germany
a.kling@ifa-ulm.de

Dr. Jochen Ruß
Institut für Finanz- und Aktuarwissenschaften (ifa) Ulm, Germany
j.russ@ifa-ulm.de

Abstract

The importance of funded private or occupational old age provision will increase due to the demographic changes and the resulting problems for government-run pay-as-you-go systems. Clients and advisors therefore need reliable methodologies to match offered products and clients’ needs and risk appetite. In Graf et al. (2011) the authors have introduced a methodology based on stochastic modelling to properly assess the risk-return profiles – i.e. the probability distribution of future benefits – of various old age provision products. In this paper, additionally to the methodology proposed so far, we consider the impact of inflation risk on the risk-return profile of old age provision products. In a model with stochastic interest rates, stochastic inflation and equity returns including stochastic equity volatility, we derive risk-return-profiles for various types of existing unit-linked products with and without embedded guarantees and especially focus on the difference between nominal and real returns observed. We find that classical “rule of thumb” approximations of measuring inflation risk are inappropriate and further show that products that are considered particularly safe by practitioners because of nominal guarantees bear significant inflation risk. Finally, we propose product designs suitable to reduce inflation risk and investigate their risk-return profile accordingly.

Keywords: Stochastic modelling, Financial planning, Inflation linked products.

* Corresponding author