

Asset liability management for Tanzania pension funds.

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This thesis presents a long-term asset liability management for Tanzania pension funds. Two kinds of pension benefits are considered; a commuted (at retirement) and a monthly (old age) pension. A decision factor in the analysis is the increased life expectancy of the members of Tanzania pension funds. As an application, data from NSSF are used. The presentation is divided into two parts. First is a 50 years demographic projection of the fund using a fixed and relatively low return on asset value. Basing on the number of members in 2015, a projection of members and retirees is done. The corresponding amount of contributions, asset values, benefit payouts, and liabilities are also projected. The evaluation of some possible reforms of the fund is done. Then, the growth of asset values using different asset returns is studied. The projection shows that the fund will not be fully sustainable in a long future due to the increase in life expectancy of its members. Second is a risk management based on stochastic programming. The model is based on work by Kouwenberg in 2001 and includes some features from Tanzania pension system. In contrast with most asset liability management models for pension funds by stochastic programming, liabilities are modeled by a number of years of life expectancy. Scenario trees are generated by using Monte Carlo simulation. Numerical results suggest that, in order to improve a long-term sustainability of the Tanzania pension fund system, it is necessary to make reforms concerning the contribution rate, investment guidelines and formulate target levels (funding ratios) to characterize the pension funds' solvency situation.