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Allocating interest rate risk in a collective pension fund

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Abstract

This thesis investigates the interest rate risk participants in a pension fund with a collective investment policy are exposed to and how this interest rate risk can be allocated over the participants such that it leads to welfare improvement of the pension fund. The pension fund that is studied follows the defined ambition pension scheme, which was the aspired new pension scheme following from the pension agreement in 2019, proposed by the Dutch government.
We introduce a theoretical interest rate hedging strategy, where the amount of interest rate risk that is hedged is expressed as the percentage of the change in value of of the liabilities, following from a change in the term structure of interest rates, where the interest rates are stochastic. By maximizing the accrued entitlements of an individual within an individual defined ambition pension fund at retirement age, we determined an age-dependent interest rate hedging strategy. From this hedging strategy we conclude that, if the investment mix is constant over time, a participant wants to hedge a large part of the interest rate risk in his early years of accrual and at least as much as in the years just before retirement. We show that in the collective defined ambition pension fund, the old participants take over interest rate risk of young participants, since the collective funding ratio is relatively more sensitive to the liabilities of young participants. By introducing and comparing several other allocation rules that allocate the interest rate risk differently over the participants, we conclude that the allocation conform the funding ratio mechanism leads to the highest welfare of the pension fund. However, this is mainly due to the welfare of the young participants, the participants just before retirement are too much exposed to interest rate risk.