

## DEFERRED ANNUITIES AND STRATEGIC ASSET ALLOCATION

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Social Security is said to experience major cuts in the scheduled benefits for the next years to come. The cuts are necessary to guarantee the solvency of PAYGO systems in aging societies. While defined benefit schemes are becoming less popular at the same time, defined contribution and private savings scheme are gaining relative importance. Therefore, it is of crucial urgency to analyze a substitute for Social Security and defined benefit plans. We integrate deferred fixed real life annuities into the dynamic consumption and portfolio choice problem for the household under consideration. A fixed deferred annuity promises life long fixed payments in exchange for an initial non-refundable premium paid to the provider of the life insurance.

Contrary to an immediate annuity, payments only commence after the deferral period which is set initially. If the annuitant perishes during the deferral period, the premium is lost. There are many advocates, in the policy arena, of embedding annuitization as a default distribution mechanism in tax sheltered saving plans to reinforce saving discipline which is naturally found in annuity payments, Social Security, and defined benefit plans. Intriguingly, the payout profile of a deferred annuity where payments commence at age 65 can be found in Social Security in as much as Social Security has a deferral period reaching up to retirement. The contribution, or purchase, is done while working.

We include deferred annuities in the strategic asset allocation to reveal the interaction among Social Security, defined benefit plans, and deferred annuities. In the analysis, we derive the optimal deferred-annuity-bond-and-equity portfolio for a household facing un-spanned labor income including a stochastic permanent and transitory component. We compare annuitization strategies including immediate life annuities to one with a combination of deferred and immediate life annuities. In our analysis, we argue that the household can construct a deferred annuity by rolling the payouts of an immediate annuity over into a new immediate annuity. Immediate annuities give the household greater flexibility to react to adverse shocks in labor income. We conduct experiments in order to analyze the extent to which an immediate annuitization strategy resembles a deferred annuity purchase.

In our setting, we prove that such a roll-over strategy provides the same benefits as a deferred annuity for an identical initial outlay. We find a surprising similarity between two different annuitization strategies. The first strategy allows the investor to purchase immediate life annuities throughout the life cycle. The second strategy requires that the household purchases a deferred annuity where payments commence at the beginning of the retirement period. Only in retirement, the household can purchase immediate annuities in this strategy. The purchasing behavior for deferred annuities is very much in line with the one observed for immediate annuities.

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The household moves gradually parts of the savings into the deferred annuity. Even though the household buys deferred annuities to a lesser extent than immediate annuities, the overall expected asset allocations and the corresponding life cycle profiles are intriguingly similar. Indeed, the household following the first annuitization strategies replicates a deferred annuity to a considerable extent, particularly if the household is not exposed to any income risk. A welfare comparison points out a small difference between the first and second strategy where payments commence at age 65.

The longer the deferral period, the higher is the utility loss. Deferred annuities are a promising vehicle to overcome the reluctance in engaging in irreversible financial transactions such as annuitization. Deferred annuities might be preferred because they are seemingly cheaper than annuities. At the same time the welfare loss is not considerably high. If we introduce loads and asymmetric mortality beliefs between the insurer and the annuitant, we find that it might be worth while engaging only in deferred annuities; strictly speaking in welfare terms.

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