

## **Modern tontines with money-back guarantee**

Sascha Günther

Université de Lausanne  
Rue du Lac 93  
Switzerland

Joint work with: Peter Hieber

In many countries, life or pension products include guaranteed amounts or guarantee periods, ensuring that a certain percentage of contributions is guaranteed to the policyholders. In the event of an early death in the retirement phase, a portion of the policyholder's funds may be paid as a bequest. Such a guarantee is costly and reduces the payments to survivors, but, at the same time, this feature might reduce scepticism towards tontine products from both customers and regulators. We show how such a guarantee can be added to a tontine design, without leaving any risks with the insurance provider. In a Lee-Carter mortality model, this product is compared to refundable income annuities, where payments are fully guaranteed to policyholders.