

**Franck ADEKAMBI**  
**School of Statistics & Actuarial Science, University of the Witwatersand**  
**Johannesburg, South Africa**

## **The Asymptotic Ruin Problem in Health Care Insurance With Interest**

*Ramsay (1984) in paper published in Insurance: Mathematics and Economics, entitled «The asymptotic ruin problem when the healthy and sick periods form an alternating renewal process» found expressions for the probabilities of sickness and health, the first moment of the aggregate amount of premium received up to the end of the  $n$ -th healthy period, the aggregate amount of benefit paid out up to the end of the  $n$ -th sickness period,  $n = 1, 2, 3, \dots$  and an approximation of the probability of ruin but ignoring the effect of force of interest. This paper aims to consider the Ramsay model modified by the inclusion of interest rate. Upper bounds for the ultimate ruin probability are derived by martingale and recursive techniques. Examples will be given when the length of the period of sickness and health follow a particular distribution.*

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*For any information, please contact  
Patricia Fernandez (01 34 43 32 45 and  
fernandez@essec.fr)*

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