Rheinisch Westphälische Technische Hochschule Aachen

MASTER THESIS

THE IMPACT OF MORTALITY RISK UNDER SOLVENCY II AND SOLVENCY ASSESSMENT MANAGEMET (SAM)

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Introduction

The insurance industry is playing a more important and substantial role in the worldwide financial system today. The European insurance industry annually generates over EURO 1.1 trillion in premiums and the industry has invested over EURO 6.8 trillion in the European economy.[1] Therefore, the stability of the insurance industry is fundamental to the economic growth of European countries. Even before the financial crises in 2008, the regulators had decided that the requirements for solvency have to be updated.[2]

A company is referred to as solvent if it is capable of meeting its obligation at any time.[3] Therefore, a solvency margin—a reserve of the company's assets—is needed to cover its liabilities. But during the development stages of the Solvency project in the European Union, the concept of solvency margin changed to mean 'to act as a buffer'.[4] The new regime, Solvency II, is a risk-based system, which will come into effect in insurance and reinsurance companies in 2016. [5]

Life insurance companies face a number of risks during the course of their day-to-day business, including operational risks, mortality risks, longevity risk, liquidity risks and credit risks. One important risk for life insurance companies is the mortality risk factor, which arises if a policyholder dies earlier than expected during the policy term.[6] The aim of this thesis is to investigate the requirements for mortality risk under Solvency II and attempt to answer the following three questions:

1) Is the standard formula for measuring mortality risk under Solvency II an appropriate measure for mortality risk?
2) What impact do demographic factors such as gender, income and industry have on mortality risk?
3) What impact does reinsurance have on the solvency of a life insurance company?

A standard formula, as an alternative to an internal model given by the directories, can be applied in the insurance companies. But within the proposed requirements, no information about the exact calibration is included. After the requirements were published, the solvency margin for mortality risk has already been set higher once.[7]

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[1] cf. Buckham/Wahl/Rose (2010), p. 33.
[2] cf. Buckham/Wahl/Rose (2010), p. 33.
[3] cf. Kriele/Wolf (2014), p. 318.
[4] cf. Kriele/Wolf (2014), p. 318.
[5] cf. Solvency (2014).
[6] cf. CEIOPS (2009), p. 7.
[7] cf. CEIOPS (2009), p. 8 f.

Due to the limitations on the number of pages as well as the scope of the topic, the following research is conducted from the perspective of a life insurance company. The only developing country that will implement a similar Solvency directive in 2016 is South Africa with a requirement called Solvency Assessment Management (SAM).[8] This is based on Solvency II but is modified to adapt to South African circumstances. [9] The original purpose in choosing the two regulations is to compare and identify some significant differences regarding mortality risk between the new directives and also to investigate their appropriateness. Unfortunately, it became evident during the research that there were no differences between the two directives because SAM was modelled on Solvency II. Hence, there is no further investigation into SAM.

The structure of this thesis is as follows: Chapter 1 focuses on the question of why the insurer has to be regulated in general. The reasons for a regulation are given from the perspective of the regulators. A description of Solvency II regulations is given in Chapter 2. The framework and requirements along with the estimation rules are introduced in Chapter 3. Chapter 4 provides information about life insurance and its structures. The definition of mortality risk and its estimation rule under Solvency II is described in Chapter 5. The research questions mentioned above are investigated in Chapter 6 and the impact of reinsurance in Chapter 7. Finally, the last chapter presents a broad general conclusion.

[8] cf. SAM (2014), p. 1.
[9] cf. SAM (2014), p. 1.

References

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