

# The Insurance Risk in the SST and in Solvency II: Modelling and Parameter Estimation

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## **Abstract:**

Both, the Swiss Solvency Test (SST) and solvency II in the EU are the framework of a new, risk based solvency regulation. In this paper we concentrate on the insurance risk. We will compare the two models and discuss what is common and what is different in the two models. Emphasis will be lead on the estimation of the parameters and some new parameter estimators will be presented. In this context we will also address the problem of how to combine individual and industry-wide data by means of credibility. Another special discussion point will be diagonal effects in the reserve risk such as the impact of inflation and super-imposed inflation.

## **1 Introduction**

As early as in 2004 Switzerland developed the first version of the Swiss Solvency Test (SST), a new risk based solvency regulation. The first field test with 10 insurers already took place in 2004. Since 2008 all Swiss companies have to do the SST and from 2011 on the target capital or solvency capital requirement according to the SST will be in force.

In the meantime the EU has developed solvency II, and in 2008 the 4th quantitative impact study QIS has been carried through.

Both, the SST and solvency II have the same aim, namely to install a risk based solvency regulation and to require a solvency capital which is based on the risks of the company, be it on the asset side or be it on the insurance side.

It is now interesting to see the two systems and modelling frameworks, where they are equal and similar and where there are major differences.

In this paper we will concentrate on the non-life insurance risk. In Section 2 we will define the insurance risk, and in Section 3 we will investigate how they are modelled in the two systems. Section 4 will be devoted to parameter estimators, where some new parameter estimators will be presented.

## **2 The Insurance Risk**

By the insurance risk in non-life we denote next year's technical result  $TR$  defined by

$$TR = P - K - C^{CY} - C^{PY} \quad (1)$$