

# **A generalized linear discrete time model for managing the solvency interaction and singularities arising from potential regulatory constraints imposed within a portfolio of different insurance products**

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## **Abstract**

We consider a typical portfolio of different insurance products and investigate the pricing process using the framework of a generalized linear discrete time model. Moreover, we assume that, due to regulatory constraints, the resulting system is singular and calculate the solution using the tools of matrix pencil theory. Finally, we present a numerical application for two different portfolios.

**Key-words:** Pooling of risks, Solvency Interaction, Singularities, Matrix pencil theory, Descriptor Control Systems; Non Causality