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Editorial

Special Issue "Machine Learning in Insurance"

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It is our pleasure to prologue the special issue on "Machine Learning in Insurance", which represents a compilation of ten high-quality articles discussing avant-garde developments or introducing new theoretical or practical advances in this field.

Two articles deal with reserving in non-life insurance. In the first one, Bischofberger (2020) provides an innovative approach to understanding operational time in this context: reverting the time scale enables a very complex correlation structure to be modelled via one-dimensional models only. Validation is performed appropriately based on state-of-the-art machine learning principles. The second paper on reserving by Elpidorou et al. (2019) shows that prior knowledge can be incorporated in the reserving process without violating standard mathematical statistics. The paper does provide a likelihood principle to incorporate prior knowledge.

There are two articles on telematics in insurance by Qazvini (2019) and Pesantez-Narvaez et al. (2019), where the authors present complicated mathematical statistical methodologies. Within the spirit of machine learning, both use model selection and validation to choose the best-predicting model out of a complex array of possibilities. The paper by Bermúdez et al. (2020) also considers claim count models based on new actuarial techniques.

The remaining papers in this collection pertain also to finance. Assa et al. (2019) study deposit insurance pricing, whereas Bärtl and Krummaker (2020) the accurate prediction of export credit insurance claims. With a focus on deriving solvency capital requirements, Krah et al. (2020) analyze adaptive machine learning approaches to proxy modelling of life insurance companies. The paper by Sarabia et al. (2020) revisits the ideas of the so-called semiparametric methods which are very useful when applying machine learning in insurance. For the modelling of prior knowledge, the authors introduce classes of distributions for financial data. They then illustrate the proposed procedures with data on stock returns. Finally, Mammen et al. (2019) apply machine learning to forecast the conditional variance of long-term stock returns measured in excess of different benchmarks, considering the short and long-term interest rate, the earnings-by-price ratio, and the inflation rate.

We are indebted to all the reviewers who collaborated and thankful to all the authors for their contributions. It is our hope that the research articles that were assembled for this Special Issue will cast light on the field and prove a fruitful reading for our audience.

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