

On the statistical aspects of insurance company’s risk management

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Risk is the potential harm that may arise from some present process or from some future event and insurance is a risk financing transfer under which an insurance company agrees to accept financial burdens arising from loss. On the other hand, statistics is the discipline concerned with the study of variability, with the study of uncertainty and with the decision-making in the face of uncertainty. Thus statistical methods – called quantitative risk management (QRM) in this connection – have played in a natural way a key role in the development of the insurance industry for decades.

Over the last twenty years the insurance industry has developed numerous new tools for quantitative measurement of risk. The need for this has mainly been due to changing regulation conditions and the securitization process in financial market. For both the insurance and the banking industry, the aim is to create prudential supervisory frameworks that focus on the true risks being taken by a company. In 2001, the European Commission launched the so-called Solvency II project. The key objective of Solvency II is to secure the benefits of the policyholders thereby assessing the company’s overall risk profile. The past two decades have also witnessed an amazing expansion and change in the workings of the financial markets, the most eye-catching development being financial innovation that has resulted in so-called derivative securities or just derivatives.

The risk management methodology draws on diverse quantitative disciplines, from mathematical finance through statistics and econometrics to actuarial mathematics. In this talk we review statistical methods for market, credit, and operational risk modelling and describe recent developments in the QRM.