Robust Data Analysis
in Insurance and Finance:
where do we stand?

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Abstract: Stochastic models play an important role in the analysis of data in many different fields, including finance and insurance. In this talk, we will first briefly discuss the main robustness problems of classical statistical estimation and testing techniques arising in different important models used in finance and insurance and then the basic ideas and techniques of robust statistics and econometrics. Emphasis in this first part is to show the generality of the different approaches (also thanks to recent contributions) and to discuss how the whole *data analysis* process can benefit from *additionally* using robust statistical procedures.

In the second part, we will discuss the robustness issues arising in estimation, testing and model selection of some critical and complex applications that are important in finance and insurance. Using real data, we show how robust methods improve the data analysis process and fit into the respective literature. Particular emphasis is given to *methodological aspects* and *open questions*, that arise when robustly analyzing financial and insurance data in practice.

Finally, as a consequence, we will discuss some implications for teaching data analysis and statistics, and for the communication of research results in finance and insurance.

The talk will be based on the following papers/books:

References

[1] Dell'Aquila R. and E. Ronchetti (2005), Robust Statistics and Econometrics with Economic and Financial Applications, Wiley, forthcoming.

[2] Dell'Aquila R. (2005): Robust Data Analysis in Insurance and Finance I: Robust Selection and Fitting of Loss Distributions, Extreme Value Models and Duration Models, Working Paper.

[3] Dell'Aquila R. and E. Ronchetti (2003): Robust GMM Analysis of Models for the Short Rate Process, Journal of Empirical Finance, 10, 373-397.

[4] Dell'Aquila R. and E. Ronchetti (2004): Resistant Nonparametric Analysis of the Short Term Rate, Working Paper.

[5] Dell'Aquila R. and E. Ronchetti (2004): Robust Tests of Predictive Accuracy, Metron, 62, 161-184.