Quantile Functionals as Measures of Social, Health and Technical Events

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Abstract

Many indicators and measures of technical or social procedures rise up as functionals of the quantile process of some parent random variable, observable only by means of model responses. These measures can further depend on covariates whose intensities are not under our control. The typical quantile functionals are measures of financial and health risk, and the environmental and technical risks. They are used in water management, in insurance and elsewhere. Well known are e.g. the mean excess function and the Lorenz curve, whose ratios are proposed for a characterization of income disparities. As quantile functionals also appear some types of entropy. The covariates, which appear as nuisance, also play an important role, because they characterize the weather or market conditions, fluctuations of energy, etc. In every case, the primary goal of mathematical statisticians is to develop mathematical methods how to precisely estimate the values of these measures, using the observable data which are at disposal. Some of our methods and the ideas behind will be illustrated.

References

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