

LONG-RANGE DEPENDENCE AND NON-SEMIMARTINGALE MODELS IN FINANCE

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ABSTRACT

Financial markets fairly often have a long memory and it is a natural idea to model them with the help of fractional Brownian motion or some of its modifications. However, it is not so straightforward to implement because the market model is appropriate when it does not admit arbitrage and the models involving fractional Brownian motion are not arbitrage-free.

The talk is devoted to some methods of construction of the long-memory arbitrage-free models and to the discussion of different approaches to this problem. In particular, we introduce the mixed Brownian–fractional-Brownian model and establish conditions that ensure the absence of arbitrage in such a model. Also we consider a fractional version of the Black–Scholes equation for the mixed Brownian-fractional Brownian model which contains pathwise integrals w.r.t. fBm, discuss possible applications of Wick products in fractional financial models and produce Black–Scholes equation for the fractional model involving Wick product w.r.t. fBm.

REFERENCES

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