Minisymposium 3 - Stochastic Processes with Jumps: Theory and applications

Malliavin calculus for Lévy processes and application to optimal portfolio with partial information

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We consider a financial market driven by Lévy processes. We assume that a given trader in this market has access to an information flow which is possibly less than the information generated by the underlying Lévy processes. Mathematically this means that the portfolio chosen by the trader must be adapted to this smaller filtration which represents the trader's information. For example, the filtration could be a delayed filtration of the filtration of the underlying processes. With a given utility function, we show that the portfolio which maximizes the expected utility for this partially informed trader can be expressed in terms of the Malliavin derivatives with respect to the underlying Lévy processes.

We illustrate the results by finding the optimal portfolio in specific examples. The presentation is based on joint work in progress with G.Di Nunno and T. Zariphopoulou.

REFERENCES

G.Di Nunno, B. Øksendal and T. Zariphopoulou: Optimal portfolio under partial information in a market driven by Lévy processes (in preparation)