

# Optimal portfolio problem in incomplete market with inside information available

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## ABSTRACT

In a market model with price dynamics driven by a Lévy type noise we consider the point of view of a dealer interested in maximizing his own expected utility at a fixed future time and having access to some “larger” information, here referred to as *inside information*.

An optimal portfolio is the result of a decision making process based on the optimized use of *all* the information at disposal. We consider a general smooth utility function and an inside information represented by a general filtration, strictly larger than the one generated by the market noise.

In this context, the optimal portfolio problem cannot be studied in the framework of Itô (non-anticipating) stochastic calculus without some *a priori* assumptions on the processes driving the market noise under the inside information. The aim of the presentation is to suggest the use of anticipating calculus, forward integration and Malliavin calculus, as alternative mathematical framework, where there is no need of *a priori* assumptions on the noise or on the kind of inside information available. We give a characterization of the existence of an optimal portfolio and we present some explicit solutions in the examples.

This presentation is based in different ways on joint works with: A. Kohatzu-Higa, T. Meyer-Brandis, B. Øksendal, F. Proske and A. Sulem.

## References

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- [3] G. Di Nunno, A. Kohatzu-Higa, T. Meyer-Brandis, B. Øksendal, F. Proske and A. Sulem. *Optimal portfolio for a “large” insider in a market driven by Lévy processes*. Preprint Series in Pure Mathematics, 30, 2005. University of Oslo (Norway).