

Optimal investment and consumption in a Black-Scholes market with Lévy-driven stochastic coefficients

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ABSTRACT

We investigate an optimal investment and consumption problem for an investor who trades in a Black-Scholes financial market with stochastic coefficients driven by a non-Gaussian Ornstein-Uhlenbeck process. We assume that an agent makes consumption and investment decisions based on a HARA utility function. By applying the usual separation method in the variables, we are faced with the problem of solving a non-linear (semilinear) first-order partial integro-differential equation. A candidate solution is derived via the Feynman-Kac representation. By using the properties of an operator, defined in a suitable functional space, we prove uniqueness and smoothness of the solution. Optimality is verified by applying a classical verification theorem.

This is joint work with Łukasz Delong from the Institute of Econometrics, Division of Probabilistic Methods, Warsaw School of Economics.

References

- [1] Delong, Ł. and Klüppelberg, C. (2006) Optimal investment and consumption in a Black-Scholes market with stochastic coefficients driven by a non-Gaussian Ornstein-Uhlenbeck process. Submitted for publication. Available at www.ma.tum.de/stat/