Section 12: Probability and Statistics | Poster number 229

Financial Market With The Gaussian Martingale.Variance-Minimizing Hedging For The European Contingent Claims

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ABSTRACT

We work on the questions of Stochastic Financial Mathematics. More exactly we investigate the problems of pricing and hedging for the European contingent claims in an incomplete market. Our research use the variance-minimizing approach which is developed for example by Follmer and Scweizer.

We considered the financial (B, S) market, where evolution of risky asset is given with the help of right-continuous gaussian martingale. Optimal in the sense of mean square criterion self-financing hedging strategies are constructed. It is calculated option price. Separately is examined the cases of the standard call and put options.

Also we studied the problems of pricing and hedging for a currency option. We considered the market with domestic and foreign currencies and with corresponding interest rates. The exchange rate process represents the semimartingale with the part of right continuous gaussian martingale. It is received the price of standard call and put options. Mean square optimal hedging strategies are obtained.

In discrete time is introduced a new condition on the class of admissible strategies (non self-financing), which has a certain economic content. It this class when the stock price sequence is semimartingale we found the optimal strategies and price of option.

Keywords: *Gaussian martingale, contingent claim, variance-minimizing hedging, self-financing hedging strategies*

Mathematics Subject Classification: *60G48, 60A05, 90A09*

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