

# The optimal investment and consumption for the financial market generated by the spread of risky assets

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## Résumé

The aim of this talk is to find the optimal investment and consumption for the financial markets generated by the spread of risky assets.

As usual in the portfolio optimization problems it is considered the financial assets of geometric Brownian motion type. In this talk we use the model of financial markets « *spread* » generated by the Ornstein-Uhlenbeck process. This extends the Boguslavsky and Boguslavskaya (BB, 2004) pure investment problem of the same model.

Moreover, we apply the probabilistic representation method for the solution of parabolic partial differential equations based on the Feynman-Kac formula. We chose this method as we could not apply the method proposed in (BB, 2004) to find an explicit solution of this equation. As for the problem with the consumption there are additional variables.

Finally, the Hamilton-Jacobi-Bellman equation for this problem is obtained. Also, the existence and uniqueness theorem for the classical solutions for this problem is shown.

## References :

- BB M. Boguslavsky and E. Boguslavskaya ; Arbitrage under Power. *Risk* (June 2004), pp 69-73  
BP B. Berdjane and S. M. Pergamenchtkhikov ; Optimal consumption and investment for markets with random coefficients. *Finance and stochastics*, (2013) 17 (2), 419446.