

On the Optimal Stopping Problems for Lévy Processes

Hao Xing

Erhan Bayraktar

Department of Mathematics, University of Michigan

haoxing@umich.edu

Abstract. Value functions of optimal stopping problems for processes with Lévy jumps are known to be generalized solutions of variational inequalities. Assuming the diffusion component of the process is nondegenerate, I will show that the value function is a classical solution of the variational inequality in the continuation region for problems with either finite or infinite variation jumps. Moreover, the smooth-fit property is shown via the global regularity of the value function.

Our global regularity results generalize the results of Bensoussan and Lions (1984) which were developed for bounded domains. On the other hand, until now the value function was known to be $C^{2,1}$ in the continuation region only for the optimal stopping problems with finite activity jumps. This is a joint work with my advisor Prof. Erhan Bayraktar.

Keywords Optimal Stopping, Variational Inequality, Lévy Process, Nondegenerate Diffusion, Classical Solution