

# A Class of Solvable Optimal Stopping Problems of Spectrally Negative Jump Diffusions

Luis H. R. Alvarez

Teppo A. Rakkolainen

Department of Economics, Turku School of Economics FIN-20500 Turku

[luis.alvarez@tse.fi](mailto:luis.alvarez@tse.fi)

**Abstract.** We consider the optimal stopping of a class of spectrally negative jump diffusions. We state a set of conditions under which the value is shown to have a representation in terms of an ordinary nonlinear programming problem. We establish a connection between the considered problem and a stopping problem of an associated continuous diffusion process and demonstrate how this connection may be applied for characterizing the stopping policy and its value. We also establish a set of typically satisfied conditions under which increased volatility as well as higher jump-intensity decelerates rational exercise by increasing the value and expanding the continuation region.

**Keywords** jump diffusions; optimal stopping; nonlinear programming; perpetual American options;