Pricing n^{th} dimensional barrier derivatives.

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Abstract

We present a closed-form solution for the joint distribution of the extreme values and endpoints of correlated Brownian motions with constant drift and volatility. This is found to be a summation of Sturm-Liouville eigenfunctions. The usefulness of this distribution for evaluating financial derivatives as CDO and n-dimensional lookback options is presented.

Key Words: Extreme Values, Correlated Brownian motions, Exotic Derivatives, CDO.