



Efficient and accurate log-Lévy approximations to Lévy driven LIBOR models

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The LIBOR market model is very popular for pricing interest rate derivatives, but is known to have several pitfalls. In addition, if the model is driven by a jump process, then the complexity of the drift term is growing exponentially fast (as a function of the tenor length). In this work, we consider a Lévy-driven LIBOR model and aim at developing accurate and efficient log-Lévy approximations for the dynamics of the rates. The approximations are based on truncation of the drift term and Picard approximation of suitable processes. Numerical experiments for FRAs, caps, swaptions and sticky ratchet caps show that the approximations perform very well. In addition, we also consider the log-Lévy approximation of annuities, which offers good approximations for high volatility regimes.

Comments: 32 pages, 21 figures. Added an example of a path-dependent option (sticky ratchet caplet). Forthcoming in the Journal of Computational Finance

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