PRICING OF SPREAD OPTIONS IN A BIVARIATE LÉVY MARKET AND STABILITY TO MODEL RISK

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Abstract

We extend the Margrabe formula for european spread options if the bivariate stock price process is driven by an exponential Lévy process with infinite activity. Furthermore we study the robustness of the spread option prices, if the small jumps of the underlying stock price processes are approximated by a scaled Brownian Motion. We prove convergence of the approximated stock prices if the truncation level of the small jumps goes to 0. Then we can conlude convergence of the option prices.

REFERENCES

- [1] Asmussen, S., and Rosinski, J. (2001). Approximations of small jump Lévy processes with a view towards simulation. J. Appl. Prob., **38**, pp. 482–493.
- [2]

¹ Carmona, R., and Durrleman, V., (2003). Pricing and hedging spread options. Siam Review, **45**(4) pp. 627–685.

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