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Pricing Equity Swaps in an Economy with Jumps

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Abstract

Empirical evidence confirms that asset price processes exhibit jumps and that asset returns are not Gaussian. We provide a pricing model for equity swaps including quanto equity swaps for a non-Gaussian market. The market is driven by a general marked point process as well as by a standard multidimensional Wiener process. In order to obtain closed-form solutions of the swap values, we assume that all parameters in the asset price processes are deterministic, but possibly functions of time. We derive swap prices using martingale methods rather than replicating portfolios, and we show how to calculate the convexity correction term analytically. Our results are an extension of the results of Liao and Wang ([2003](); Pricing models of equity swaps, The Journal of Futures Markets, 23(8), pp. 751–772). The martingale method is the key that enables the extension.

Key Words:

Derivatives pricing   equity swaps   convexity corrections   marked point processes   martingales

Notes

1 Recall that and are martingales under .

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