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Research Article

Pricing and hedging of quanto range accrual notes under Gaussian HJM with cross-currency Levy processes

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Abstract

This study analyzes the pricing and hedging problems for quanto range accrual notes (RANs) under the Heath-Jarrow-Morton (HJM) framework with Levy processes for instantaneous domestic and foreign forward interest rates. We consider the effects of jump risk on both interest rates and exchange rates in the pricing of the notes. We first derive the pricing formula for quanto double interest rate digital options and quanto contingent payoff options; then we apply the method proposed by Turnbull (*Journal of Derivatives*, 1995, 3, 92–101) to replicate the quanto RAN by a combination of the quanto double interest rate digital options and the quanto contingent payoff options. Using the pricing formulas derived in this study, we obtain the hedging position for each issue of quanto RANs. In addition, by simulation and assuming the jump risk to follow a compound Poisson process, we further analyze the effects of jump risk and exchange rate risk on the coupons receivable in holding a RAN. © 2009 Wiley Periodicals, Inc. Jrl Fut Mark 29:973–998, 2009

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