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Pricing American put option on zero-coupon bond under fractional CIR model with transaction cost

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ABSTRACT

The motivation of this study is to evaluate the American put option on zero-coupon bond, when the interest rate model is governed by a fractional CIR (FCIR) interest rate model. Since the existence of fractional Brownian motion, leading to create the arbitrage, we employ the transaction cost for eliminating the arbitrage. We first of all apply the Leland's hedging strategy for a self-financing portfolio that contains an American option and zero-coupon bond and derive a formula for the transaction cost. We perform the least-square Monte Carlo (LSM) method for pricing American option under the proposed interest rate model.

KEYWORDS:

MATHEMATICS SUBJECT CLASSIFICATION:

91G30

91G20

91G60

Related Research Data

Option Pricing and Replication with Transactions Costs

Source: The Journal of Finance

Fractional Brownian Motions, Fractional Noises and Applications

Source: SIAM Review

Arbitrage with Fractional Brownian Motion

Source: Mathematical Finance

Valuing American Options by Simulation: A Simple Least-Squares Approach

Source: Review of Financial Studies

An Algorithmic Introduction to Numerical Simulation of Stochastic Differential Equations

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