Pricing European Continuous-Installment Options under Regime-Switching Models

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Abstract : In this paper, we study the valuation problem of European continuous-installment options under Markov-modulated models with a partial differential equation approach. Due to the opportunity for continuing or stopping to pay installments, the valuation problem under regime-switching models can be formulated as coupled partial differential equations (CPDE) with free boundary features. To value the installment options, we express the truncated CPDE as a linear complementarity problem (LCP), then a finite element method is proposed to solve the resulted variational inequality. Under some appropriate assumptions, we establish the stability of the method and illustrate some numerical results to examine the rate of convergence and accuracy of the proposed method for the pricing problem under the regime-switching model.

1

Keywords : continuous-installment option, European option, regime-switching model, finite element method

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