

8 📜 🗏

Q

Home ► All Journals ► Mathematics, Statistics & Data Science ► Applied Mathematical Finance ► List of Issues ► Volume 16, Issue 6 ► A New Approach to Pricing Double-Barrier

Applied Mathematical Finance >

Volume 16, 2009 - Issue 6

535280ViewsCrossRef citations to dateAltmetric

Original Articles

A New Approach to Pricing Double-Barrier Options with Arbitrary Payoffs and Exponential Boundaries

Peter Buchen & Otto Konstandatos 💟

Pages 497-515 | Received 15 May 2008, Accepted 12 Dec 2008, Published online: 06 Nov 2009

L Cite this article **A** https://doi.org/10.1080/13504860903075480



Abstract

We consider in this article the arbitrage free pricing of double knock-out barrier options with payoffs that are arbitrary functions of the underlying asset, where we allow exponentially time-varying barrier levels in an otherwise standard Black–Scholes model. Our approach, reminiscent of the method of images of electromagnetics, considerably simplifies the derivation of analytical formulae for this class of exotics by reducing the pricing of any double-barrier problem to that of pricing a related European option. We illustrate the method by reproducing the well-known formulae of Kunitomo and Ikeda (1992) for the standard knock-out double-barrier call and put options. We give an explanation for the rapid rate of convergence of the doubly infinite sums for affine payoffs in the stock price, as encountered in the pricing of double-barrier call and put options first observed by Kunitomo and Ikeda (1992).

Key Words:

Exotic options	double-barrier options	method of images	parity relations of double-barrier options

Notes

¹Where single flat barriers were treated.

²Where the flat double-barrier case is treated.



Related research 🚺

People also read	Recommended articles	Cited by 28
· · · · · · · · · · · · · · · · · · ·		

Information for	Open access
Authors	Overview
R&D professionals	Open journals
Editors	Open Select
Librarians	Dove Medical Press
Societies	F1000Research
Opportunities	Help and information
Reprints and e-prints	Help and contact
Advertising solutions	Newsroom
Accelerated publication	All journals
Corporate access solutions	Books

Keep up to date

Register to receive personalised research and resources by email





Copyright © 2025 Informa UK Limited Privacy policy Cookies Terms & conditions

Taylor & Francis Group an informa business



Registered in England & Wales No. 01072954 5 Howick Place | London | SW1P 1WG