



Ryerson Applied Mathematics Laboratory.

Technical Report.

Title: Closed form pricing of two-asset barrier options with stochastic covariance.

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2011: # 4

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Abstract

Single and two-asset barrier options on more than one underlying with stochastic volatility are usually priced via Monte Carlo simulation due to the non-existence of closed-form solutions for their value. In this paper, we show a valuation method which gives prices for single-barrier options in a stochastic covariance framework. For a special dependence structure, the prices of some of two-asset barrier derivatives, like digital options and correlation options can even be derived analytically. The analytic formulas can be easily and quickly computed. We extend our approach to further allow a random correlation structure.

Key words: stochastic volatility, random correlation, barrier options.

JEL classification: G13, C63