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Pricing Lookback Options with Knock-out Boundaries

Yoshifumi Muroi

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Abstract

In the last decade, many kinds of exotic options have been traded and introduced in the financial market. This paper describes a new kind of exotic option, lookback options with knock-out boundaries. These options are knock-out options whose pay-offs depend on the extrema of a given securities price over a certain period of time. Closed form expressions for the price of seven kinds of lookback options with knock-out boundaries are obtained in this article. The numerical studies have also been presented.

Keywords

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discussions. This paper is based on Chapter 5 of my doctoral dissertation submitted to Graduate School of Economics, University of Tokyo and it does not necessarily reflect the opinion of the Bank of Japan or the Institute of Monetary and Economics Studies.

Notes

1. This was pointed out by Professor Masayuki Ikeda.

2. It is also possible to derive the integral formula (32) by taking the limit $\alpha \to 0$ in integral formula (9). This formula is then derived using l'Hopital's rule. This was pointed by Professor Masayuki Ikeda.