

# 國立中央大學

## 統計研究所

### 學術演講

主 講 人：繆維中 教授（台灣科技大學 財務金融研究所）

講 題：Using forward Monte-Carlo simulation for the valuation of American barrier options

時 間：105 年 05 月 24 日（星期二）上午 11：00 ~ 12：00

地 點：中央大學鴻經館 M605 室

茶 會：上午 10：30 ~ 11：00                      地 點：鴻經館 510 室

### ABSTRACT

This study extends the forward Monte-Carlo methods, which have been developed for the basic types of American options, to the valuation of American barrier options. The main advantage of these methods is that they can avoid backward induction, the most time-consuming and memory-intensive step in the simulation approach to American options pricing. For these methods to work, we need to define the so-called pseudo critical prices which are used to determine whether early exercise should happen. In this talk, we will first review how the original version of the forward method is developed for the American vanilla options, and then discuss how the method is adapted to American barrier options. In the adaption, we define a new and more flexible version of the pseudo critical prices which can be conveniently extended to all the fourteen types of American barrier options. A series of numerical experiments are provided to compare the performance between the forward and backward Monte-Carlo methods and demonstrate the computational advantages of the forward methods.

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