

摘要

本研究使用情節模擬法，透過對角化單因子結構化模型，提出全新的衡量含個股選擇權、指數期貨與股票組合保證金需求的新模型—Beta 情節模擬，計算程序上不但可以簡化 SPAN 保證金系統跨商品折抵問題，在理論上亦可以改善 TIMS 系統跨商品信用折抵成數過於簡化的缺失。本研究以含股票選擇權組合的歷史資料對 Beta 情節模擬，進行保證金需求的回溯測試，並與其他主要之含選擇權組合保證金系統進行比較分析。

實證結果顯示，只有 SPAN 與 Beta 情節模擬系統能有效的估計含選擇權投資組合之保證金需求，但 Beta 情節模擬在同樣程度的保護下比 SPAN 用顯著較少的保證金就能達到目的且計算方法遠比 SPAN 簡便。因此本研究提出之新模型不但是含股票選擇權組合計算保證金需求較佳的模型，也是計算含股票選擇權組合風險值評量之較佳依據。

關鍵詞：保證金系統、對角化模型、風險值、SPAN、TIMS

Abstract

We modified the scenario analysis with a diagonal model to present a new margining system called Beta-Simulation to calculate margin requirements for portfolios that include stock index futures contract, stocks and stock options. The new system will use the estimated Beta to simplify the appropriate collateral requirement offset estimate for inter-commodity spread, thus easier than SPAN in computational procedure but offering sounder theoretical basis than TIMS for credit offset estimates among individual stock options.

When testing with a portfolio consisting stocks, index futures, index options and stock options, the new margining system provides almost the same market risk protection as the SPAN system but with collateral levels that are significantly less than the level required by SPAN. All other competing systems including TIMS, Monte-Carlo simulation, and delta-gamma normal systems could not pass the likelihood-ratio test and could not provide the same coverage.

Keywords : Margining system, Diagonal model, SPAN, TIMS