

題目	以最大熵值法估計台指選擇權投資組合保險極端值分配係數與其風險值
作者	蘇恩德 (國立高雄第一科技大學 風險管理與保險系助理教授) 李勝榮 (國立高雄第一科技大學 風險管理與保險系博士候選人)
摘要	投資組合保險 (portfolio insurance)，雖然有規避現貨下跌的功能，但是並非是一完全的 delta 中立或者是 delta-gamma 中立，因此還是會因現貨的波動，到期日的趨近或不同的履約價，而產生投資組合價位的變動，本文因此乃欲探討投資組合保險是如何受這些風險因子的影響。而現貨波動常有左偏高峰 (leptokurtosis) 或跳躍的現象，因此若以 delta-gamma 敏感性模式化投資組合保險的風險值，則常會因忽略此異常現象而使風險值的估計產生偏誤，然而最大化熵值的方法則可說明系統外的異常現象-熵值是物理學對於系統亂數的描述方法，普遍運用於亂象 (disorder) 的處理-也可用以修正標的物變動的異常現象與投資組合風險值的估計。研究結果發現最大熵值法對投資組合風險測量與風險情境的反應能力是比 delta-gamma 風險敏感性的方法還佳，對於投資組合極度價內時-風險值近於零的情境其風險反應程度會變低或價平與價外時-風險值較大的情境，其風險反應的程度也隨著提高，因此以最大熵值法來測度投資組合風險值，是較能提供投資人較有效率且快速的風險訊息。
關鍵字	投資組合保險、左偏高峰、風險值、delta-gamma、最大熵值法
Title	Estimating the Taiwan Index Option Portfolio Insurance Extreme Value Distribution Coefficients and Value at Risk by Using Maximum Entropy Methodology
Author(s)	Ender Su, Sheng-Jung Li
Abstract	Though the portfolio insurance could hedge against the price tumble of the spot position, it is in some way not a fully delta or delta-gamma neutral hedging position. Thus, its value would nevertheless be affected by risk factors such as spot price volatility, time to maturity, and exercise price. The purpose of this paper hence intends to examine how those risk factors would influence the value of the portfolio insurance. On the other hand, we recognize that the spot price movement frequently exists phenomenon of leptokurtosis or jump. So, if we use the delta-gamma approach (sensitivity measure) to model the value at risk (VaR) of the portfolio insurance, we would ignore the foregoing abnormal and nonlinear phenomenon, and give rise to bias estimation of the VaR. However, the maximum entropy (ME) theory that is used widely to deal with the disorders in system can in the same way describe the abnormal phenomenon of the spot price moment and VaR estimation of the portfolio insurance. In this research, we found that the maximum entropy method can provide more desirable risk reactions of the risk scenario than delta-gamma sensitivity method. When the portfolio insurance is deep in-the-money- near zero VaR, ME would react less risk increase degree and when it is out-of-the money- larger VaR, the maximum entropy method could illustrate higher risk increase degree. This therefore gives investors more efficiency and speedy risk alert information.
Key Words	portfolio insurance, leptokurtosis, value at risk, delta-gamma, maximum entropy.