題目	應用 Copula-FHS 模型於國際投資組合風險值評估
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摘要	本文運用修正後的歷史模擬法 (Filtered Historical Simulation, FHS)、GARCH-EVT 模型和以 Copula 為基礎的 FHS 模型 (Copula Based FHS Model) 三種方法評估國際投資組合之風險值；並進一步應用 Kupiec (1995) 的概似比檢定 (Likelihood Ratio Test, LR Test) 和均方誤差法 (Root Mean Squared Error, RMSE) 評估風險值模型的績效。由實證結果可知次貸危機發生後，各國股價指數之間的關聯性結構具有顯著的變動，使得國際投資組合不再具有風險分散效果。另由概似比檢定可知，無論是在金融危機前後，FHS 模型有較佳的績效。另一方面，相較於傳統的線性結構，非線性關聯結構的 Copula 函數可以相對準確地預測風險值。
關鍵字	Copula 函數；極值理論；GARCH 模型；FHS；風險值
Title	Applying Copula Based FHS Model for the Estimation of International Portfolio Value-at-Risk
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Abstract	The article applies Filtered Historical Simulation, GARCH-EVT model and Copula Based FHS model to calculate the Value at Risk (VaR) of international portfolio. We conduct the Kupiec (1995)'s LR test and use Root Mean Squared Error (RMSE) to evaluate the performance of all VaR models. The empirical results show that the relationship among international stock indexes has significant varying such that international portfolio didn't have diversified effect of risk. The FHS model has the better performance no matter before or during the financial crisis through the LR test. On the other side, comparing with traditional linear structure, the nonlinear structure is relatively correct on VaR forecasting.
Key Words	Copula Function; Extreme Value Theory; GARCH Model; FHS; VaR