



EVALUATION OF VAR AND CVAR USING DIFFERENT METHODS

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Abstract

Risk management has become increasingly important in finance especially for financial institutions. Traditionally, Value-At-Risk (VaR) has been used as a practical measure of risk. However, more recently a number of researchers have shown that VaR suffers from subadditivity condition and proposed the used of Conditional VaR (CVaR). Both these measures are widely used today. This paper investigates the used of different methodology to estimate these two risk measurements. The methodologies use different statistical distributional assumption to estimate VaR and CVaR. We compared the following three approaches: Gaussian approach which is the traditional model, Historical Simulation (HS), and Cornish-Fisher extension (CF) which is an extension of the Gaussian approach but takes into account the skewness and kurtosis of the statistical distribution. Also, we apply violation ratio and unconditional coverage test for VaR backtesting, and one-sample bootstrap test and sum square error for CVaR backtesting. The data used for backtesting are from twelve portfolios from six Asian MSCI country both currencies and stock indices which are Indonesia, Korea, Philippines, Singapore, Taiwan and Thailand from the period of January 1998 to December 2011. We apply exponential weighting scheme from RiskMetrics™ for volatility prediction. The results show that overall the HS model gives the best results compared to the other two models. The Gaussian model underestimates risk especially for high confidence levels while the CF models under estimates risk.

Keywords: Value-At-Risk, Conditional VaR, Gaussian approach, Historical Simulation, Cornish-Fisher extension