A vine copula approach to analyze financial risk and co-movement of Philippine, Indonesia and Thailand stock markets

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Abstract

Copula methodology has been widely used to capture dependence structure in finance and become one of the most popular tools to measure risk, such as value at risk and expected shortfall. This study firstly aims to analyze the conditional volatility and test leverage effect in Philippines, Indonesia and Thailand stock market. Second, this paper estimates the dependence between Philippines and Thailand conditional on Indonesia stock market, between Philippines and Indonesia conditional on Thailand stock market, and between Indonesia and Thailand conditional on Philippines stock market by using C-and D-vine copula. In addition, we illustrate the value at risk and expected shortfall using Monte Carlo simulation with copula based GJR-GARCH model. The empirical evidence shows that all leverage effects add much to the explanatory ability for the three stock returns, and the D-vine structure is more appropriate than C-vine for describing dependence of the three stock markets. In addition, the value at risk and ES provide an evidence that portfolio may avoid risk in significant measure.

Keywords: C-vine; D-vine; copula; ASEAN; expected shortfall
ABSTRACT

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