Portfolios Optimization Under Regime Switching Model: Evidences in the American Bonds and Other Financial Assets

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Abstract

In this study, we aim to investigate the high dimension portfolio optimization by using Markov Switching Copula-based GJR-GARCH model. The proposed model is flexible and can capture the dependence structure that changes over time. This model is applied to 8 times series, including DJIA, FTSE, COMEX Gold, US Dollar Index, Crude Oil, and US Bonds (one-month, 2-year, and 5-year. In order to construct a portfolio, first we use GJR-GARCH to capture the volatility of each asset. Then, the Markov Switching copula is used to measure the dependence across assets. Finally, the results from MS-Copula is used to construct portfolios and Value at Risk and Expected Shortfall are used for optimal portfolio selection.