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MEASURING THE PREDICTIVE ACCURACY OF THE CORRELATED GAMMA RATIO METHOD FOR MODEL SELECTION

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Abstract-- Autoregressive Conditional Heteroscedasticity (ARCH) models have successfully been applied in order to predict asset return volatility. Predicting volatility is of great importance in pricing financial derivatives, selecting portfolios, measuring and managing investment risk more accurately. In this paper, a number of ARCH models are examined in the framework of a method for model selection based on the Correlated Gamma Ratio (CGR) distribution and their ability to predict future volatility is examined. According to this method, the ARCH model with the lowest sum of squared standardized forecasting errors is selected for predicting future volatility. A number of evaluation criteria are used to examine the performance of a model to predict future volatility, for forecasting horizons ranging from one day to one hundred days ahead. The results show that the CGR model selection procedure has a satisfactory performance in selecting that model that generates "better" volatility predictions. It appears, therefore, that it can be regarded as a tool in guiding one's choice of the appropriate model for predicting future volatility, with applications in evaluating portfolios, managing financial risk and creating speculative strategies with options.

Index terms-- ARCH models, forecast volatility, model selection, predictability, correlated gamma ratio distribution.