

We propose a residual-based bootstrap method for the construction of prediction intervals and joint prediction bands for returns and volatility in ARCH( $\infty$ ) processes. The key idea is use a linear representation of ARCH( $\infty$ ) processes and to estimate the residuals and model parameters by Constrained Ordinary Least Squares. Prediction intervals and bands are obtained by resampling the residuals while keeping the observed variables fixed. We provide simulation results which demonstrate the consistency and computational efficiency of the proposed method. Exploiting similarity in the model structure, our method can be directly applied to Autoregressive Conditional Duration (ACD) models for the construction of prediction intervals and bands of future durations. The methodology is illustrated by a case study for IBM stock daily closing prices and transaction data.