

1038-62-241

Michael Levine*, Department of Statistics, Purdue University, 250 N. University St, West Lafayette, IN 47907-2067, and **Tony Li**. *The Additive-Interactive Nonlinear Arch Model and Its Estimation.*

We consider a new separable nonparametric volatility model that allows for "interactions" in both mean and volatility function. It can be described as an additive-interactive nonlinear ARCH model. The model is proposed as an alternative to the GANARCH model of Kim and Linton (2004). Unlike the GANARCH model, it does not assume known link functions. This ensures a much more data-driven model compared to GANARCH of Kim and Linton (2004) since the known link function implies known distribution of the data. In practice, the data distribution has to be selected based on the exploratory data analysis which is very difficult for multivariate data. Thus, the proposed model is much more flexible compared to GANARCH.

Instrumental variable-based estimation method for the components of the mean and volatility functions is proposed. The estimators are shown to be consistent and asymptotically normal. Explicit expressions for asymptotic means and variances of these estimators are also obtained. Several simulation experiments are conducted that show a very good performance of our algorithm for moderate sample sizes. Finally, the method is applied to the real data set of currency exchange rates where it leads to some interesting conclusions. (Received February 11, 2008)