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Steve S. Chung* (schung@csufresno.edu), Department of Mathematics, California State University, Fresno, 5245 N. Backer Ave. M/S PB 108, Fresno, CA 93740. *Conditional variance estimation using support vector machine.*

Conditional variance plays an important role in finance because it is associated with the risk. This is also called the volatility. A growing body of literature shows that risks associated with volatility are priced in stock, option, bond, and foreign exchange markets. Therefore, accurate estimation is critical in financial markets. The generalized autoregressive conditional heteroskedasticity (GARCH) has been one of the most popular models and the parameters are usually estimated from conditional maximum likelihood estimation (MLE) method. In this work, we attempt to improve the MLE-based GARCH forecast using the support vector machine (SVM). We also compare the SVM-based model with two popular asymmetric models: exponential GARCH (E-GARCH) and Glosten-Jagannathan-Runkle GARCH (GJR-GARCH). We carry out the analysis through simulations and real datasets. The results show that the SVM-based models provide better predictive potential than the existing parametric models. (Received September 22, 2017)