

Buffered Vector Error-Correction Models: An Application to the U.S. Treasury Bond Rates

Renjie Lu

Department of Statistics and Actuarial Science, The University of Hong Kong, China

Email: u3003350@connect.hku.hk

Title: Buffered Vector Error-Correction Models: An Application to the U.S. Treasury Bond Rates

Abstract: This paper extends the buffered autoregressive model to the buffered vector error-correction model (VECM). Least squares estimation and reduced-rank estimation are discussed, and the consistency of the estimators on the delay parameter and threshold parameters is derived. We also propose a supWald test for the presence of buffer-type threshold effect. Under the null hypothesis of no threshold, the supWald test statistic converges to a function of Gaussian process. A bootstrap method is proposed to obtain the p-value for the supWald test. We investigate the effectiveness of our methods by simulation studies. We apply our model to study the monthly Federal bond rates of United States. We find the evidences of buffering regimes and the asymmetric error-correction effect.