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Estimating and Testing for Functional Coefficient Quantile Cointegrating Regression

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Non-Technical Summary

- This paper proposes a generalized quantile cointegrating regressive model for nonstationary time series, allowing coefficients to be unknown functions of informative covariates at each quantile level.
- Using a local polynomial quantile regressive method, we obtain the estimator for the functional coefficients at each quantile level, which is shown to be nonparametrically super-consistent.
- To alleviate the endogeneity of the model, this paper proposes a fully modified local polynomial quantile cointegrating regressive estimator which is shown to follow a mixed normal distribution asymptotically.
- We then propose two types of test statistics related to functional coefficient quantile cointegrating model.
- The first is to test the stability of the cointegrating vector to determine whether the conventional fixed-coefficient cointegration model is appropriate or not.
- The second is to test the presence of the varying coefficient cointegrating relationship among the economic variables based on a modified quantile residual cumulative sum (MQCS) statistic. Monte Carlo simulation results show that the two tests perform quite well in finite samples.
- Finally, by using the proposed functional coefficient quantile cointegrating model, this paper examines the validity of the purchasing power parity (PPP) theory between China, Japan, South Korea and the United States, respectively.

You can read the full paper here.