

**PARAMETRIC ESTIMATION OF VALUE AT RISK USING  
AUTOREGRESSIVE PROCESS**

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## ABSTRACT

Quantile regression, as introduced in Koenker and Bassett (1978), is gradually emerging as a comprehensive approach to the econometric analysis. Regression quantiles extend the concepts of quantile in a location model to regression analysis and extract the information from whole conditional distributions of model parameters. Instead of the exclusive focus of least-square-based methods on the estimation of conditional mean function, quantile regression estimators are based on asymmetric loss function.

We obtained the parametric conditional quantiles by minimizing the objective function. It is established that the minimum of the objective function exists and is unique and the estimator converges in probability to the true function. The quantile regression function estimator obtained is shown to be consistent and asymptotically normal using results from Fitzenberger (1997).

The consistent estimator obtained is then applied to CBK Foreign Exchange data to estimate VaR at both 0.95 and 0.99 confidence levels. In order to verify the correctness of a model, one relies on a backtesting, a method in which the data point predicted by an internal model is compared to the actual data point by going back in time and re-checking earlier predictions. Kupiec's test is then used to validate the mode