

GENERALIZED QUASI-LIKELIHOOD RATIO  
TESTS FOR VARYING COEFFICIENT QUANTILE  
REGRESSION MODELS

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**Abstract**

Quantile regression models which can track the relationship of predictive variables and the response variable in specific quantiles are especially useful in applications when extreme quantiles instead of the center of the distribution are interesting. In this dissertation, my aim is to propose a new test procedure, termed as generalized quasi-likelihood (GQLR) test, to test whether all or partial coefficients are indeed constant or of some specific functions for the varying coefficient quantile regression models. The test statistics are constructed based on the comparison of the quasi-likelihood functions under null and alternative hypotheses. The asymptotic distributions of the proposed test statistics are also derived upon the Bahadur representation of the estimators. To exam the finite sample performance of all test statistics, Monte Carlo simulation studies are conducted respectively. I also apply the proposed methodologies to test if the existing models in the literature used to analyze the Boston house price data are appropriate or not. The simulation results and the real example illustrate the effectiveness and practical usefulness of the proposed test statistics.