# Generalized Quasi-likelihood Ratio Statistics for Multivariate Time-varying Coefficient Regression Models

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Preprint no. 2013-09

**Abstract**

In this dissertation, some new test procedures, called the generalized quasi-likelihood ratio test, are proposed to test some hypotheses for multivariate time-varying coefficient regression model for time series data, such as testing whether coefficients are indeed time-varying or of some specific functional form.

First of all, local linear technique is used to estimate the nonparametric coefficient functions and derive the explicit representation of the estimators. The theoretical asymptotic distribution of the estimators derived in the dissertation is also developed.

Secondly, the new test statistics is proposed, which is built based on the comparison of the quasi-likelihood under between null and alternative hypotheses. The theoretical asymptotic null and alternative distributions are given. The Monte Carlo simulations are conducted to illustrate the power of the proposed test procedure and an application to a real data set is presented as well.

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