A NEW INSTRUMENTAL VARIABLE ESTIMATION FOR DIFFUSION PROCESSES*

Beong Soo So

Department of Statistics, Ewha Womans University, Seoul 120-750, Korea

Abstract. We consider the problem of parametric inference from continuous sample paths of the diffusion processes $\{x(t)\}$ generated by the system of possibly non-stationary and/or nonlinear Ito stochastic differential equations. We propose a new instrumental variable estimator of the parameter whose pivotal statistic has a Gaussian distribution for all possible values of parameter. The new estimator enables us to construct exact level-α confidence intervals and tests for the parameter in the possibly non-stationary and/or nonlinear diffusion processes. Applications to several non-stationary and/or nonlinear diffusion processes are considered as examples.

Key words and phrases: Non-stationary nonlinear diffusion, instrumental variable estimator.