Nonstationary Choice

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Some recent work on the development of a limit theory for nonlinear functions of integrated processes will be discussed. In such cases, the conventional application of functional limit laws and continuous maps fails and a new approach is needed. A prototypical application of the theory that is important in economics arises in the case of binary choice modeling when the covariates are nonstationary. An apparently new phenomenon arises in this application where the limit theory for the estimated coefficients is a mixture of two components which have $n^{3/4}$ and $n^{1/4}$ convergence rates. The limit distribution of the ML estimator is mixed normal with a mixing variate that is dependent upon Brownian local time as well as Brownian motion.

The sample proportion of binary choices turns out to follow an arc sine law, an outcome which has implications for policy decision making that involves binary choices and where the decisions depend on economic fundamentals that involve stochastic trends. The limit theory shows that, in such conditions, policy is likely to manifest streams of little intervention or intensive intervention.