Hypothesis testing for Fisher-Snedecor diffusion

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Abstract

We consider the problem of testing the hypothesis on marginal distribution of ergodic diffusion with Fisher-Snedecor invariant distribution, to be called Fisher-Snedecor diffusion. We propose a GMM approach to testing this statistical hypothesis where the moment condition is based on eigenfunctions of the diffusion infinitesimal generator - Fisher-Snedecor polynomials. Statistical test is observed in two different settings: 1) for known values of parameters of the process; 2) for consistent moment based estimators of parameters. Results are illustrated in a short simulation study.

Keywords

Diffusion process, Fisher-Snedecor polynomials, Generalized method of moments, Hansen-Scheinkman moment condition, Stein equation, Transition density.

MSC

60J60, 62M02, 62M05, 62M15.

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Testiranje hipoteza za Fisher-Snedecorovu difuziju

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Abstract

Analiziran je problem testiranja hipoteze o marginalnoj distribuciji ergodične difuzije s Fisher-Snedecorovom invarijantnom distribucijom. Postupak testiranja temeljen je na uvjetu danom u terminima matematičkog očekivanja slučajnih varijabli iz promtranog procesa transformiranih svojstvenim funkcijama infinitezimalnog generatora difuzije - Fisher-Snedecorovim polinomima. Testiranje ove statističke hipoteze promatrano je u dva slučaja - 1) za poznate vrijednosti parametara procesa; 2) za konzistentne procjenitelje nepoznatih parametara procesa dobivene metodom momenata. Rezultati analize su prikazani kratkom simulacijskom studijom.

Keywords

Difuzijski proces, Fisher-Snedecorovi polinomi, Generalizirana metoda momenata, Hansen-Scheinkmanov momentni uvjet, Steinova jednadžba, Prijelazna funkcija gustoće.

MSC

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