Asymptotic distribution of the delay time in Page's sequential procedure

Stefan Fremdt

CUSUM procedures have been proposed in the change-point literature in a variety of time series settings and the asymptotic normality of the corresponding stopping time was proven in several of these models. One drawback of the aforementioned procedures that is also reflected in the results on the stopping times is the dependence of their performance on relatively early change-points. We will therefore provide the asymptotic distribution of the stopping time of Page's CUSUM procedure in a time series regression model, quantifying that this procedure depends less on the (early) time of change than ordinary CUSUM procedures. The properties of this limiting distribution are then illustrated by the results of a small simulation study.