

Local kernel Density Estimation from Time Series Data

Abstract:

A probability density function, or the corresponding cumulative distribution function, may be estimated nonparametrically by using a kernel and weighting the observations using schemes derived from time series modelling. The parameters may be estimated by maximum likelihood and diagnostic checks may be carried out directly on residuals given by the predictive cumulative distribution function. The issue of bandwidth selection is investigated. Since tracking the distribution is only viable if it changes relatively slowly, the technique may need to be combined with filter for scale and/or location. The methods are applied to data on General Motors, NASDAQ and the Hong Kong stock market index.