

Title:

Using Linear Smoothers to Assess the Structural Dimension of Regressions

Author(s):

Efstathia Bura

Technical Report number (Dept. of Statistics, Stanford Univ.):

2001-27

Date:

October 2001

Abstract:

Sliced Inverse Regression (Li, 1991) is a simple nonparametric estimation method of the *structural dimension* of a regression; that is, of the dimension of the linear subspace spanned by projections of the multidimensional regressor vector \mathbf{X} , that contains part or all of the modelling information for the regression of a random variable Y on \mathbf{X} . In this paper, the nonparametric estimation method is extended to include the family of linear smoothers. No restrictions are placed on the distribution of the regressors except for the *linearity condition* and existence of second moments. An asymptotic chi-square test for dimension is obtained. The theoretical results are illustrated with a small comparative simulation study.