Sieve Wald and QLR Inferences on Semi/nonparametric Conditional Moment Models
Monte Carlo Simulation Documentation

Xiaohong Chen (Yale) and Demian Pouzo (UC Berkeley)
with the R code kindly written by Yinjia (Jeff) Qiu (Yale)

October 22, 2014

Contents

1 Sieve_Functional_Space_Basis.R

This R file contains a list of functions that take an $n \times 1$ vector X, and generate an $n \times B$ matrix of the specified basis for the functional of X. It also contains functions that generate an $n \times B$ matrix of the first or second derivative of the specified basis of X. Below is a list of basis functions that this file can generate:

i Polynomial,

ii Polynomial Spline,

iii Cosine,

iv Sine,

v Trigonometric,

vi Hermite Polynomial,

vii Laguerre Polynomial.

Please read the section 2.1 of Chen (2007) in the Handbook of Econometrics vol 6B for the detailed definitions of these bases. Precise comments are written for each function in the R file.[1]

2 Chen_Pouzo_NPIV.R

This R code runs the NPIV Monte Carlo studies corresponding to the ones described in Section 7.1 of the paper. Given the sieve bases for the unknown function h and the conditional mean functional m, this code generates Tables 7.2 and 7.3 in the paper. It also generates the QQ plot in Figure 7.2.

3 Chen_Pouzo_NPQIV.R

This R code runs the NPQIV Monte Carlo studies corresponding to the ones described in Section 7.1 of the paper. Given the sieve bases for the unknown function h and the conditional mean functional m, this code generates Table 7.1 in the paper.

[1] In the paper, J_n and K_n are the smoothing parameters. Please read the code on how to set J_n and K_n for different basis. For example, if the researcher wants to approximate the unknown structural function h by a cubic spline with two knots then $K_n = 6$.

4 Chen_Pouzo_Bootstrap_NPQIV.R

This R code computes the bootstrapped SQLR for the NPQIV model and outputs the empirical chi square distribution under $h(0) = 0$. This result is not reported in Section 7 of the paper.

5 Chen_Pouzo_Power_Curve.R

This R code takes the pre-specified bases for the unknown function h and the conditional mean functional m to generate the Bootstrap SQLR statistics for the NPQIV. It produces the power curve for the bootstrap and non-bootstrap SQLR as outputs (see, e.g., Figure 7.1 in the paper).