HSE and University of London Double Degree Programme in Data Science and Business Analytics

Elements of Econometrics, 2023-2024

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Class 17: Autocorrelation

Problem 1

(i) Explain how autocorrelation of the first order is defined. And what about autocorrelation of the second order? Is some sense in the autocorrelation of the higher order

(ii) How autocorrelation is detected

Problem 2

How specification errors can cause autocorrelation? How to distinguish between true and false autocorrelation?

Problem 3

What are symptoms and consequences of the autocorrelation when estimating regressions? Illustrate topics discussed in Problem 1 and Problem 2 using regression of the expenditures on clothes (CLOT) and houses (HOUS) on disposable personal income (DPI).

Problem 4

(i) Explain the idea of Durbin-Watson test

(ii) Derive the asymptotics of Durbin-Watson test statistic

Problem 5

(i) Explain the idea of Breush-Godfrey test

(ii) What are the advantages and disadvantages of DW and BG tests?

Problem 6

How to evaluate auteregression coefficient? What are the problems connected with this?

Problem 7

Explain the difference between regression with ARMA errors, ARIMAX and ARDL models