

The International College of Economics and Finance.

Elements of Econometrics. 2021-2022.

Class 19. AR, MA and Common Factor Test.

Problem 1. (Theoretical exercise). Explain why better specification could help to get rid of autocorrelation?

Problem 2. (Practice exercise). Illustrate the improving specification as tool for fighting symptoms and consequences of the autocorrelation using regression of the expenditures on cosmetics (COSM) on disposable personal income (DPI) and cosmetic prices (PCOSM and PRELCOSM) – file **EXPEND.WF1**. Use DW tables to test for autocorrelation.

Problem 3. (Theoretical exercise). Explain what is autoregressive transformation AR(1). How to apply iterative autoregressive transformation (C-O regression of GLS)?

Problem 4. (Practice exercise). Illustrate topics discussed in Problem 3 using regression of the expenditures on cosmetics (CLOT) on disposable personal income (DPI) and cosmetic prices. Use DW tables to test for autocorrelation.

Problem 5. (Theoretical exercise). What is autocorrelation of the moving average type?

Problem 6. (Theoretical exercise). What is moving average transformation MA(1)? How it works in case of MA(1) type of autocorrelation?

Problem 7. (Practical exercise). Illustrate using moving average transformation MA(1) and combined AR(1) and MA(1) approach to fight with autocorrelation using regressions mentioned above.

Problem 8. (Theoretical exercise). Explain how including lagged dependent variable ADL(1,0) could help in case of autocorrelation.

Problem 9. (Practical exercise). Illustrate topics in problem 8. Use h-test for autocorrelation.

Problem 10. (Theoretical exercise). Explain how ADL(1,1) model could help in case of autocorrelation. How it is connected with Common Factor Test?

Problem 11. (Practical exercise). Illustrate Common Factor Test for simple linear regression

Problem 12. (Practical exercise). Illustrate Common Factor Test for multiple linear regression

Problem 13. (UoL Exam). Describe the Cochrane-Orcutt procedure in detail. Should the Cochrane-Orcutt procedure always be used when a statistical test establishes that serial correlation is present in the residuals of a least squares regression?

Denoting aggregate consumer expenditure on personal business services y , aggregate disposable personal income x , and a relative price index for personal business services p , the following regressions were fitted using annual data for the United States for the period 1959-1994 (standard errors in parentheses):

(b) Show that using some iterative process similar iterative autoregressive transformation it is possible to get rid of autocorrelation, or at least to mitigate its consequences.