

Elements of Econometrics, 2023-2024

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Class 19: Simultaneous equation modelling

Problem 1

Consider this model, the equation

$$C_t = \alpha + \beta Y_t + \varepsilon_t,$$

where C_t is real consumption per capita; Y_t - real income per capita; ε_t - random error,
is complemented by the ratio

$$Y_t = C_t + I_t,$$

where I_t is real investment per capita.

This leads to the system of equations

$$\begin{cases} C_t = \alpha + \beta Y_t + \varepsilon_t \\ Y_t = C_t + I_t \end{cases}$$

Problem 2

Are systems identified?

a)

$$\begin{cases} Q_t = a_0 + a_1 P_t + a_2 Y_t + u_t \\ Q_t = b_0 + b_1 P_t + b_2 R_t + v_t \end{cases}$$

b)

$$\begin{cases} Q_t = a_0 + a_1 P_t + u_t \\ Q_t = b_0 + b_1 P_t + b_2 R_t + b_3 S_t + v_t \end{cases}$$