ETF5200 Applied time series econometrics

Project 2

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Part I

Personal capita consumption and income data are more likely to be inter-dependent dynamically, therefore vector autoregressive model (VAR) will be used to study their behavior in this project.

Question 1

We start with checking the time plots of these two series, which are shown in figure 1. We can see the increasing time trend clearly. So since we want to fit a VAR(2) model, the interested model form is as below:

$$Y_t = \Gamma\nu_t + A_1 Y_{t-1} + A_2 Y_{t-2} + \epsilon_t$$

where

$$Y_t = \begin{pmatrix} Consumption_t \\ Income_t \end{pmatrix} \quad \nu_t = \begin{pmatrix} 1 \\ time \end{pmatrix} \quad \epsilon_t = \begin{pmatrix} \epsilon_{1t} \\ \epsilon_{2t} \end{pmatrix}$$

and Γ, A_1, A_2 are coefficient matrices. First we want to estimate the intercept vector (ν) and the coefficient matrices (A_1 and A_2) for the VAR(2) model.

Table 1: Coefficient matrix A1

	Consumption lag 1	Income lag 1
Consumption	1.1360223	0.0933692
Income	0.7996653	1.1131855

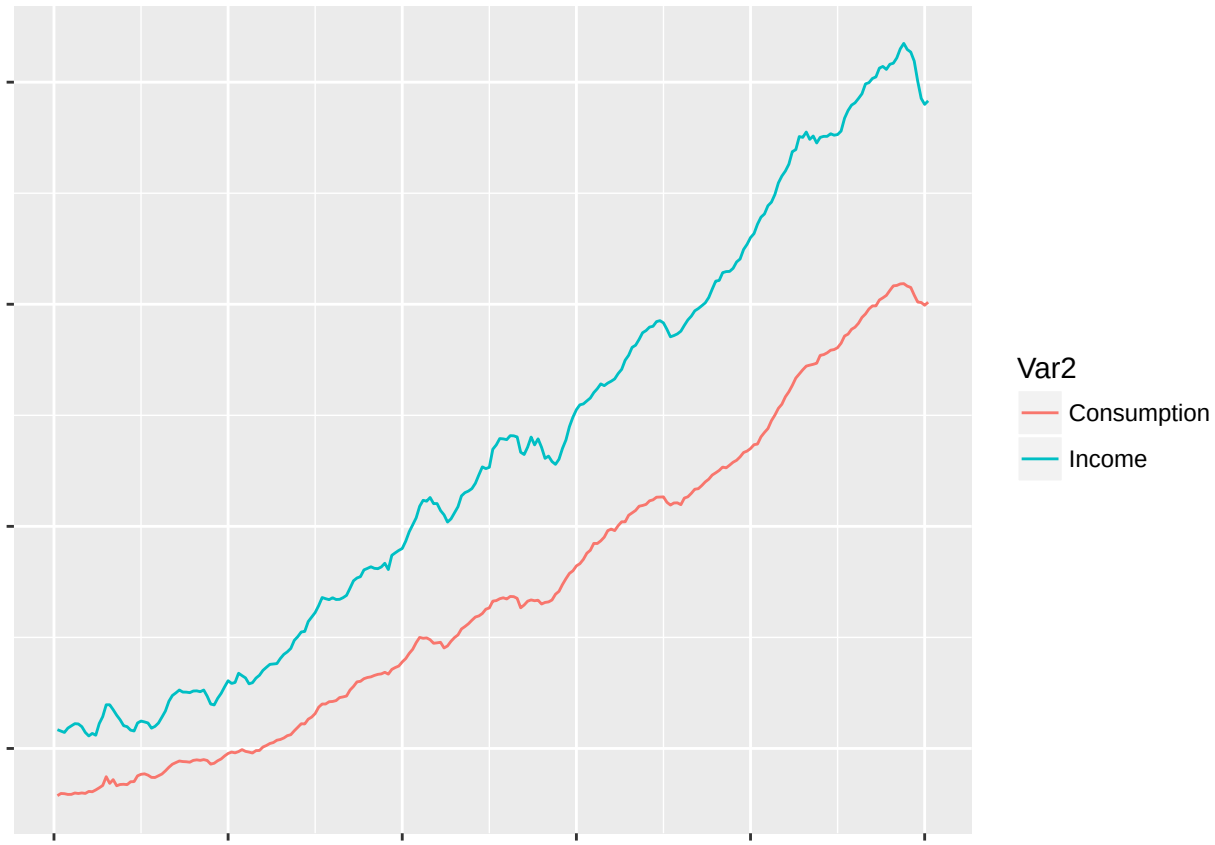

Figure 1: Time plots of personal capita consumption and income shows clear trend.

Table 2: Coefficient matrix A2

	Consumption lag 2	Income lag 2
Consumption	-0.1383776	-0.1020669
Income	-0.7390285	-0.1850136

	Intercept	Trend
Consumption	0.099878535	0.001649501
Income	0.211463502	0.003618762