Σχολή Επιστημών Οικονομίας και Δημόσιας Διοίκησης
Τμήμα Οικονομικής και Περιφερειακής Ανάπτυξης

PANTEION UNIVERSITY
OF SOCIAL AND POLITICAL SCIENCES

ASSIGNMENT 01
Quantitative Methods in Applied Economics
Submission Deadline: 13 December 2023, Time 23:59
Submission: bampinasg@gmail.com
Assignment Type: Personal

Prepare answers for the following questions and submit the word and gretl session documents including your answers to the email given above.

Download from *yahoo finance*(or other source) two end of month stock prices and the market index (S&P500), for a period between 2000-2015 (about 15 years).

1. Provide the descriptive statistics of the log returns of the series and test the series for normality. Comment on your findings.
2. Estimate the correlation (matrix) for all stocks with the market (S&P500). Comment on your findings.
3. Create seasonal dummy variables for each month and for each stock estimate the following model using January as base variable:

$$return_{stock} = B_1 + B_2 D_2 + B_3 D_3 + B_4 D_4 + B_5 D_5 + B_6 D_6 + B_7 D_7 + B_8 D_8$$
$$+ B_9 D_9 + B_{10} D_{10} + B_{11} D_{11} + B_{12} D_{12} + \varepsilon_t$$

where D_2 takes the value 1 in February and zero otherwise, D_3 takes the value 1 in March and zero otherwise, D_4 takes the value 1 in April and zero otherwise and so on. Interpret the results.

4. Re-estimate the above equation without the constant term and twelve dummy variables. Interpret the results.

5. Are the January mean returns higher than the mean returns of the other months? If yes, how can we interpret this phenomenon?

6. Is the above estimated regression significant? (Perform the F-test)
7. For each stock–market index pair perform the Chow test for parameter stability for the date around the 2007-2008 global financial crisis.

Note that you have run the equation $R_{s,t} = a + \beta_{i,t} \left(R_{S\&P500,t} \right) + \varepsilon_{i,t}$

8. In the above equation for each stock-market index pair examine the restriction that $\beta=1$. What may you infer?