

AFE6019-B Econometrics

Coursework 2: Individual project

Submission deadline: 3pm, 17 January 2022

Word limits: Up to 3000 words

Weighting: 60%

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1. You should provide answers to ALL the questions. Your coursework should make use of appropriate academic literature and statistical software. You should also provide necessary references of your research work.
 2. Your name and UB number should be on the cover of your report.
 3. You are advised to plan your work carefully and back-up your work. Computing problems will NOT be accepted as reasons for non-submission.
 4. Word count excludes title cover, tables, figures, and appendices where applicable.

5. Tables and figures:

- 5.1 Tables and figures must be numbered consecutively in order of appearance within the report.
- 5.2 Each table and figure should be given an appropriate title, which is mandatory. Add note(s) below to the table(s) where applicable.
- 5.3 Tables and figures should be cited in the relevant text by using sentences such as “Table 1 reports. .” or “Figure 1 shows . . .”.
- 5.4 Failing to meet the requirements for tables and figures will be penalized.

Marking criteria:

Your research report should illustrate your level of understanding on theoretical and empirical linkages and data analysis. The report will be assessed mainly using following criteria:

1. Clarity in presentation and use of data
2. Depth of subject knowledge
3. Rigour and evaluation

Assessment will be marked against the University of Bradford undergraduate marking scheme which is provided in the module handbook.

Each student should collect data on variables for a **minimum of 35 observations**-more the better. You are required to collect data from world Bank source. The data is available at the World Bank – **World Development Indicators (WDI)**:<https://databank.worldbank.org/source/world-development-indicators>

Each student should choose his/her own time series data from WDI and should not share that selected data with others. This is not a group exercise.

Q1. Obtain a time-series of minimum of 35 observations, for three variables of your own choice of country from world development indicators (**WDI**) **data source**. However, the choice of variables should be guided by an economic model from Macroeconomics. These variables should be representing an economic model where one variable (Y) is deemed to be dependent on the others (X s are independent variables). Provide full sources and definitions for those series.

(10 marks)

Q2. Produce (separate) time-series graphs of these variables in levels and in first differences. Examine these graphs for evidence of drift (trend) or unit roots.

(5 marks)

Q3. Write down fully an estimating equation which represents your underlying economic model (Hint: it may be easier to use natural logs) in the form:

$$\ln Y_t = \beta_0 + \beta_1 \ln X_{1t} + \beta_2 \ln X_{2t} + u_t \quad (1)$$

where t is the time subscript, and u is the disturbance term.

(5 marks)

Q4. Perform appropriate tests for the presence of a unit root in each of the three series and comment on the findings.

(15 marks)

Q5. Estimate your model by OLS and use this to perform a test for cointegration (Do **NOT** provide a discussion of the standard significance tests for this model) **(20 marks)**

Q6. Compute the first difference for each time series. Perform appropriate tests for the presence of a unit root in each of the three series in the first differences and comment on the findings. Estimate your model in the first differences:

$$\Delta \ln Y_t = \beta_0 + \beta_1 \Delta \ln X_{1t} + \beta_2 \Delta \ln X_{2t} + \varepsilon_t \quad (2)$$

(20 marks)

Q7. Given your answers in Q4-Q6, explain whether Model (1) or Model (2) is more appropriate. Discuss the findings in your preferred equation with respect to the sign, size and statistical significance of the individual coefficients and the overall performance of the model represented by your chosen equation.

(25 marks)

