

ECON8015
2020
ASSIGNMENT/PROJECT
Due: Monday, November 16 by 7am

LATE ASSIGNMENTS WILL BE PENALISED:

No extensions will be granted. There will be a deduction of 10% of the total available marks made from the total awarded mark for each 24 hour period or part thereof that the submission is late (for example, 25 hours late in submission incurs a 20% penalty). Late submissions will be accepted up to 96 hours after the due date and time. This penalty does not apply for penalty does not apply for cases in which an application for Special Consideration is made and approved. Note: Applications for Special Consideration must be made within 5 (five) business days of the due date and time.

You will need to submit your assignment to “Turn-it-in” (via iLearn) under the Assignment banner.

- In this assessment students will submit a written document. This is to be completed as an individual piece of work.
- The assignment should be typed with the main tables, charts and results presented throughout the assignment to highlight your responses to the assignment questions. Marks will be deducted for assignments that are badly presented or hard to read.
- Insert the **relevant** part of the Eviews (or any other software) output to each question. The Eviews commands you used should also be explained carefully.
- The assignment is worth 34% of the course grade.
- In addition to submitting your written assignment, you must also submit, as separate files, the Eviews program that you wrote, the data file read into Eviews in Excel format and a text file containing the output of the program. Your Eviews program should be commented, and you should use names for objects that help the marker understand your program. The files that you submit will not be individually marked but may be used by the marker to understand your written assignment better. If you do not submit these files, or if they are incomplete, you may be marked down.
- To submit your assignment and your computer files, find the two relevant links on the homepage under the Assignment 3 ECON8015/7015 banner and follow the instructions therein.

Part I

(35 marks)

Acemoglu et al. (2005) investigate whether education promotes democracy. Arguments in the literature are based on the assumption that education broadens one's outlook and increases the ability to make rational electoral choices.

In this study you will use two measures of democracy. The first one is the Freedom House Political Rights Index (**FHP**). This index is based on the political rights for individuals in a country (free and fair elections, whether those who are elected rule, whether there are competitive parties or other political groupings, whether the opposition plays an important role and has actual power, and whether minority groups have reasonable self-government or can participate in the government through informal consensus). It is transformed to lie between 0 and 1. The value 1 corresponds to the most democratic set of institutions. The second index is the Polity IV (**Polity4**) index. The Polity Democracy Index ranges from zero to ten and is derived from coding the competitiveness of political participation, the openness and competitiveness of executive recruitment, and constraints on the chief executive. To facilitate comparison with the Freedom House score, we normalize the composite Polity index to lie between zero and one.

You are also given the countries PPP GDP per capita in log (**lrgdp**) and education as average total years of schooling in the population age 25 years and over (**educ**).

The data file DEMO_8015.xlsx includes data on 60 countries for the sample period 1960–2000 and each observation corresponds to five-year intervals.

We consider the following econometric model:

$$d_{it} = \beta_{1i} + \gamma_t + \beta_2 d_{i,t-1} + \beta_3 educ_{it} + e_{it} \quad (1)$$

where d_{it} is the democracy score of country i in period t .

1. Graph the two democracy series on different graphs using the individual cross sectional unit option.

Comment on the graphs.
(5 marks)

2. Using FHP as the democracy index estimate equation (1) using FE (both cross-sections and periods) and 2SLS (use the following instruments $educ(-1$ to $-2)$ and $lrgdp(-1$ to $-2)$ @EXPAND(@YEAR,@DROPFIRST) C for 2SLS).

Comment on the results.
(10 marks)

3. Estimate equation (1) using FHP as the democracy index and Arellano-Bond. Use the following instruments: @DYN(FHP,-2) @DYN(EDUC, -2) @DYN(LRGDP,-2) @LEV(@EXPAND(@YEAR,@DROPFIRST)).

Comment on the results.

(10 marks)

4. Estimate equation (1) using Polity4 as the democracy index and Arellano-Bond. Use the following instruments: @DYN(Polity4,-2) @DYN(EDUC,-2) @DYN(LRGDP,-2) @LEV((@EXPAND(@YEAR,@DROPFIRST)).

Comment on the results.

(10 marks)

Acemoglu, D., Johnson, S., Robinson, J. A. and Yared, P. (2008), Income and Democracy, *American Economic Review*, 98:3, 808–842

Part II

(35 marks)

Long run relationship between energy consumption and GDP

Basic Concepts

In this assignment you will investigate the long run relationship between energy consumption and GDP in Asia over the last four decades. Twenty Asian countries including Australia, Bangladesh, People's Republic of China, Hong Kong, India, Indonesia, Japan, Korea, Malaysia, Nepal, New Zealand, Pakistan, Singapore, Chinese Taipei, Thailand, Vietnam, Philippines, Myanmar, Democratic People's Republic of Korea, Brunei Darussalam have been selected. These Asian economies represent a dynamic, diverse, and interesting set of countries and exhibit a wide range of growth patterns in both energy consumption and the GDPs produced.

Over the past several decades we have observed significant changes in energy consumption and income (GDP) characteristics of these 20 Asian countries. Individual country changes have not occurred in a vacuum. These changes have occurred within the context of changing regional and world energy consumption patterns.

You are asked to apply panel unit roots and panel cointegration techniques to study the relationships between per capita GDP (GDP-PC) and per capita total final consumption (TFC) of energy. In the cross-section dimension the panel includes the 20 economies across Asia, and in the time series dimension it ranges over the 46-year period from 1971 to 2016. You will need to take the logs of those variables.

The data file is TFC_GDP_8015.xlsx. The annual data are drawn from the IEA and OECD online databases: GDP (billion 2010 USD using PPPs), TFC (mtoe, Million Tonnes of Oil Equivalent), Population (millions).

1. Graph the two series, $\log(\text{GDP}/\text{Population})$ (LGDP/PC) and $\log(\text{TFC}/\text{Population})$ (LTFC/PC) on the same graph using the Individual cross sectional unit option. LGDP/PC should be on the left axis and LTFC/PC on the right axis.

Do the series appear to move together? Comment on the relationship between these two variables during the sample period.

(5 marks)

2. Test whether the two series are $I(1)$ using panel unit root tests.

(10 marks)

3. Test whether those two series are cointegrated using LTFC/PC as the dependent variable. Use the Pedroni test for cointegration.

(10 Marks)

4. Whether or not you found cointegration, estimate the cointegrating relationship using Panel DOLS. Comment on the results.

(10 marks)