Coursework
INDUSTRIAL ORGANISATION MODULE

- Maximum 9 pages in total
- Answer **ALL** questions from both sections

Section A: ALL questions in Section A should be answered, to total 100 marks.

Question 1

Use the data Arrest.dta to respond the following equations:

1.1. Consider this study of crime rate in the US represented by the model below:

$$crime_i = \beta_0 + \beta_1 \log educ\ av_i + \beta_2 Black\ male_i + \beta_3 age\ range_i + \beta_4 FBI\ offence_i + e_i \quad (1)$$

(a) Estimate the model 1, using OLS (with standard errors clustered at the State level - variable *State*). Could we argue that educm is an endogenous regressor? Why? (**the data can be downloaded from Learn: "arrest.dta"**) [20 marks]

(b) Discuss the possible endogeneity of the other control variables. [10 marks]

1.2 . Consider the variable *dropm*. It is the percent of high school drop-out in the State.

(a) Argue about the validity of $dropm_i$ as a possible instrument for $educm_i$. Discuss its exogeneity [10 marks]

(b) Produce your own two stage least squares estimator of the coefficient β_1 using $dropm_i$ as an instrument for log-prices. (You can use thecommand *ivregress 2sls* or *ivreg2*). Interpret the results. [20 marks]

(c) Compare IV and OLS results [10 marks]

(d) Now consider the variable $work\_age$: the minimum allowed working age in State i. *Discuss the validity as instrument and report and discuss the results. Compare with previous instrument. Which IV would you choose?* [30 marks]

Section B: ALL questions in Section B should be answered, to total 100 marks.

Question 2:

Background:

Aggregate shocks may have important effects on the economy. In 2016 the UK has voted to leave the EU and this has had important implications on firms and industries in the UK. This has led to a policy change globally –i.e. in the EU- and particularly in the United Kingdom. This has meant increased uncertainties on businesses and across industries. This inevitable has had some consequences on the UK trade. You are hired by a company as an Analyst to evaluate how Brexit has affected the overall effect of aggregate trade and across industries. Here we would like to provide new evidence on the effect of Brexit shock into trade values. This particularly relevant as one of the major concerns of businesses affected by this shock is the financial impact in terms of their trade competitiveness. This is because trade links with overseas partners that have been disrupted.

Questions: As a data analyst, you are going to use relevant data to estimate how Brexit shock affected the aggregate UK trade so as to help design effective regulatory policies. Notice that we are interested on HOW the trade value changes with respect to the **Event** (Brexit shock).

a. What're the main concerns that might cause a biased estimation if we run a simple regression? And write down your model.
[30 marks]

b. If the government wants to implement some policy against Brexit shock to support the economy how we could conduct a causal inference about how the shock affected the aggregate trade value?; which study method (DiD, IV, RDD, and etc.) are you going to use, explain the reasons and limitation. And write down your model.
[30 marks]

c. If the government want to investigate the effect on different sectors which study method (DiD, IV, RDD, and etc.) are you going to use, explain the reasons and describe how you are going to proceed with the analysis. And write down your model.
[40 marks]

[Section B total: 100 marks]
[Total: 200 marks]