Ref EX/PG/Eco/ 23/2018

Master of Arts Examination 2018
(1st year, 2nd Semester)
Economics
Econometrics II

Time 2 hours Full marks 30

1. Consider a model for new capital investment in a particular industry (say, manufacturing), where the cross section observations are at the county level and there are T years of data for each county:

$\text{Log(invest}_{it}) = = \theta_t + \gamma z_{it} + \delta_1 tax_{it} + \delta_2 disaster_{it} + c_i + u_{it}$

The variable tax_{it} is a measure of the marginal tax rate on capital in the county, and $disaster_{it}$ is a dummy indicator equal to one if there was a significant natural disaster in county i at time period t (for example, a major flood, a hurricane, or an earthquake).
The variables in Z_{it} are other factors affecting capital investment, and the Y_t represent different time intercepts.
a. What kinds of variables are captured in c_i?
b. Interpreting the equation in a causal fashion, what sign does economic reasoning suggest for δ_1 ?
c. Explain in detail how you would estimate this model; be specific about the assumptions you are making. [3+2+10]

or.

2.a. Suppose that annual earnings and alcohol consumption are determined by the Simultaneous Equation Model (SEM)

$\log(earnings) = \beta_0 + \beta_1 alchohol + \beta_2 education + u_1$

$alchohol = \gamma_0 + \gamma_1 \log(earnings) + \gamma_2 education + \gamma_3 \log(price) + u_2$

where *price* is a local price index for alcohol, which includes state and local taxes. Assume that *education* and *price* are exogenous. If $\beta_1, \beta_2, \gamma_1, \gamma_2, \gamma_3$ are all different from zero, which equation is identified?

[Turn over

b. Explain in detail how would you estimate the structural form parameters of a simultaneous equation system using the three stage least square (3SLS) method. Are the 3SLS estimates consistent? [5+6+4]

3. (a) Characterize ARMA and ARIMA processes and distinguish between them.

(b) Describe Box Jenkins method of time series model building highlighting its usefulness.

(b) Explain Trend Stationary Process (TSP) and Difference Stationary Process(DSP) and distinguish between them.

[5+5+5]

Or,

4 (a) Construct a suitable model satisfying the properties of seemingly unrelated regression equation (SURE) highlighting the basic assumptions

(b) Derive the conditions under which OLS estimator will be equal to SURE estimator.

[5+10]