UNIVERSITY OF COLOMBO

FACULTY OF ARTS

FOURTH YEAR EXAMINATION IN ARTS (ECONOMICS) -2018

END OF SECOND SEMESTER

ECN 4274: ECONOMETRIC APPLICATION

TIME ALLOCATED: TWO (02) HOURS ONLY

ANSWER (03 QUESTIONS ONLY

1.

(a) Discuss the advantages and disadvantages of Linear Probability model.

(05 Marks)

(b) Briefly derive the Maximum Likelihood estimator of Bivariate LOGIT model mathematically.

(10 Marks)

(c) What are the key properties of the LOGIT model as against the linear probability model?

(05 Marks)

2.

(a) Fill the following table

Econometric issue	***Consequences***	***Diagnostic test(s)***	***Remedial procedures***
Endogeniety			
Omitted variable bias			
Heteroskedasticity			
Autocorrelation			
Multicolinearity			

(15 Marks)

(b) Discuss the theoretical framework of the Mincerian Earnings equation.

(05 Marks)

3.

A researcher examined the factors that influence whether a farmer defaults on a crop-farming loan. Below is a summary of 3 LOGIT models that he estimated where the dependent variable is one if the farmer defaults on the loan and is zero otherwise. Farmer status is a dummy that equals one if the farmer is irrigated agricultural area; education is a dummy that equals one if the farmer completed at least 10 years of schooling. The other variable names are sufficiently descriptive for your task here. Note the regression models also include district dummies. Also, K is the number of explanatory variables in the specification, and log (L) is the log of the likelihood function.

Dependent Variable: Farmer's default on Crop-Farming Loan

Variable	(1)	(2)	(3)
Constant	-0.608	-1.005	-1.146
	(-5.587)	(-1.942)	(-3.915)
Farmer status	-0.259	-0.203	-0.258
	(-2.251)	(-1.701)	(-2.217)
Education	-0.943	-1.021	-1.035
	(-3.724)	(9.249)	(-8.532)
Income level	-0.016	-0.017	-0.017
	(-3.724)	(-3.785)	(-3.806)
Race (1=Sinhala)	0.902	0.820	0.857
	(7.865)	(5.733)	(6.875)
Gender (1=Female)	-	-0.057	-0.078
		(-0.602)	(-0.196)
Loan amount	-	-	0.024
			(1.978)
District dummies (24)	No	yes	yes

Note t-values are given in parentheses and 'yes' indicates the district dummies are included into the model.

(a) Interpret the estimated results highlighting underlying economic theoretical reasoning.

(10 Marks)

(b) Using specification (3), estimate the probability of default on crop-farming loan for a farmer who has schooled more than 10 years, farming in irrigated area, whose race is not Sinhala, and whose monthly income is Rs. 40,000.

(05 Marks)

(c) For the farmer described in (b), what is the marginal effect of an extra Rs. 10,000 of income on the probability of default?

(05 Marks)

4.

(a) Discuss what additional information a researcher could derive by applying multinomial logistic regression framework instead of simple binary LOGIT model?

(05 Marks)

(b) Table 3 reproduced a part of the Multinomial Regression results from Tingum (2016), "*Female Labour Force Participation and Sectoral Choices for Females in Cameroonian Labor Market*".

Table 3: Multinomial Logit estimates of choice of employment sectors by females (Agricultural sector is the base category)

	(2)	(3)	(4)
Variables	Industrial	Commerce	Services
age	0.107***	0.0278	0.0629***
	(0.0358)	(0.0169)	(0.0197)
Age squared	-0.0011**	-0.000118	-0.000520*
	(0.0005)	(0.0002)	(0.0003)
Residence	1.190***	1.604***	1.430***
	(0.1820)	(0.0886)	(0.0997)
Household size	0.0418*	-0.0173	-0.0162
	(0.0249)	(0.0132)	(0.0148)
Household head	-0.222	-0.123	-0.364
	(0.2780)	(0.1120)	(0.1321)

Note: Standard errors are in parentheses.

Interpret the regression results. (10 Marks)

(c) List out steps in checking *Independence Irrelevant Alternative* (IIA) assumption under the multinomial regression framework.

(05 Marks)

5. Write short essays on each of the followings (05 Marks each)

(a) Log likelihood ratio test

(b) Maximum Likelihood estimator

(c) Gravity Model

(d) Barro Cross-Country Regression equation

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