本試題雙面印制

淡江大學99學年度碩士班招生考試試題

系別:產業經濟學系

科目:計量經濟學

准带工	頁目請打「V」
V	計算機
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1. Consider the following equation:

$$bw\hat{g}ht = \hat{\beta}_0 + \hat{\beta}_1 cigs + \hat{\beta}_2 inc$$

where *bwght* is the child birth weight, in <u>gram</u>, *cigs* is the <u>number</u> of cigarettes smoked by the mother per day, *inc* is annual family income, in <u>thousands of dollars</u>.

Assume the estimated results are $\hat{\beta}_0 = 116.974$ (standard error = 1.049), $\hat{\beta}_1 = -0.4634$

(standard error = 0.0916), $\hat{\beta}_2 = 0.0927$ (standard error = 0.0292). $R^2 = 0.281$

- (i) if the measurement unit of *bwght* is changed to <u>kilogram</u>, rather than gram, and no change on other variables, then how do the estimated results change? (10%)
- (ii) if the unit of *cigs* is changed to <u>pack</u>, rather than number, and no change on other variables, then how do the estimated results change? (10%)
- 2. Consider the following linear probability model:

$$approved = 0.112 - 0.021 black + 0.058 income$$

Where *approved* is a dummy variable, equals 1 if the individual can get the bank loan and 0 if not. *black* is a dummy variable, equals 1 if the individual is a black and 0 if not. *income* is the individual's income (in thousands of dollars).

- (i) Please interpret the estimated coefficients of "-0.021" and "+0.058". (10%)
- (ii) Please provide two shortcomings of the linear probability model. (10%)
- 3. Consider the following regression model:

$$\log(wage) = \beta_0 + \beta_1 edu + \beta_2 \exp + \beta_3 \exp^2 + \mu$$

Where wage is the individual's wage, edu is the individual's educational level (in years), exp is the individual's working experience and exp^2 is the square of exp.

- (i) if you believe there are some unobservable factors, such as ability, which can affect the individual's wage but are correlated with the educational level (variable "edu"), then what kind of problem will occur if we still regress the model using OLS? (10%)
- (ii) How do you take care of this problem? Please provide at least two methods.(10%)
- 4. Consider the following estimated results:

$$log(wage) = 0.410 - 0.189 female + 0.077 edu - 0.012 female \cdot edu + 0.088 exp$$

$$(0.129) \quad (0.091) \quad (0.006) \quad (0.006)$$

$$-0.0034 exp2$$

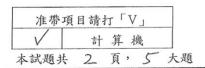
$$(0.00011)$$

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, where wage is the worker's wage, female is a dummy variable with value of 1 if the worker is a female and 0 if the worker is a male, edu is the worker's years of schooling, exp is the years of the worker's working experience, exp^2 is the square of exp. The number in parentheses is the standard error of estimated coefficient.

- (i) What is the effect of education on wage for female worker?What is the effect of education on wage for male worker?Please interpret the results completely using the estimated coefficients. (8%)
- (ii)Based on the estimated results, is there discrimination in the labor market? Explain. (6%)
- (iii)At what year does the marginal effect of experience on log(wage) become negative? (6%)
- 5. Interpret the following results on $\hat{\beta}_1$. That is, explain the meaning of $\hat{\beta}_1$ for each equation. (wage: unit = dollar), (edu: unit = years)

(i)
$$wage = \beta_0 + \beta_1 \cdot edu$$
, $\hat{\beta}_1 = 1,000$ (5%)

(ii)
$$\log(wage) = \beta_0 + \beta_1 \cdot edu$$
, $\hat{\beta}_1 = 0.079$ (5%)

(iii)
$$\log(wage) = \beta_0 + \beta_1 \cdot \log(edu), \qquad \hat{\beta}_1 = 0.00021$$
 (5%)

(iv)
$$wage = \beta_0 + \beta_1 \cdot \log(edu), \qquad \hat{\beta}_1 = 50$$
 (5%)