

Lecture 15

Chapter 6 Outline

I. Effects of Data Scaling on OLS Statistics

A. Scaling the Dependent Variable

B. Scaling an Explanatory Variable

(pp. 182-184)

II. Beta Coefficients

(STB option in model statement of PROC REG)

$$\hat{b}_j = (\hat{\sigma}_j / \hat{\sigma}_y) \hat{\beta}_j, \quad j = 1, 2, \dots, k.$$

(pp. 186-187 and Example 6.1)

III. More on Logarithmic Functional Forms

A. More Exact Calculation of % Δ

(Equation (6.8), p. 188)

B. Uses of Logging Dependent Variable

i. Controlling for Heteroskedasticity (p. 188)

ii. Reducing Effects of Outliers (p. 188)

iii. Practical Recommendations (p. 189)

iv. Percent Change vs. Percent Point Change

(pp. 189, 682)

IV. Models with Quadratics

- A. Interpretation of QX effect on y . (p. 190)
- B. Maximum or Minimum Value of Quadratic (pp. 190-193)

V. Adjusted R^2

- A. Motivation (Eqs. (6.20) & (6.21))
- B. Use of Adjusted R^2 to Choose Between Non-nested models with same dependent variable. (pp. 198-199).

VI. Prediction

- A. Confidence Interval for $E(y | x = x_0)$
Reparametrization Trick (pp. 203-204)
- B. Confidence Interval for y_0 (pp. 205-206)
Wider Confidence Interval
- C. Confidence Interval for y_0 when setting of x is ~~uncertain~~ uncertain. (class lecture)
Even wider Confidence Interval
- D. Prediction when $\log(y)$ is dependent variable (pp. 207-209)

③

VII. Choosing Between Two Models, one with y as dependent variable and one with $\log(y)$ as dependent variable (p. 209).