

Answers

EE 325 Section 2 HW 3 (STATA)

In order to receive HW points from the following questions, students must submit your STATA output table. No photocopy of STATA output table will be accepted.

Gujarati, D.N. (2009) Basic Econometrics. 5th ed. Singapore, McGraw-Hill.

Chapter 7 Questions 7.17, 7.18, and 7.19

7.17

- a. A priori, all the variables seem relevant to explain wildcat activity. With the exception of the trend variable, all the slope coefficients are expected to be positive; trend may be positive or negative.
- b. The estimated model is:

$$\begin{aligned}\hat{Y} &= -37.186 + 2.775X_{2i} + 24.152X_{3i} - 0.011X_{4i} - 0.213X_{5i} \\ se &= (12.877) \quad (0.57) \quad (5.587) \quad (0.008) \quad (0.259) \\ R^2 &= 0.656\end{aligned}$$

*Adjusted R*² = 0.603

- c. Price per barrel and domestic output variables are statistically significant at the 5% level and have the expected signs. The other variables are not statistically different from zero.
- d. The log-linear model may be another specification. Besides giving direct estimates of the elasticities, it may capture nonlinearities (in the variables), if any.

7.18

- a. The regression results are:

$$\begin{aligned}\hat{Y} &= 19.443 + 0.018X_{2i} - 0.284X_{3i} + 1.343X_{4i} + 6.332X_{5i} \\ se &= (3.406) \quad (0.006) \quad (0.457) \quad (0.259) \quad (3.024) \\ R^2 &= 0.978\end{aligned}$$

*Adjusted R*² = 0.972

- b. A priori, all the slope coefficients are expected to be positive. Except the coefficient for US military sales, all the other variables have the expected signs and are statistically significant at the 5% level.
- c. Overall federal outlays and some form of trend variable may be valuable.

7.19

- a. Model (5) seems to be the best as it includes all the economically relevant variables, including the composite real price of chicken substitutes, which should help alleviate the multicollinearity problem that may exist in model (4) between the price of beef and price of pork. Model (1) contains no substitute good information, and models (2) and (3) have limited substitute good information.
- b. The coefficient of $\ln X_2$ represents income elasticity; the coefficient of $\ln X_3$ represents own-price elasticity.
- c. Model (2) considers only pork as a substitute good, while model(4) considers both pork and beef.
- d. There may be a problem of multicollinearity between the price of beef and the price of pork.
- e. Yes. This might alleviate the problem of multicollinearity.
- f. They should be substitute goods because they compete with chicken as a food consumption product.
- g. The regression results of Model (5) are as follows

$$\ln \hat{Y} = 2.030 + 0.48 \ln X_{2i} - 0.351 \ln X_{3i} - 0.061 \ln X_{6i}$$

$$se = (0.119) \quad (0.068) \quad (0.079) \quad (0.130)$$

$$R^2 = 0.980$$

$$\text{Adjusted } R^2 = 0.977$$

The income elasticity and own-price elasticity have the correct signs.

- h. The consequence of estimating model (2) would be that the estimators are likely to be biased due to model misspecification.