*Table 5.7* **Output for Exercise 5.5**

Dependent Variable: *VALUE*
Included observations: 506

| Variable | Coefficient | Std. Error | *t*-Statistic | Prob. |
|---|---|---|---|---|
| *C* | 28.4067 | 5.3659 | 5.2939 | 0.0000 |
| *CRIME* | −0.1834 | 0.0365 | −5.0275 | 0.0000 |
| *NITOX* | −22.8109 | 4.1607 | −5.4824 | 0.0000 |
| *ROOMS* | 6.3715 | 0.3924 | 16.2378 | 0.0000 |
| *AGE* | −0.0478 | 0.0141 | −3.3861 | 0.0008 |
| *DIST* | −1.3353 | 0.2001 | −6.6714 | 0.0000 |
| *ACCESS* | 0.2723 | 0.0723 | 3.7673 | 0.0002 |
| *TAX* | −0.0126 | 0.0038 | −3.3399 | 0.0009 |
| *PTRATIO* | −1.1768 | 0.1394 | −8.4409 | 0.0000 |

(e) Predict the proportion of a budget that will be spent on transportation, for both one- and two-children households, when total expenditure and age are set at their sample means, which are 98.7 and 36, respectively.

5.5 This question is concerned with the value of houses in towns surrounding Boston. It uses the data of Harrison, D. and D.L. Rubinfeld (1978), "Hedonic Prices and the Demand for Clean Air," *Journal of Environmental Economics and Management*, 5, 81–102. The output appears in Table 5.7. The variables are defined as follows:

*VALUE* = median value of owner-occupied homes in thousands of dollars,
*CRIME* = per capita crime rate,
*NITOX* = nitric oxide concentration (parts per million),
*ROOMS* = average number of rooms per dwelling,
*AGE* = proportion of owner-occupied units built prior to 1940,
*DIST* = weighted distances to five Boston employment centers,
*ACCESS* = index of accessibility to radial highways,
*TAX* = full-value property-tax rate per $10,000, and
*PTRATIO* = pupil–teacher ratio by town.

(a) Report briefly on how each of the variables influences the value of a home.
(b) Find 95% interval estimates for the coefficients of *CRIME* and *ACCESS*.
(c) Test the hypothesis that increasing the number of rooms by one, increases the value of a house by $7000.
(d) Test as an alternative hypothesis $H_1$ that reducing the pupil–teacher ratio by 10 will increase the value of a house by more than $10,000.

### 5.7.2 Computer Exercises

5.6 Use a computer to verify your answers to Exercise 5.1, parts (c), (e), (f), (g), and (h).

5.7 (a) The file *lond_small.dat* contains a subset of 500 observations from the bigger file *london.dat*. Use the data in the file *lond_small.dat* to estimate budget share equations of the form

$$W = \beta_1 + \beta_2 \ln(TOTEXP) + \beta_3 AGE + \beta_4 NK + e$$

for all budget shares (food, fuel, clothing, alcohol, transportation, and other) in the data set. Report and discuss your results. In your discussion comment on how