

## cations

*on the website in gas-dot*

Data on U.S. gasoline consumption for the years 1953 to 2004 are given in Table F2.2. Note, the consumption data appear as ~~total expenditure~~. ~~To obtain the per capita quantity variable, divide GASEXP by GASP times Pop. The other variables do not need transformation.~~ \*

- Compute the multiple regression of per capita consumption of gasoline on per capita income, the price of gasoline, all the other prices and a time trend. Report all results. Do the signs of the estimates agree with your expectations?
- Test the hypothesis that at least in regard to demand for gasoline, consumers do not differentiate between changes in the prices of new and used cars.
- Estimate the own price elasticity of demand, the income elasticity, and the cross-price elasticity with respect to changes in the price of public transportation. Do the computations at the 2004 point in the data.
- Reestimate the regression in logarithms so that the coefficients are direct estimates of the elasticities. (Do not use the log of the time trend.) How do your estimates compare with the results in the previous question? Which specification do you prefer?
- Compute the simple correlations of the price variables. Would you conclude that multicollinearity is a "problem" for the regression in part a or part d?
- Notice that the price index for gasoline is normalized to 100 in 2000, whereas the other price indices are anchored at 1983 (roughly). If you were to renormalize the indices so that they were all 100.00 in 2004, then how would the results of the regression in part a change? How would the results of the regression in part d change?

\* *the data on consumption ARE per capita. A mistake was made in version 6 of the text and replicated in the Prediction*

**TABLE F2.2** The U.S. Gasoline Market, 36 Yearly Observations 1953–2004

Variables used in the examples are as follows:

- $G$  = Per capita U.S. gasoline consumption = expenditure/(population times price index),
- $P_g$  = Price index for gasoline,
- $Y$  = Per capita disposable income,
- $P_{nc}$  = Price index for new cars,
- $P_{uc}$  = Price index for used cars,
- $P_{pt}$  = Price index for public transportation,
- $P_d$  = Aggregate price index for consumer durables,
- $P_n$  = Aggregate price index for consumer nondurables,
- $P_s$  = Aggregate price index for consumer services,
- $Pop$  = U.S. total population in millions.

Source: The data were compiled by Professor Chris Bell, Department of Economics, University of North Carolina, Asheville. Sources: [www.bea.gov](http://www.bea.gov) and [www.bls.gov](http://www.bls.gov).

Location: <http://pages.stern.nyu.edu/~wgreene/Text/econometricanalysis.htm>

Uses: Examples 2.3, 4.4, 4.7, 4.8, 6.7, 7.1, 19.2, 20.3, Sections 6.4, 19.9.3, Application 4.1.