

14 CHAPTER ONE: THE NATURE AND SCOPE OF ECONOMETRICS

**QUESTIONS**

- 1.1. Suppose a local government decides to increase the tax rate on residential properties under its jurisdiction. What will be the effect of this on the prices of residential houses? Follow the eight-step procedure discussed in the text to answer this question.
- 1.2. How do you perceive the role of econometrics in decision making in business and economics?
- 1.3. Suppose you are an economic adviser to the Chairman of the Federal Reserve Board (the Fed), and he asks you whether it is advisable to increase the money supply to bolster the economy. What factors would you take into account in your advice? How would you use econometrics in your advice?
- 1.4. To reduce the dependence on foreign oil supplies, the government is thinking of increasing the federal taxes on gasoline. Suppose the Ford Motor Company has hired you to assess the impact of the tax increase on the demand for its cars. How would you go about advising the company?
- 1.5. Suppose the president of the United States is thinking of imposing tariffs on imported steel to protect the interests of the domestic steel industry. As an economic adviser to the president, what would be your recommendations? How would you set up an econometric study to assess the consequences of imposing the tariff?

**PROBLEMS**

- 1.6. Table 1-2 gives data on the Consumer Price Index (CPI), S&P 500 stock index, and three-month Treasury bill rate for the United States for the years 1980–2007.
  - a. Plot these data with time on the horizontal axis and the three variables on the vertical axis. If you prefer, you may use a separate figure for each variable.
  - b. What relationships do you expect to find between the CPI and the S&P index and between the CPI and the three-month Treasury bill rate? Why?
  - c. For each variable, “eyeball” a regression line from the scattergram.

**TABLE 1-2** CONSUMER PRICE INDEX (CPI, 1982–1984 = 100), STANDARD AND POOR'S COMPOSITE INDEX (S&P 500, 1941–1943 = 100), AND THREE-MONTH TREASURY BILL RATE (3-m T BILL, %)

Year	CPI	S&P 500	3-m T bill	Year	CPI	S&P 500	3-m T bill
1980	82.4	118.78	12.00	1994	148.2	460.42	4.29
1981	90.9	128.05	14.00	1995	152.4	541.72	5.51
1982	96.5	119.71	11.00	1996	156.9	670.50	5.02
1983	99.6	160.41	8.63	1997	160.5	873.43	5.07
1984	103.9	160.46	9.58	1998	163.0	1,085.50	4.81
1985	107.6	186.84	7.48	1999	166.6	1,327.33	4.66
1986	109.6	236.34	5.98	2000	172.2	1,427.22	5.85
1987	113.6	286.83	5.82	2001	177.1	1,194.18	3.45
1988	118.3	265.79	6.69	2002	179.9	993.94	1.62
1989	124.0	322.84	8.12	2003	184.0	965.23	1.02
1990	130.7	334.59	7.51	2004	188.9	1,130.65	1.38
1991	136.2	376.18	5.42	2005	195.3	1,207.23	3.16
1992	140.3	415.74	3.45	2006	201.6	1,310.46	4.73
1993	144.5	451.41	3.02	2007	207.3	1,477.19	4.41

Source: *Economic Report of the President*, 2008, Tables B-60, B-95, B-96, and B-74, respectively.

**TABLE 1-3** U.K. POUND / \$ EXCHANGE RATE BETWEEN U.K. POUND AND U.S. DOLLAR AND THE CPI IN THE UNITED STATES AND THE U.K., 1985–2007

Period	£ / \$	CPI U.S.	CPI U.K.
1985	1.2974	107.6	111.1
1986	1.4677	109.6	114.9
1987	1.6398	113.6	119.7
1988	1.7813	118.3	125.6
1989	1.6382	124.0	135.4
1990	1.7841	130.7	148.2
1991	1.7674	136.2	156.9
1992	1.7663	140.3	162.7
1993	1.5016	144.5	165.3
1994	1.5319	148.2	169.3
1995	1.5785	152.4	175.2
1996	1.5607	156.9	179.4
1997	1.6376	160.5	185.1
1998	1.6573	163.0	191.4
1999	1.6172	166.6	194.3
2000	1.5156	172.2	200.1
2001	1.4396	177.1	203.6
2002	1.5025	179.9	207.0
2003	1.6347	184.0	213.0
2004	1.8330	188.9	219.4
2005	1.8204	195.3	225.6
2006	1.8434	201.6	232.8
2007	2.0020	207.3	242.7

Source: *Economic Report of the President*, 2008. U.K. Pound/\$ from Table B-110; CPI (1982–1984 = 100) from Table B-108.

- 1.7. Table 1-3 gives you data on the exchange rate between the U.K. pound and the U.S. dollar (number of U.K. pounds per U.S. dollar) as well as the consumer price indexes in the two countries for the period 1985–2007.
  - a. Plot the exchange rate (ER) and the two consumer price indexes against time, measured in years.
  - b. Divide the U.S. CPI by the U.K. CPI and call it the relative price ratio (RPR).
  - c. Plot ER against RPR.
  - d. Visually sketch a regression line through the scatterpoints.
- 1.8. Table 1-4 on the textbook Web site contains data on 1247 cars from 2008.<sup>14</sup> Is there a strong relationship between a car's MPG (miles per gallon) and the number of cylinders it has?
  - a. Create a scatterplot of the combined MPG for the vehicles based on the number of cylinders.
  - b. Sketch a straight line that seems to fit the data.
  - c. What type of relationship is indicated by the plot?

<sup>14</sup>Data were collected from the United States Department of Energy Web site at <http://www.fueleconomy.gov/>.