Complete Problem 3.14 of Chapter 3.

**3.14.** Table 3-6 gives data on X (net profits after tax in U.S. manufacturing industries [$, in millions]) and Y (cash dividend paid quarterly in manufacturing industries [$, in millions]) for years 1974 to 1986.
a. What relationship, if any, do you expect between cash dividend and after-tax profits?
b. Plot the scattergram between Y and X.
c. Does the scattergram support your expectations in part (a)?
d. If so, do an OLS regression of Y on X and obtain the usual statistics.
e. Establish a 99% confidence interval for the true slope and test the hypothesis that the true slope coefficient is zero; that is, there is no
    relationship between dividend and the after-tax profit.

**TABLE 3-6** CASH DIVIDEND (Y) AND AFTER-TAX PROFITS (X) IN U.S. MANUFACTURING INDUSTRIES, 1974-1986

|  |  |  |
| --- | --- | --- |
| Year | Y | X |
| $ in millions |
| 1974 |  19,467  |  58,747  |
| 1975 |  19,968  |  49,135  |
| 1976 |  22,763  |  64,519  |
| 1977 |  26,585  |  70,366  |
| 1978 |  28,932  |  81,148  |
| 1979 |  32,491  |  98,698  |
| 1980 |  36,495  |  92,579  |
| 1981 |  40,317  |  101,302  |
| 1982 |  41,259  |  71,028  |
| 1983 |  41,624  |  85,834  |
| 1984 |  45,102  |  107,648  |
| 1985 |  45,517  |  87,648  |
| 1986 |  46,044  |  83,121  |