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 |