

EE325 ☺☺
STATA Session 1
Class activity

1. Table 2.8 gives data on expenditure on food and total expenditure, measured in rupees, for a sample of 55 rural households from India. (In early 2000, a U.S. dollar was about 40 Indian rupees.)
 - a. Plot the data, using the vertical axis for expenditure on food and the horizontal axis for total expenditure, and sketch a regression line through the scatterpoints.
 - b. What broad conclusions can you draw from this example?
2. **Construct regression model and hypothesis testing (p-value method)**

Table 3.3 gives data on the number of cell phone subscribers and the number of personal computers (PCs), both per 100 persons, and the purchasing-power adjusted per capita income in dollars for a sample of 34 countries.

 - a. To see if per capita income is a factor in the use of cell phones, we regressed each of these means of communication on per capita income using the sample of 34 countries. Construct a regression line and interpret the meaning. Is the estimated intercept coefficient different from zero at the 5 percent significance level? Is the estimated slope coefficient different from zero at the 5 percent significance level?
 - b. To see if per capita income is a factor in the use of PCs, we regressed each of these means of communication on per capita income using the sample of 34 countries. Construct a regression line and interpret the meaning. Is the estimated intercept coefficient different from zero at the 5 percent significance level? Is the estimated slope coefficient different from zero at the 5 percent significance level?
3. Table 5.11 provides data on the lung cancer mortality index (100 = average) and the smoking index (100 = average) for 25 occupational groups.
 - a. Plot the cancer mortality index against the smoking index. What general pattern do you observe?
 - b. Letting Y = cancer mortality index and X = smoking index, estimate a linear regression model
 - c. Test the hypothesis that smoking has no influence on lung cancer at $\alpha = 5\%$
4. Table 5.5 gives data on average public teacher pay (annual salary in dollars) and spending on public school per pupil (dollars) in 1985 for 50 states and the District of Columbia

To find out if there is any relationship between teacher's pay and per pupil expenditure in public schools, the following model was suggested:

$$Pay_i = \beta_1 + \beta_2 Spend_i + u_i$$

, where Pay stands for teacher's salary and Spend stands for per pupil expenditure.

- Plot the data and eyeball a regression line.
- Suppose on the basis of (a) you decide to estimate the above regression model. Obtain the estimates of the parameters, their standard errors, r^2 , RSS and ESS.
- Interpret the regression. Does it make economic sense?
- Establish a 95 percent confidence interval for β_2 . Would you reject the hypothesis that the true slope coefficient is 3.0?

4. Class example- regression through origin

Table 6.1 gives data on excess return Y_t (%) on an index of 104 stocks in the sector of cyclical consumer goods and excess returns X_t (%) on the overall stock market index for the U.K. for the monthly data for the period 1980-1999, for a total of 240 observations. Excess return refers to return in excess of return on a riskless asset (see the CAPM model)

5. Class example- scaling and units of measurement

Table 6.2 The relationship between the GDPI and GDP, United States, 1990-2005.

- Construct regression model (The Log-Linear Model)** *Expenditure on Durable Goods in relation to total personal consumption expenditure* Table 6.3 presents data on total personal consumption expenditure (PCEXP), expenditure on durable goods (EXPDUR), expenditure on nondurable goods (EXPNONDUR), and expenditure on services (EXPSERVICES), all measured in 2000 billions of dollars.

- Suppose we wish to find **the elasticity of expenditure on durable goods** with respect to **total personal consumption expenditure**. . Construct a regression line and interpret the meaning
- Suppose we wish to find **the elasticity of expenditure on nondurable goods** with respect to **total personal consumption expenditure**. . Construct a regression line and interpret the meaning