Temple University
Department of Economics

Econ 3503 – Introduction to Econometrics

Chapter 2 Exercises – Rescaling variables

4.1. A simple regression has quantities: $\sum(y_i - \bar{y})_i^2 = 1028.05; \quad \sum\hat{e}_i^2 = 366.42$. Find R^2.

R^2 is the % of variation in the dependent variable explained by the RHS variables. I.e. $R^2 = SSE/SST = 1 - SSR/SST$.

$R^2 = 1 - (366.42/1028.05) = 1 - .3564 = .6435$

4.2. A simple regression has quantities: $n = 23; \quad R^2 = 0.92; \quad SST = 1937.62$. Find $\hat{\sigma}^2$.

We know $R^2 = 1 - SSR/SST$ and $\sigma^2 = (1/(n-2))SSR$. So

$0.92 = 1 - (SSR/1937.62) \rightarrow SSR = 1937.62(.08) = 155.0096$

$\sigma^2 = (155.0096/21) = 7.381$

4.3. Consider the following regression:

$\hat{y}_i = 112.376 + 1.884x_i$ (where both variables are in dollars).

Rewrite the estimated regression if:
(a) All values x are expressed in thousands of dollars, not in dollars, but y remains unchanged.

Answer: $\hat{y}_i = 112.376 + .001884x_i$ The decimal in the slope estimate moved three places to the left.

(b) All values for both x and y are expressed in thousands of dollars, not in dollars.

Answer: $\hat{y}_i = .112376 + 1.884x_i$ The decimal in the intercept estimate moved three places to the left.