Quiz 4

Table 9.7 provides data on a sample of 261 workers in an industrial town in southern India in 1990.

The variables are defined as follows:

WI = weekly wage income in rupees
Age = age in years
$D_{sex} = 1$ for male workers and 0 for female workers
$DE_2 =$ a dummy variable taking a value of 1 for workers with an education level up to primary
$DE_3 =$ a dummy variable taking a value of 1 for workers up to secondary level of education
$DE_4 =$ a dummy variable taking a value of 1 for workers with higher than secondary education
DPT = a dummy variable taking a value of 1 for workers with permanent jobs and a value of 0 for temporary workers

The reference category is male workers with no primary education and temporary jobs. Our interest is in finding out how weekly wages relate to age, sex, level of education, and job tenure. For this purpose, we estimate the following regression model:

$$Model\ I:\ \ln WI_i = \beta_1 + \beta_2 AGE_i + \beta_3 D_{sex} + \beta_4 DE_2 + \beta_5 DE_3 + \beta_6 DE_4 + u_i \quad (1)$$

$$Model\ II:\ \ln WI_i = \beta_1 + \beta_2 AGE_i + \beta_3 D_{sex} + \beta_4 DE_2 + \beta_5 DE_3 + \beta_6 DE_4 + \beta_7 DPT + u_i \quad (2)$$

1. Interpret both models.
2. Test the overall significance of the estimated regressions (both models).
3. Which of the estimated coefficients are individually statistically significant? (both models)
4. Which is better model? Why?
5. Which statistical test(s) would you use to choose between the two models?

From Model II, interaction terms were created between the education variables (DE_2, DE_3, DE_4) and the gender variable (D_{sex}). What happens if we create interaction terms between the education dummies and the permanent worker dummy variable (DPT)?

6. Estimate the model predicting $lnWI_i$ containing age, sex, the education dummy variables, and three new interaction terms: $(DE_2 \times DPT, DE_3 \times DPT, DE_4 \times DPT)$ Does there appear to be a significant interaction effect among the new terms?
7. Is there a significance difference between workers with an education level up to primary and those without a primary education? What about the difference between workers with a secondary level of education and those without a primary level of education? What about the difference between those with an education level beyond secondary, compared to those without a primary level of education?